Asia Pacific Graduate Education

Comparative Policies and Regional Developments

Edited by
Deane E. Neubauer
&
Prompilai Buasuwan

EAST-WEST CENTER
COLLABORATION · EXPERTISE · LEADERSHIP

International and Development Education

The International and Development Education series focuses on the complementary areas of comparative, international, and development education. Books emphasize a number of topics ranging from key international education issues, trends, and reforms to examinations of national education systems, social theories, and development education initiatives. Local, national, regional, and global volumes (single authored and edited collections) constitute the breadth of the series and offer potential contributors a great deal of latitude based on interests and cutting edge research.

More information about this series at
http://www.springer.com/series/14849

Deane E. Neubauer • Prompilai Buasuwan

Editors

Asia Pacific Graduate Education

Comparative Policies and Regional Developments

palgrave
macmillan

Editors
Deane E. Neubauer
University of Hawaii, Manoa
Honolulu, USA

Prompilai Buasuwan
Kasetsart University
Bangkok, Thailand

ACKNOWLEDGMENTS

Contents

About the Contributors

Robyn Barnacle is a senior research fellow at the School of Graduate Research, RMIT University, Melbourne, Australia, where she is responsible for higher degrees by research supervisor training and professional development programs. Barnacle holds a PhD in philosophy from Monash University, Melbourne, Australia. Her interests are in the fields of researcher development and doctoral pedagogy. Her articles have appeared in *Studies in Higher Education* and other respected journals and have been widely cited. Barnacle is a coeditor of the 2012 collection *Supervising Practices for Postgraduate Research in Art, Architecture and Design.*

Sanford Beppu is an analyst at the University of Hawai'i (UH's) Institutional Research and Analysis Office (IRAO). He holds a master of urban planning degree and a bachelor of Geography, both from the University of Washington. In addition to supporting the institutional research needs of the ten-campus UH system, he has worked on analyzing employment outcomes for recent UH graduates and has been involved in IRAO's continuing commitment to make frequently used university data easily accessible to both the university and general communities.

Prompilai Buasuwan is an associate professor in the Program of Educational Administration, Faculty of Education at Kasetsart University and is also an assistant to the vice president of international affairs at Kasetsart University. Her main research interests are quality of education, partnership in education, internationalization of education, and educational policy analysis and evaluation. She has undertaken various projects with international organizations, research funding agencies, university networks, and consortiums. She is a coordinator of the Kasetsart Initiative international network

for partnership and collaboration with participating members from over 20 countries and is also a core member of the Thailand Evaluation Network and the Comparative and International Education Society of Thailand.

Gregory S. Ching holds a PhD in education from the National Cheng Chi University, Taiwan, and is an assistant professor at the Graduate School of Educational Leadership and Development, Fu Jen Catholic University, Taiwan. His research interests include technology and education, globalization, higher education issues, international student mobility, and student engagement.

Shang-Shing P. Chou, holds a BS in Chemistry from Fu Jen Catholic University (1971) and a PhD from the University of Michigan (1979) also in Chemistry. He has done postdoctoral research at the University of Texas (Austin) during the period 1979-1980. He has been employed at Fu Jen Catholic University subsequent to that where he has been an associate professor (1980-1984) and professor (1984-present). At Fu Jen Catholic University he has served as chairman of the Chemistry department (1986-1990), dean of the College of Science and Engineering (1990-1996), dean of General Affairs (1996-2000), director of the Holistic Education Center (2000-2002), vice-president for administration (2002-2003), dean of Continuing Education (2008-2012) and vice-president for academic affairs (2012-present). His research interests include organic synthesis, natural product synthesis and materials chemistry.

Denise Cuthbert is a graduate of the Universities of Queensland and Sydney and is Dean of the School of Graduate Research at RMIT University. Cuthbert has over 30 years' experience in higher education and has held substantive appointments in Literature, Women's Studies and Sociology in the humanities and social sciences. She has over 15 years' experience in leadership in graduate research education, which has been distinguished by a Vice Chancellor's Award (Monash University) and a national citation in 2007. Cuthbert's research in higher education, focused on doctoral education and the development of research capabilities, appears in leading journals including *Studies in Higher Education*, *Higher Education Research & Development,* and the *Journal of Higher Education Policy and Management.*

Edilberto C. de Jesus, professor emeritus at the Asian Institute of Management (AIM), Manila, has served as president of AIM, the Far Eastern University, Manila, and the University of the Cordilleras, Baguio

City, Philippines. He was appointed Deputy Peace Commissioner in 1987 and served concurrently, from 1988 to 1992, as Presidential Adviser on Rural Development in the Cabinet of Corazon Aquino. He was Secretary of Education from 2002 to 2004 in the first Arroyo administration and served as Secretariat Director of the Southeast Asia Ministers of Education Organization in Bangkok from 2005 to 2007. He serves on the advisory committees of the Asia-Europe Education Hub and of Philippine Business for Education.

Bundit Fungtammasan is an associate professor at King Mongkut's University of Technology Thonburi (KMUTT), Thailand. He has a BEng (Hons I) and PhD in mechanical engineering, both from the University of New South Wales, Australia. His academic career began as a lecturer in mechanical engineering at King Mongkut's University of Technology North Bangkok. He then became head of department, dean of engineering, dean of Graduate College, and vice president for R&D. He served a brief stint as assistant director of the National Science and Technology Development Agency, Thailand before being appointed the director of the Joint Graduate School of Energy and Environment at KMUTT. His current position is Senior Vice President for Research and Innovation at KMUTT.

Pearl Imada Iboshi is Director of IRAO for the University of Hawaii system. In this capacity, she promotes consistent, quality data collection and reporting across all ten campuses; uses data analysis to improve student success; and provides information to enhance data-driven decision making. She previously served as the acting director for the Department of Labor and Industrial Relations and the state economist in the Department of Business, Economic Development and Tourism, Hawaii. She holds a BA in Economics from Grinnell College in Iowa, an MA in economics from Hitotsubashi University in Tokyo, and a PhD in economics from the University of Hawaii.

Michael E. Jones holds a PhD in international comparative education policy from Indiana University Bloomington with a minor in intercultural communication. He also holds a master of science degree in instructional systems technology from Indiana University Bloomington. Jones has worked in eight countries across three continents in the fields of education, dispute resolution, social services, and human development for more than 20 years. He is Program Manager of the International Program in Design and Architecture, Chulalongkorn University, Bangkok.

Somkiat Kamolpun is an education officer at the Office of the Higher Education Commission (OHEC), Thailand. He was in charge of the policy on trade in higher education services and academic cooperation under the Asia-Pacific Economic Cooperation and Asia-Europe Meeting frameworks. He graduated in August 2015. He works at OHEC and is in charge of academic cooperation under ASEAN and ASEAN Plus Three frameworks.

Richard Laurie is a multimedia producer, writer, and editor specializing in secondary and tertiary education in Melbourne, Australia. Laurie has worked in this field for over 30 years, writing and developing materials for CSIRO, Fairfax newspapers, AsiaLink, and RMIT University among others. As a research assistant in the School of Graduate Research at RMIT University in 2014–2015, Laurie worked with the school's research education team contributing specialist writing, project management, and analysis services.

Koo Yew Lie is an honorary professorial associate at the School of Oriental and African Studies, University of London, UK; adjunct professor at the School of Education, Charles Darwin University, Australia; associate research fellow at the National Higher Education Research Institute, Malaysia; and has been Professor of Language Studies and Linguistics at the National University of Malaysia. She researches, teaches, and publishes in the areas of language, culture, and literacy in multilingual/cultural contexts, as well as in the area of higher education with special interest in Malaysia and ASEAN countries. She has led and/or worked in national and international research projects in language and literacy as well as in higher education policy funded by Mitsubishi Foundation; Ministry of Higher Education, Malaysia; International Institute for Educational Planning; Research Grants Council of the Hong Kong government; Institute of Youth Research, Ministry of Youth & Sports, Malaysia; Institute of Strategic and International Studies, Malaysia; and Center of Strategic and International Studies, Washington DC, USA.

Deane E. Neubauer is Professor Emeritus of Political Science and Co-Director of the Asia Pacific Higher Education Research Partnership, headquartered at the East-West Center in Honolulu, Hawaii. His work has explored comparative democratic practices at the nation state level, the political economy of health and food, globalization, and more recently, the varied dynamics and expressions of higher education, particularly in the Asia Pacific Region.

Vincent Pang holds a doctorate in education from RMIT University, Australia. He is a professor of education in the Faculty of Psychology and Education and Dean of the Centre for the Promotion of Knowledge and Language Learning, Universiti Malaysia Sabah. He is also an honorary professorial fellow at Charles Darwin University, Australia, and an associate research fellow of the National Higher Education Research Institute Malaysia. He has conducted research and consultancy projects for UNESCO; UNICEF; Malaysian Examination Syndicate; Malaysian Qualifications Agency; Department of Higher Education, Ministry of Education, Malaysia; Department of Human Resource Department, Sabah; Public Service Department, Sabah; and State Public Service Training Institute, Sabah. He is an editor of the *Malaysian Journal of Learning and Instruction*. He has been a visiting scholar at National Pingtung University, Taiwan. Pang's research areas are curriculum, assessment, evaluation, and higher education.

Stewart Sutin is Clinical Professor of Administrative and Policy Studies at the University of Pittsburgh, where he is also Associate Director of the Institute for International Studies of Education. He is a former president of Community College of Allegheny County, president of Bank of Boston International, and senior vice president and international department head of Mellon Bank. While in banking, Sutin served as president and board chairman of the Banker's Association for Foreign Trade. He is a senior editor and coauthor of *Increasing Effectiveness of the Community College Financial Model* (Palgrave Macmillan, 2011) and coauthor of *Value Based Education: A Vision for a Higher Education Business Model* (2012).

Winnie Wu is an IT specialist in IRAO for the University of Hawaii system. She holds a bachelor's degree in business administration from the University of Hawaii and has previously worked as a decision support analyst for a medical insurance carrier. She is now working with workforce, human resource and student data as well as generating online reports for the IRAO.

Chih-Hsien Yang holds a PhD in sport administration from Temple University, USA, and is a professor in the Department of Physical Education and Dean of the College of Education of Fu Jen Catholic University, Taiwan. He was appointed to several administrative positions in the past, including head of the department of physical education, athletic director, associate dean of academic affairs, director of admissions, and dean of general affairs.

Dr. Farrah Dina Yusop is the Deputy Director of the University of Malaya's Curriculum Development Center. She holds a PhD in Curriculum and Instructional Technology (CIT) and Human Computer Interaction (HCI) from Iowa State University. Dr. Farrah actively researches and publishes in the areas of higher education, Web 2.0, social media, educational games and mobile learning. She is especially known for her Civic-Minded Instructional Designer (CMID) conceptAUl framework which has reframed current ways of educating professionals for the purpose of improving public life. She has published internationally. Her recent 2014 BJET article has won the Outstanding Journal Article Award 2014 from the world renowned American Association for Educational Communications and Technology (AECT).

She also serves as international board member for the Malaysian Online Journal of Educational Technology (MOJET) and the Turkish Online Journal of Educational Technology (TOJET), as well as advisor for Iowa State University's Learning Design Solutions. She also is engaged in various trans-disciplinary national and international collaborative research projects in Australia, the USA, Thailand and the Philippines.

Ming Zhang is an institutional analyst in the IRAO for the University of Hawaii system. He holds a PhD in economics from University of Hawaii. He has worked in health statistics (at the Hawaii State Department of Health) and census data and tourism statistics (at the Hawaii State Department of Business, Economic Development and Tourism) before moving into institutional education research. His current research focuses on enrollment forecasting, student cohort longitudinal analysis, and predictive modeling.

Christopher Ziguras is an associate professor in the School of Global, Urban and Social Studies at RMIT University. His research focuses on globalization processes in education, particularly the regulation of cross-border provision. He oversees a wide range of international projects at RMIT as a deputy dean, International, and is Vice President of the International Education Association of Australia. He received the RMIT University Vice Chancellor's Distinguished Teaching Award in 2011 and was Tony Adams Visiting Senior Scholar at the Centre for Higher Education Internationalisation at Università Cattolica Del Sacro Cuore, Milan, in 2013. His latest book is *Governing Cross-Border Higher Education*.

LIST OF FIGURES

LIST OF TABLES

Introduction: Situating Graduate Education in a Rapidly Changing Higher Education Environment

Deane E. Neubauer and Prompilai Buasuwan

INTRODUCTION

It has become commonplace to note that one prominent feature of contemporary globalization is the "speeding up of change" (Harvey 1989). We find evidence of this assertion throughout social life and particularly in those portions of social interactions being impacted by new information and communication technologies. A companion assertion holds that education in general and higher education in particular are stressed by what is familiarly termed the "alignment dilemma" by which is usually meant the lack of fit between the kinds of education and skills required in contemporary economies and those possessed by higher education

D.E. Neubauer (✉)
University of Hawaii, Manoa, Honolulu, HI, USA

P. Buasuwan
Kasetsart University, Bangkok, Thailand

graduates. We have discussed this issue in various other places (e.g. in a senior seminar held in Shanghai in November 2013 on twenty-first-century work skills and competencies, see Neubauer and Ghazali 2015). We have also noted that the "disruption" movement in higher education takes form in part as an expression of this tension (in this regard, see Christensen et al. 2011). In the main, discussion along these lines has focused on undergraduate education.

The chapters that appear in this volume have been derived from a researcher's seminar held at the Royal Melbourne Institute of Technology University in March 2014. These offerings examine a range of propositions focused on the changing nature of graduate education. Our purpose in offering these is to create a frame of reference through which graduate education can be examined in relation to the many functions and purposes it has performed in society as well as to initiate an assessment of other developments that arise within graduate education as a result of the many more general transformations occurring in higher education, especially in the Asia Pacific region.

Some Contemporary Trends

The following is intended as an introductory set of observations about graduate education as it has been increasingly affected and transformed by the processes of contemporary globalization in which it is variously located.

Interdisciplinarity in MA and PhD dissertations is rising worldwide, especially in the Asia Pacific. The key assumption underlying the investments many higher education institutions (HEIs) are making in transdisciplinary research centers and training programs is "that cross-disciplinary research and training provide a stronger basis for achieving scientific and societal advances than unidisciplinary programs" (Mitrany and Stokois 2005).These events play out against another set of variables often mentioned in the context of higher education, namely, the relative difficulty of instigating change within HEIs given the dominant role played in university structure and administration by traditional disciplines and many professional schools (Trowler 1998).

Running throughout higher education is an increased focus on Science, Technology, Engineering, and Mathematics (STEM) graduate work, especially in Asia (ICEF Monitor 2012). Throughout the world one can observe a steadily increasing awareness that societal needs, especially those

expressed through innovation derived from technological advance, are occurring most rapidly in STEM fields, and that in terms of both employability and the value-added component of higher education and graduate education, qualification in STEM fields is increasingly important as well. This awareness is very strong in Asia (especially in India, Korea, Singapore, and China), and it is widely recognized throughout the world that Asian students in general outperform others in STEM-related testing at pre-graduate levels. (For an overall assessment of STEM issues throughout education and society in addition to cross-country comparisons and their graduate education implications, see Marginson et al. 2013.)

In general, one can observe an increase in international competition for the best students at both graduate and undergraduate levels. One feature of internationalization/globalization is that in their operation, the higher education dynamics they have occasioned have generally favored the West at the expense of HEIs in Asia and the Pacific (A&P). This was represented over the decades from 1980 to 2005 by the radical imbalance of Asian countries sending cross-border students out for their experiences, especially in graduate education. This is beginning to change, as A&P HEIs get stronger and enter new stages of massification (Enders and Jongbloed 2007; Hawkins and Wu 2015).

As indicated above, a major issue in all of the tertiary education is workforce misalignment with fields of study, which is becoming increasingly an issue in graduate education. Indeed, in some instances doctoral programs are subject to intense criticism because of their length and cost and the difficulties experienced by graduates in seeking employment upon completing their degrees. In the USA, this has become an increasing critique of higher education as the proportion of teaching/research faculty hired on tenure track drops and that of contract faculty increases—the result being a "poor return on investment" in doctoral education. These dynamics in linking graduate education to workforce alignment are enhanced in an A&P context (Asian Development Bank 2012; Luzer 2013; Kezar 2013).

Another aspect of these dynamics has been the relative increase in the cost of higher education throughout the world and the related tendency to shift increasing portions of that cost on students through increases in tuition, with the result that in many instances they "own" significant amounts of debt upon receiving their degrees. In the USA this has become a major political issue with aggregate student debt having reached a trillion dollars plus. The phenomenon is intensified when associated with graduate degrees, which on the whole costs more than undergraduate

degrees. Again, this is a phenomenon that has begun to expand rapidly throughout Asia as more governments reduce their contributions to both undergraduate and graduate education, and as the role of private education looms larger (Rowan 2013).

In recent years, the public policy sector in various countries has become increasingly involved in promoting closer collaboration between HEIs, employers, and the public service realm to increase the alignment between HE and work. This phenomenon is just beginning to occur in Asia, and with a gradual realization that the issue in general extends to graduate education, but because of the persistence of the issue, one can expect an increase in the reach and rate of these endeavors (Asia Society 2011). In the USA and in a manner that may stand as a prediction for how the process will extend to other countries as well, the economic and status dilemmas facing recent graduates motivate many of them to extend their work to graduate education. In this regard, in recent years the most rapidly growing segment of US higher education has been at the MA level. Joshua A. Boldt, for example, has developed a variety of analyses of higher education focused on elements of political economy from which he argues that the relative dearth of post-BA employment contributes in a focused way to the expansion of graduate education as the expansion of MA and PhD education serves to absorb excess labor (Boldt 2013).

Regional cooperation is intensifying for graduate work within the Asia Pacific region. This has strong implications for non-Asian dominance of the best graduate students. One can advance the hypothesis that as Asian HE improves, and the relatively new and distinctive "education hubs" develop (as in Singapore and Malaysia), the best students will stay in the region, thus depriving traditional recipient nations of talented human resources (Vincent-Lancrin 2009, Cheng et al. 2011).

Some years ago Bigalke offered the proposition that when seeking to compare events that occur in US higher education with various sites in A&P, one can see that in some cases the US events act as a forerunner of similar developments that will occur in Asia; in other cases the US experience can be seen as an outlier, a series of events that have taken the form and shape they have largely because of structural features that are unique to the US, such as the fact that most higher education is authorized and regulated at the state level, not the national level as is most common in Asia (Bigalke 2009). However, even as outliers, as the largest economy in the world and as one that is situated firmly in the center of globalization dynamics, such events are often forerunners.

In this regard, The Path Forward for Graduate Education in the US 2010 is a good summary of where graduate education is going in the US, and as such perhaps a harbinger for the rest of the world, Asia especially (Education Testing Service 2012). Specifically this report makes the following recommendations, after setting a context in which both the continued importance of higher education is emphasized as well as the probability that the current models through which graduate education is financed are not sustainable. These are to:

- improve completion rates
- clarify career pathways for graduate students
- prepare future faculty
- prepare future professionals
- establish and expand programs to identify talented undergraduate students.

Mindful of the persistence of the alignment dilemma, the report also makes recommendations to employers to:

- establish endowed graduate school chairs
- promote lifelong learning accounts
- provide tuition reimbursement accounts for graduate study
- replicate established programs that address challenges facing under-represented groups
- create industry-sponsored graduate fellowship programs
- create special incentives for small businesses to develop talent
- collaborate with universities to clarify entry points into careers
- provide internships and work-study programs for graduate students.

DIPLOMA DISEASE (CREDENTIALIZATION)

In 1976, Ronald Dore published a study called "The Diploma Disease" in which he argued, "the 'bureaucratization of economic life' in all modern societies is making selection for jobs/careers by educational attainment more and more universal." From this he argued that one could predict the flow of "credentialization" throughout an economy, for which the primary indicator was the university degree. At the time he was most concerned about Associate and Bachelor degrees. In this volume, in various ways we seek to extend aspects of his analyses to graduate education,

arguing in some instances that for many purposes the MA is the new BA, leading to most of the consequences Dore foresaw: credentialism, a lack of alignment, the privileging of the symbolic value of graduate degrees, and so forth. In various chapters that follow, we can see a form of analysis, a kind of "back to the future" phenomenon in Asia in which graduate degrees are progressively displacing even BA/BS degrees as occupational requirements. Some (e.g. in Australia) have even begun to argue that this phenomenon is beginning to attach to the PhD as well (Collins 2002).

In some respects, a phenomenon linked to the kinds of structures and processes that lead to diploma disease is the finding leveled by some that the training doctoral students receive is not necessarily what they want, nor does it prepare them for the jobs they take (Walker et al. 2008). In the USA, for example, the "Carnegie Initiative on the Doctorate" has generated extensive active and continuing conversations on the purpose of given doctoral programs and the rationale and educational purpose of each element of the program, conversations that are being employed to transform many US doctoral programs. In addition, Walker et al. (2008) performed much of the work for this project and reported on it in a separate volume. Among other points made is the important assertion that many students do not clearly understand what doctoral study entails, how the process works, and/or how to navigate it effectively. These findings, initially derived from a US study, appear to be replicated by Asia Survey results (Nyquist and Woodford 2000).

SATISFACTION WITH GRADUATE EDUCATION IS STRONGLY LINKED TO CHOICE

A number of studies have indicated that students desire graduate curricula that are sufficiently broad to give them a choice of careers. They also want information to ensure that the choices they are making are informed, and they want the choices they make to be respected by others, and particularly by the market.

For example, a 2010 survey of graduate students (including MA, PhD, and Professional students) at the University of California, Berkeley, found that, in general, graduate students highly recommend their program, but doctoral students are likely to be less positive in their recommendation as they progress through the program. The quality of the mentor was the most important factor in determining whether the program was viewed positively. And in this particular instance graduate students were very

much aware of the decrease in general public funding for graduate education and doctoral education in particular (Bowling Green State University 2007, Graduate Assembly 2010).

Oversupply of PhDs?

The adequacy of PhDs for academic positions in a variety of disciplines is varied. As support for the arts, humanities, and social sciences declines, so does the employability of doctoral holders for full-time faculty positions, at least in some countries and cases (Kezar 2013). Whether an intended or unintended consequence, various societal pressures including the overall financial pressure on HEIs have resulted in a significant use of part-time faculty in universities. To date this has been mostly a US phenomenon, but is increasing in some countries (e.g. Australia, Indonesia), where the supply of doctoral holders is not so much an issue as is their low rate of compensation. Yet, the situation in other Asian countries (e.g. Vietnam, Cambodia) is one of shortage. Again, this can be viewed as another form of the alignment issue, in this case having to do with the cumulative effects of national histories, policies, and support for higher education in general. In situations where shortages occur, this can either be the cause or effect of broader structural issues that affect the overall quality in graduate higher education (on this situation in Vietnam, see Lan 2011).

Stakeholders in doctoral education have conflicting views about the degree, including its purpose, enrollment practices, and methods of training. As a matter of increasing concern in the USA, this conversation is beginning to also occur in Asia (Yefanova 2011, Wendler et al. 2012). However, widespread agreement among stakeholders does seem to exist on an agenda for improving doctoral education that would include shortening the time to degree, developing more diversity among PhD recipients, preparing doctoral students for a wider variety of careers, and making interdisciplinary work more integral to doctoral education. These data are from a US Pew study (Nyquist and Woodford 2000). It may be useful to inquire how much these kinds of factors are becoming evident in various Asian contexts (National Science Foundation 2000).

As indicated above, in one way or another, the chapters of this volume are given context by these various propositions and seek to expand the discussion. In Chap. 2, Christopher Ziguras examines the critical role that finance plays in making graduate education available and the novel forms that are emerging to meet the complex needs of a diverse degree-seeking

constituency. He points out that across borders an individual's family is the most common source of support, followed by various schemes available through home governments. In instances of cross-border graduate education, a third source is supplied by host governments, followed by host institutional sources, which tend to be almost exclusively reserved for doctoral students. He goes on to suggest how these traditional pathways of supporting graduate education are being supplemented by more novel ways as well including, for example, the provision of host country loans.

In Chap. 3, Edilberto C. de Jesus follows this exploration of financing novelty by surveying the changing roles and purposes of graduate education. Recognizing that graduate education is changing in response to a broad array of macro-forces impinging on Southeast Asian states, some countries in the region are introducing "typologies" that distinguish among different categories of post-secondary educational institutions. The new norms will include higher numbers of PhD faculty in the institutions recognized as "university." Some HEIs have responded to the pressure for PhD faculty by establishing their own PhD programs to make it easier for their faculty to earn the degree.

However, beyond the reclassification of HEI, as De Jesus recounts, stands the larger alignment issue, the failure of the HEI to produce graduates who can find employment in the market, leading some employers to complain that graduates simply do not have employable skills in the contemporary marketplace. However, as suggested above, it is not at all clear that HEIs are solely accountable for this failure. Nor is it certain that advocating for more graduate education will address the parallel problems of unemployed degree holders and unfilled jobs in the market. What is becoming increasingly evident, De Jesus argues, is that addressing this issue will require aligning toward common goals and multiple moving pieces that impact on the higher education system: government-stated objectives and prevailing laws and government policies, the roles of different government agencies overseeing aspects of HEI operations, government agencies and HEI, and public and private higher education.

Neubauer picks up this theme in Chap. 4, suggesting that if one focuses on the overall processes of contemporary globalization that characterize the past two decades, with particular emphasis on the period since the Great Recession (beginning in 2007), one can discern the outlines of a possible new and emergent political economy, at least within and among the most economically developed nations. In brief the structural dynamics of this economy, led by its largest member, the USA, has begun to

reveal a pattern of investment, profit acquisition, earnings sequester, and labor force utilization that is made possible through the creation of the "newish" institutions of the global system of innovation, manufacture, transportation, consumption, and finance. This system allows firms to maximize profit while simultaneously minimizing both the costs of production and the degree to which wealth needs to be shared with national governments through taxation. At the core of this system, he argues, is a new system of labor which, aided by the dynamics of the technological replacement of labor, permits the "labor bill" (especially when contrasted to "profit taking") to be continually lowered for the largest firms within the global system. In this system, he asserts that the currency of education is dramatically affected, with one important result being the increasing importance being placed at one end on graduate education and at the other on post-secondary technical education.

Part II of this volume examines how some of these dynamics play out in country settings. In Chap. 5, Pearl Iboshi et al. examine the impacts of candidates' field of study and their level of post-secondary education on the earnings of recent graduates at the University of Hawaii. The study compares wages of graduates with certificates for programs of one year or more, associate degrees, bachelor degrees, and graduate-level education. The results show that those earning graduate degrees, in general, earn more, but the results are highly dependent on the field of study. Their generalized linear model confirms that the most important indicators affecting college graduates' labor market earnings (by their rank of importance) are: student's academic major, degree, industry in which they work, age, gender, and their family financial background. Graduate degrees (master and above) had higher earnings than the baccalaureate while graduates at this degree level had higher earnings than those with an associate degree and certificates. Students with majors in healthcare, education, STEM, business, and communication tended to have higher earnings, and students in the construction, utilities, education, public services, and healthcare industries also tended to have higher earnings. Women tend to have lower earnings, but the gap decreases as the level of degree increases.

Koo Yew Lie and Vincent Pang in Chap. 6 shift the ground to a developing economy, albeit one on a rapid growth trajectory, examining the postgraduate experience in Malaysia. The Malaysian Ministry of Education (MOE) has set its mission to establish a higher education environment that will foster the development of education excellence within a highly globalized and competitive university context. In line with the MOE's commitment to

develop an evidence-based higher education policy and practice to ensure quality and international standards in its provision, the study reported on in this chapter has developed a Malaysian Postgraduate Research Student Experience Questionnaire (MyPREQ) to measure the postgraduate research student experience in public HEIs that are the main providers of postgraduate research programs. Koo Yew Lie and Vincent Pang suggest that there are broad implications for the role of higher education in terms of the range of graduate literacies emerging out of the knowledge economy and in the broader reaches of civil society.

In Chap. 7, Stewart Sutin and Somkiat Kamolpun follow a similar path of seeking to determine the range of needs for graduate education in the region by comparing elements of graduate education in the USA, Malaysia, the Philippines, and Thailand. In this examination, the research lenses consist variously of government officials, accreditation associations, HEIs, and students. Sutin and Kamolpon identify trends, commonalities, and perceptible differences between these countries, in an effort to better understand a range of underlying causal factors affecting contemporary graduate education in these settings. Reaching beyond this frame of reference, the authors also examine some contested views regarding broader and deeper government engagement in oversight, reporting, and government's role as "the assurer of last resort" of sustainable quality and affordability of graduate education. Much of the evidence for this aspect of their reporting is drawn from a case study of assessments and curriculum change in the Higher Education Management Program of the University of Pittsburgh.

In Chap. 8 Shang-Shing P. Chou, Chih-Hsien Yang and Gregory S. Ching turn their attention to an issue that is coming to have ever-greater importance throughout higher education, namely the ways in which societal-wide demographic changes impact higher education capacity and institutional missions, especially in the creation and provision of doctoral programs. In Taiwan, an overall decrease in student numbers has dramatically affected those in graduate programs. Indeed, data show that PhD student applications are at an all-time low. If the current trend persists, universities will eventually be forced to close down some of their doctoral programs. With these current issues in mind, the authors examine the experiences of Fu Jen Catholic University in facing this challenge. They report on a series of focus group interviews conducted with doctoral candidates, current and prospective doctoral students, graduate program directors, and top-level university administrators. Their interviews seek to identify both present and future challenges faced by Fu Jen's PhD programs, and how they might adapt to and prepare

for these concerns. The authors argue that the implications of this study extend far beyond Taiwan to embrace a number of other Asian societies.

In Chap. 9 the nature of the challenges facing graduate education is given a somewhat different perspective by Farrah Dina Yusop, who asserts that in order for doctoral education to be deemed of continuing social value, it will need to extend beyond its current dominant framing in which it typically consists of both extensive coursework and academic research-related tasks. In this form, doctoral students are being prepared to become stewards of the discipline to which they will devote their academic lives. While agreeing that such an approach is essential in preparing students for their future workplaces, Yusop argues that such strong emphasis on school-to-work curricula often results in students having a lack of understanding with respect to their expected social roles in society. Such an approach, she asserts, will only undermine the professional-to-be graduate students' transformative powers to initiate and sustain positive changes they could offer for the well-being of society. She begins the argument with an overview of current graduate education, followed by an introduction to concepts of civic professionalism. This is in turn followed by a discussion of the attributes that constitute civic-minded professionalism. The chapter concludes by proposing a framework for a contemporary graduate education program that balances the transition to workplace preparation with the development of civic-minded attitudes among graduate students.

In Chap. 10, Bundit Fungtammasan asserts that in an open and increasingly integrated world environment, higher education is expected to play a critical role in economic growth by providing high-level skills and research that apply current technologies and to assimilate, adapt, and develop new technologies to meet social needs. However, he argues, higher education in most countries of the fast-developing East Asia, including Thailand, has failed to live up to these expectations. Mainstream science and engineering education at the graduate level in Thailand, for instance, is very much oriented toward academic research with little relevance to industry. Thus, typical graduates tend to lack the relevant skills to meet the challenges of global competition, be they technical or soft skills such as critical thinking, communication, leadership, or even English proficiency. To redress these deficiencies, he points out, certain Thai institutions have initiated innovative programs in the form of graduate-level Work Integrated Learning and industry-oriented thesis studies. His chapter reviews two such programs: the Science and Engineering Practice Schools at King Mongkut's University of Technology Thonburi and the

Industrial PhD and Master programs supported by the Thailand Research Fund—a major national research-granting agency.

This issue of the ongoing relevance of graduate education is pursued from another perspective by Prompilai Buasuwan and Michael E. Jones in Chap. 11, who follow the well-known argument referenced above of Ronald Dore (1976) to examine the notion of the "Diploma Disease" as it might apply to graduate education. Dore's argument in effect made the case that the overall relative ubiquity of bureaucratization of education in general had impacted virtually all modern societies. This Dore had argued that "the 'bureaucratization of economic life' in all modern societies is making selection for jobs/careers by education attainment more and more universal." This well-known phenomenon has been exacerbated by the "credentialization" of education that is linked to modern economies. Although at the time Dore was most concerned about undergraduate degrees, various evidence within Thai society supports the proposition that the MA is the new BA, leading to credentialism accompanied by a lack of alignment with societal needs, the privileging of the symbolic value of graduate degrees, and so on.

This issue of the demonstrable relevance of graduate education is pursued from another perspective in Chap. 12 by Barnacle et al. who review various aspects of "The Future Fellowships Scheme," introduced in Australia in 2008 to promote research in areas of critical national importance by giving outstanding incentives to conduct research in Australia. The aim of these future fellowships has been to attract and retain the best and the brightest mid-career researchers. Framed in terms of the necessity of creating talented researchers focused on the unique problems created by the emergent knowledge society, one aspect of the program has been to promote more and different kinds of doctoral graduates, and in particular to develop a powerful research and innovation system that drives economic and social progress by encouraging universities to review how best to train PhD graduates for employment in the broader economy and to increase the number of international students enrolled in doctoral programs. The contributors report on research conducted on 323 fellows from the first four years of the national scheme including data that focuses on why doctoral aspirants make the choices they do. These data can then be analyzed for policy significance of interest to all of the Australian graduates.

Finally, in Chap. 13, Buasuwan and Neubauer conclude this examination of various aspects of graduate education by introducing a set of hypotheses/propositions that they suggest frame in a more general way the overall nature of graduate education throughout the Asia Pacific arena

and which may constitute relevant courses for future research on its nature and relevance in the region.

References

Asia DevelopmentBank.2012. "Improving Transitions from School to University to Workplace."Accessed January 14, 2014. http://www.adb.org/publications/improving-transitions-school-university-workplace.

AsiaSociety.2011. "National Public Education Support Fund: Singapore and Shanghai." Accessed January 16, 2014. http://www.npesf.org/singapore-shanghai.

Bigalke, T. W.2009. "Increasing Privatization of U.S. Higher Education: Forerunner or Deviant Case?" *In Higher Education in Asia/Pacific: Quality and the Public Good*, edited by T. W. Bigalke and D. E. Neubauer. New York: Palgrave Macmillan, pp. 68–84.

Boldt, J. A.2013. "Masters is the New Bachelors." *Order of Education*, February 28, 2013. Accessed January 21, 2014. http://www.orderofeducation.com/degree-inflation/.

Bowling Green State University. 2007. "Report of the Results of the BGSU Graduate Student Survey." Accessed January 18, 2014. http://www2.bgsu.edu/downloads/finance/file41283.pdf.

Cheng, Y.C., A.C.K. Cheung, and T.W.W. Yeun. 2011. Development of a Regional Education Hub: The Case of Hong Kong. *International Journal of Education Management.* 25(5): 474–493.

Christensen, C. M., M. B.Horn, L.Caldera, and L.Soares.2011. "Disrupting College: How DisruptiveInnovation Can Deliver Quality and Affordability to Postsecondary Education."*Center for American Progress*. Accessed November 23, 2012. www.americanprogress.org/issues/2011/02/disrupting_college.html.

Collins, R. 2002. "The Dirty Little Secret of Credential Inflation."*The Chronicle of Higher Education*, September 27, B20. Accessed Feb. 25, 2016 http://dpdproject.info/details/the-dirty-little-secret-of-credential-inflation-collins/ (But we must tell you that the citation listed was the complete citation in 2002 when the *Chronicle* was a paper entity delivered by mail to HEIs).

Dore, R. P.1976. *The Diploma Disease*.Berkeley: University of California Press, p. 76.

Education Testing Service.2012. "The Path Forward: The Future of Graduate Education in the UnitedStates." Accessed: January 16, 2014.http://www.fgereport.org/.

Enders, U., and B. Jongbloed, eds. 2007. *Public-Private Dynamics of Higher Education: Expectations,Developments, and Outcomes*. Bielefeld: Transcript Verlag.

GraduateAssembly.2010. "2010 Graduate Satisfaction Survey." Accessed: January 18, 2014.http://ga.berkeley.edu/files/page/surveyreport.pdf.

Harvey, D. 1989. *The Condition of Post Modernity: An Inquiry into the Origins of Cultural Change*. Oxford: Blackwell Publishers.

Hawkins, J.W., and A. Wu. 2015. *Massification of Higher Education in Asia: Consequences, PolicyResponses, and Changing Governance*. Hong Kong: Springer in press.

ICEFMonitor.2012. "Demand for STEM Programming Continues to Rise: Countries Race to Meet It."Accessed June 30, 2015.http://monitor.icef.com/2012/11/demand-for-stem-continues-to-increase/.

Kezar, A.2013. "The New Ecology of Higher Education: The Changing Faculty." In *WASC ConceptPapers,2nd Series: The Changing Ecology of Higher Education and Its Impact on Accreditation*. Alameda, CA: Western Association of Schools and Colleges, Senior Commission.

Lan, B.P.2011. "Quality as Key in Vietnam's Passage to Education Integration." In *Access, Equity, and Capacity in Asia Pacific Higher Education*, edited by D.E. Neubauer and Y. Tanaka. New York: Palgrave Macmillan. Pp.83–97

Luzer, D.2013. "The Decline of Academic Tenure." *Washington Monthly*. Accessed January 14, 2014.http://www.washingtonmonthly.com/college_guide/blog/the_decline_of_academic_tenure.php.

Marginson, S., R. Tytler, B. Freeman, and K. Roberts. 2013. *STEM: Country Comparisons:Internationalcomparisons of science, technology, engineering and mathematics (STEM) education*. Melbourne: Australian Council of Learned Academies.

Mitrany, M., and D.Stokois. 2005. "Gauging the Transdisciplinary Qualities and Outcomes of DoctoralTraining Programs."Accessed January 14, 2014.http://jpe.sagepub.com/content/24/4/437.short.

National ScienceFoundation.2000. "Graduate Education Reform in Europe, Asia, and the Americas and International Mobility of Scientists and Engineers."Accessed January 18, 2014.http://www.nsf.gov/statistics/nsf00318/foreword.htm.

Neubauer, D.E., and K. Ghazali, eds. 2015. *Technology and Workplace Skills for the Twenty-FirstCentury: Asia Pacific Universities in the Global Economy*. New York: Palgrave Macmillan.

Nyquist, J. D., and B. J.Woodford. 2000. "Re-envisioning the PhD: What Concerns Do We Have?" *PewCharitable Trusts*. Accessed January 18, 2014.http://depts.washington.edu/envision/resources/ConcernsBrief.pdf.

Rowan, R.2013. "Student Loans Around the Globe."Accessed January 16, 2014.http://www.tuition.io/blog/2013/06/student-loans-around-the-globe/.

Trowler, P.R. 1998. *Academics Responding to Change: New Higher Education Frameworks andAcademic Cultures*. Buckingham: Open University Press.

Vincent-Lancrin, S.2009. "Cross-border Higher Education: Trends and Perspectives." In *HigherEducation to 2030*. Volume 2: Globalization.Paris: OECD.63–88.

Walker, G.E., C.M. Golde, L. Jones, A.C. Bueschel, and P. Hutchings. 2008. *The Formation ofScholars: Rethinking Doctoral Education for the Twenty-First Century*. San Francisco: Jossey-Bass.

Wendler, C., B.Bridgeman, R.Markle, F.Cline, N.Bell, P.McAllister, and J.Kent. 2012. *PathwaysThrough Graduate School and Into Careers. Princeton, NJ: Educational Testing Service*.Accessed January 18, 2014.http://pathwaysreport.org/rsc/pdf/19089_PathwaysRept_Links.pdf.

Yefanova, D.2011. "Stakeholder View Congruence on Cross-Border Graduate Double Degree ProgramImplementation in Australia, Japan and the United States."*Digital Conservancy, University of Minnesota*. Accessed January 16, 2014.http://conservancy.umn.edu/handle/11299/116052.

Changing Dynamics of Asia Pacific Graduate Education

The Expansion of Cross-Border Graduate Education in the Asia Pacific: Developmental and Financial Challenges

Christopher Ziguras

INTRODUCTION

Patterns of international study are changing with the rapid increase in higher education participation rates in the major source countries, with more students undertaking a first degree in their home country followed by graduate studies abroad. This chapter examines recent trends in cross-border graduate study in the Asia Pacific and considers the ways in which governments are able to influence students' choices so that patterns of graduate mobility support broader developmental objectives. The chapter argues that the dominant models of financing cross-border education in the region limit the scale of cross-border mobility and overly restrict students' choice of programs. Innovative forms of financing pioneered in Latin America that introduce public-private cost sharing for internationally mobile students present major opportunities for the region.

Globally, the number of internationally mobile tertiary students continues to increase steadily, with over four million students studying outside their

C. Ziguras
RMIT University, Melbourne, VIC, Australia

home country for at least 12 months (UNESCO 2014). This represents around 1 out of every 50 university students globally. Most of these international students are studying at bachelor/undergraduate level. The proportion studying in graduate programs vary considerably between source countries, ranging from 20 % of mobile students from Vietnam to 43 % of those from India. Chinese postgraduates far outnumber those from any other source country, with India a distant second and all other countries having much smaller numbers (see Table 2.1) (British Council 2014).

The British Council (2014) predicts that postgraduate student mobility will continue to increase over the next decade, with larger increases in student numbers from India and China and smaller increases from most countries in the Asia Pacific region, apart from Korea and Taiwan which will decline slightly. The number of students undertaking graduate studies abroad is influenced by a range of factors, which differ in importance in each location. "Push" factors in the students' home countries include the inadequate supply of quality graduate study options (especially as growing numbers of students complete degree programs), growing labor market

Table 2.1 Internationally mobile students and postgraduates from selected countries

Source country	International students, 2012 (in 000s[a])	International postgraduate students, 2012 (in 000s, and by percentage of national total[b])	Forecast international postgraduate students, 2024 (in 000s[b])
China	712	227 (32 %)	338
India	182	88 (43 %)	209
Republic of Korea	117	30 (26 %)	26
Saudi Arabia	74	19 (26 %)	34
United States	60	19 (32 %)	26
Taiwan	61[c]	19 (31 %)	12
Canada	46	18 (39 %)	19
Thailand	26	12 (46 %)	13
Vietnam	54	11 (20 %)	20
Russia	51	11 (22 %)	18
Malaysia	56	10 (18 %)	11
Indonesia	39	9 (23 %)	21
Mexico	27	8 (30 %)	13

[a]UNESCO (2014)
[b]British Council (2014)
[c]Lin and Chung (2014)

demand for graduate qualifications, and buoyant economic conditions that allow families to invest in education. "Pull" factors in the destination country include the prestige of qualifications, the possibility of migration, and the allure of cosmopolitan cities and campuses.

While all graduate students are conflated in such data, there are major differences between those who are undertaking coursework master's programs (who are predominantly privately funded and concentrate in business and professional fields of study) and those who are undertaking doctoral research programs (who are overwhelmingly sponsored by governments and/or universities and are concentrated in the Science, Technology, Engineering and Mathematics fields). In this chapter we will focus on the predominant form of cross-border graduate studies, which involves a student from one country traveling abroad to undertake a master's or doctoral program. There are several other forms of cross-border education that we will not consider in detail here because they operate on a smaller scale at the graduate level, which are briefly outlined below.

Exchange and study abroad programs, which involve students spending one or two semesters at an overseas partner institution for credit to their program of studies in their home country, have long been popular with undergraduate students from affluent societies. Such mobility is usually supported by governments in affluent societies through schemes such as University Mobility in Asia and the Pacific and the European Region Action Scheme for the Mobility of University Students, which since 1987 has sponsored the international exchange of 2.2 million students, at more than 4000 institutions in 33 countries (European Commission 2010). However, these types of student mobility are less common among graduate students, in part because their shorter program duration poses logistical difficulties, but also because a higher proportion of graduate students have work and family commitments that prevent them from spending months away from home.

Joint and double degrees are forms of cross-border education which exist predominately at the master's and doctoral level (Kuder et al. 2014). Double degrees allow students to obtain qualifications from two universities, usually master's or PhDs, by simultaneously or sequentially undertaking two different programs that are coordinated between the two institutions. Joint degrees are single programs that are jointly awarded by two or more different universities. Usually students spend time on the campuses of the two universities. These forms of collaborative provision have great potential to offer students an exciting combination of studies,

but they tend to operate on a tiny scale as niche offerings with a handful of students, and predominantly in Europe (Kuder et al. 2014).

A third form of cross-border graduate study worthy of passing mention is transnational education, in which students are located in a different country from the one in which the provider is based. The USA, the UK, and Australia are the major provider countries, offering a wide range of programs through international branch campuses and collaborative partnerships (see McBurnie and Ziguras 2007). A high proportion of transnational provision takes place in East and Southeast Asia, but mostly at the undergraduate level.

Here we are concerned primarily with the ways in which governments are able to influence students' choices so that patterns of graduate mobility support broader developmental objectives. A key problem is that overseas study is for most students much more expensive than studying in the home country and is beyond the reach of the vast majority of the world's graduates. So we will examine the ways in which cross-border graduate studies are funded, with a view to identifying means by which governments and other actors are able to broaden access.

Before we consider funding models in detail, let us consider the ideological debates that have shaped consideration of the proper role of government in relation to mobile students. One can discern three broad contemporary political positions. The first is the neoliberal commitment to free trade in education, which advocates limiting state-imposed restrictions on the consumption of education as a service that can now be more easily traded across borders. Left parties have reacted against these trends, becoming increasingly concerned with protecting the vulnerable from the negative consequences of educational mobility, such as brain drain, increasing inequality in access, and exploitation of students. Meanwhile, most governments have come to see cross-border education as a key means of fostering global knowledge exchange and cooperation in order to assist in social and economic development.

Neoliberalism and Mobile Graduate Students

Some of the key exporting governments and private education providers have, since the 1990s, promoted the idea of a global market for goods and services in which education is traded like any other commodity (see Ziguras and McBurnie 2015). They are right to interpret the growth in graduate student mobility as a response to market forces, to the extent

that unmet demand for education in one place leads students to study elsewhere where the supply is greater. Students will travel from places where the supply of graduate education is scarce, or of poor quality, to places where it is plentiful or prestigious. One can clearly see all the features of markets at play in cross-border education; there are many sellers of education who are free to set prices and quantities (although other providers may be constrained). Students are able to choose between a vast array of educational products offered across the globe to mobile students, each with its own features, price, and selectivity. Education marketers are keenly aware that many students (and their families) see foreign education as an investment upon which they expect to generate a return.

By far the largest source of funds to support graduate students is students themselves and their families. The number of self-funded students has grown rapidly in recent decades, fueled largely by rapid economic development in Asia. However, it has long been the case that most internationally mobile students are predominantly privately funded. In 1980 the US Institute of International Education estimated that around 85 % of foreign students in the USA received no funding from the home country other than support from their families (Barber 1985).

At the master's level this market operates quite freely, with most students paying the full cost of their programs with private funds. Doctoral education, on the other hand, is heavily subsidized by home and host country governments. In such cases governments become the major purchasers of education, while many providers discount their programs heavily by providing tuition waivers because they reap significant other benefits from the exchange. The purchase of education for the benefit of foreign nationals can be considered international development assistance, or aid, but the scale of this pales in comparison with private funding. Bashir (2007) estimates that the value of trade in higher education exceeds the value of aid in higher education tenfold (p. 9).

In the USA, Australia, Canada, New Zealand, Malaysia, and Singapore, most education providers have considerable autonomy to recruit international graduate students. But, though international provision is largely commodified in these countries, it is by no means unregulated by the state. In fact, as Martens and Starke (2008) have observed in the case of New Zealand, governments that have adopted a "trade-oriented" approach to international education exercise a high degree of intervention, especially through the promotion of the country as a destination, the regulation of their education providers, and the filtering of students through visa conditions.

Left Critiques of the Global Education Market

The opposition to this market-based model has been pronounced and expressed strongly by university associations, student unions, academic unions, The United Nations Education, Scientific and Cultural Organization (UNESCO), and many governments, who assert that education should be considered a public good and should not be traded. The peak bodies representing universities in North America and Europe proclaim this to be a fact when arguing that trade agreements have no right to include provisions concerning education: "Higher education exists to serve the public interest and is not a 'commodity', a fact which WTO Member States have recognized through UNESCO and other international or multilateral bodies, conventions, and declarations" (AUCC, ACE, EUA, and CHEA 2001, p. 1). There is clearly much opposition in those countries that receive large numbers of self-funded graduate students.

Frequent warnings occur about the vulnerability of education providers to international markets (Knight 2008). Much concern has been focused on institutions' dependency on revenue from international students (Nelson 2003), although since the Great Recession, being overly dependent on government funding is perhaps a bigger risk. Concerns are also expressed that international students are displacing local students, that international students with language difficulties may lower the quality of the classroom experience for locals, and that international students may command a disproportionate amount of academics' time.

Left critics of commercial international education also argue that the market in education exacerbates social inequalities in access, particularly in low-income countries. Altbach's influential body of work on cross-border higher education (Altbach 1980, 1998, 2006; Altbach and Knight 2007) has highlighted the inequality that lies at the heart of these market exchanges and the ongoing dependency of the academic periphery on the core, which makes the development of reciprocal relationships difficult:

> The landscape of international higher education is characterized by inequalities and is increasingly focused on commercial and market concerns. These inequalities are especially stark in the context of relations between developing and developed countries, but market concerns are central to academe worldwide. This, of course, creates serious problems for international academic relations based on cooperation and on traditional academic norms and values. (Altbach 2005, p. 14)

A third major concern is cultural imperialism, in particular, the dominance in transnational education of Western, Anglophone universities who impose

their cultural values on non-Western students. For example, the president of the European Association for International Education told the Observatory on Higher Education that transnational education "can be conceived as a 'form of neo-colonialism' if it consists only of international qualifications delivered in Asia with local teachers and without any significant differentiation in the curriculum" (Lawton et al. 2013, p. 19). Institutions, on the one hand, achieve economies of scale by providing the same programs in many locations, but also have to balance this with the educational imperative to tailor teaching to suit the needs of particular student cohorts (Shams and Huisman 2012). This is not only a concern for transnational education, but also reflects a deep current of concern about the extent of Western, and particularly, American influence on the internationalization of higher education (Choi 2010; Mok 2007). Similarly, the International Association of Universities (IAU) fears that the widespread usage of English in transnational programs contributes to cultural homogenization (IAU 2012).

So while neoliberals seek to expand the size of the global education market, those on the Left concerned with social justice would rather shrink the scale of self-funded cross-border education. The Left is generally supportive of government-funded scholarship programs, particularly for students from low-income countries, but laments the growth of commercialized master's programs.

Regulating Mobility to Foster Social and Economic Development

As passionate as the pro- and antimarket campaigns have been, they have not persuaded governments either to liberalize their education systems, or to eliminate competition. What has instead happened is that virtually all governments see a quality higher education sector as a necessary prerequisite for national competitiveness. Governments have continued to be closely involved in regulating and shaping education systems, just as they do with other sectors of the economy that feature a mix of public and private sector providers (Braithwaite 2005). King (2009) observes that despite differences in emphasis, most Western governments and the major international institutions involved in higher education (the Organisation for Economic Cooperation and Development (OECD), World Bank, and UNESCO) advocate a consistent policy template that incorporates features of new public management and advocates systemic diversity (King 2009). They promote a regulatory environment that fosters institutional autonomy, devolving management wherever possible to the institutional level,

while the government sets the broad parameters within which institutions operate and establishes rewards and incentives for performance.

Support for such a model of governance is widespread. Altbach and Salmi (2011), for example, share a belief that such regulatory environments allow research universities to thrive, despite the fact that the former is an academic critic of Western educational neo-imperialism and the latter a World Bank technocrat. Similarly, a recent ranking of higher education regulatory environments sponsored by the Universitas 21 network of research-intensive universities advocates the same qualities (Williams et al. 2013). The regulatory characteristics they chose to rate as desirable include "the existence of national monitoring agencies, especially the ones that make public their findings; academics are not government employees and are free to move institutions; the chief executive officer is chosen by the university; and there is complete flexibility to appoint foreign academics" (p. 601). Another feature of the standard global policy template, King (2009) argues, is the notion that a mix of different types of institutions is beneficial, including both public and private, vocational and research-focused, comprehensive and niche, and even domestic and foreign providers.

The pro- and antimarket rhetoric has on the whole given way to a widespread belief that cross-border education, when well regulated, can benefit both sending and receiving countries. In 2012 the Asia-Pacific Economic Cooperation (APEC) education ministers agreed on the need to enhance educational cooperation and supported the development of multiyear projects in facilitating and evaluating regional collaborative projects, the "Gyeongju Initiative." APEC trade ministers then issued a statement noting the importance of both "cross-border *trade* in education services *and* deepening educational *cooperation* in the Asia-Pacific" (my emphasis) (APEC 2012). This statement could signify that the region's leaders are able to accept the coexistence of trade and cooperation in education, noting that both have a role to play in social and economic development. The outflow of graduate students, whether self-funded or sponsored, is seen by many governments as a means of rapidly acquiring the high-level skills required to boost the competitiveness of key industries.

Funding Models and Accessibility

So how are governments able to harness the opportunities provided by the global education market, by broadening access beyond the most affluent students, and steering students toward fields of study that will best

support development goals? One simple approach is for host governments to subsidize education for foreign students. Japan and China both subsidize foreign degree students to some extent; however, they still receive few graduate students, while in the major Anglophone destinations subsidization by government is rare. The political challenge is that this practice is difficult to support since taxpayers' funds are being spent on noncitizens who will most likely leave the country upon completion of their studies. As a result, host country funding in the Asia Pacific region is nearly always tied to particular developmental or diplomatic objectives that can be shown to be in the national interest.

Some countries, particularly in northern Europe, provide their own citizens with government grants and loans that are portable overseas. The Netherlands, for example, provides students with a progressive scholarship that varies according to the family's income and can be used to cover tuition fees and living expenses either in the Netherlands (where all institutions charge tuition fees) or abroad (see Ziguras and McBurnie 2015). Norway funds outgoing student mobility not only to promote educational and cultural exchange, but also for pragmatic reasons. As Wiers-Jenssen (2008) has noted, as a small country it is more economical for the Norwegian government to fund students to undertake niche programs abroad rather than develop such programs at home. Unfortunately, no governments in the Asia Pacific region make their tertiary education funding internationally portable in this way. While students are subsidized at home, they are on their own if they choose to study abroad, unless they are lucky enough to win a scholarship.

Sponsored Students

Many governments, including Malaysia, Vietnam, China, and Chile to name a few, operate large scholarship programs that support high-performing students to undertake graduate studies abroad, typically professional master's and doctoral studies in fields that are national priorities, and often with a bias toward the natural sciences (OECD and World Bank 2010, pp. 46–52). Master's degrees are often funded by a particular government department as a way of recruiting the brightest graduates and bringing international experience into middle management. Doctoral studies are often funded by the Ministry of Education as a way of developing the country's academic labor force to support the expansion of universities.

Perhaps the largest scholarship scheme in the world today is Saudi Arabia's King Abdullah Foreign Scholarship Program, which reportedly spends USD 2.4 billion per year to send 125,000 highly qualified students overseas (Bashraheel 2013). Begun in 2005, the program aims to meet the country's human resource development needs by helping young people to acquire the skills required to enable Saudi citizens to occupy some of the specialist jobs currently occupied by expatriates (Saudisation). It also aims to provide a significant pool of bright young people with international experience, in order to develop social, cultural, and economic linkages that will allow the country to move beyond its reliance on oil. The Ministry of Education has added and removed countries from the program from time to time and screens institutions at which students are able to study, directs students interested in particular niche fields of study to targeted institutions, and avoids too high a concentration of students at individual institutions. As a result of the program, the number of Saudi students abroad grew sixfold in a period of just 4 years, from 14,523 in 2006 to 88,435 in 2010, with the largest destinations being the USA, the UK, Canada, Australia, Egypt, South Africa, and Malaysia, according to Saudi Ministry of Education figures (Denman and Hilal 2011). Now nearly 90 % of Saudi students abroad are funded by the program rather than by private sources, which has broadened access considerably, including to female students who have increased from 31 % of outgoing students in 2004 to 42 % in 2012 (PIE 2013; UNESCO 2013).

The scale of Saudi Arabia's scholarship program is exceptional, and very few countries are able to publicly fund such large-scale scholarship programs. It is notable that two of the largest schemes are supported by huge natural resource windfalls—oil in the case of Saudi Arabia and copper in the case of Chile. Middle-income countries generally have much more limited scholarship programs targeted to the highest achieving students in fields of study identified as being of critical importance for national development.

Host countries in the Asia Pacific region also sponsor many students, usually for doctoral studies. For example, the number of Australian government and university scholarships for international students is higher now than it was during the post-Second World War "Colombo Plan" period, at an estimated cost of around AUD 720 (USD 530) million per year, with around half of the spending coming from government and half from universities (Department of Education 2014). Accounting for all sources of sponsorship, around 85 % of international research

students in Australia are supported by scholarships from the Australian government, their home government, or host universities. However, the number of these sponsored doctoral students represents a tiny fraction of the many tens of thousands of full-fee paying international master's students in Australia.

Some countries have made government-funded places in doctoral programs open to international students. New Zealand has done this for quite some time, and Canadian provinces have also adopted this practice, with Ontario announcing that a quarter of funded places would be open to international students (Chiose 2015). This is possible because although PhD student numbers are relatively small, they contribute to the research output of the host country and university, and because they are more likely to stay in the host country than undergraduate students are. There is also considerable competition for top PhD students, so recruiters have to offer generous packages in order to be competitive.

Consequently, scholarships are a key means of supporting graduate students, but for most countries they are highly competitive and only available to top doctoral students. Because of the public investment involved in supporting these students, recipients are nearly always required to return to their home country after completion of their studies, and often required to work for a period of several years with a particular organization. For example, recipients of Becas Chile scholarships may only remain abroad after completion of their studies for up to half the period of funding, and then must spend a minimum of 2 years in Chile for each year of scholarship funding (Belyavina and Brensinger 2013). Students who fail to meet these conditions are usually required to repay the funding they have received, along with a penalty fee in some cases. Only a few countries are able to finance large-scale mobility of master's students in this way.

Implicit in all these schemes is an expectation that the international mobility of these students generates broader public benefits as well as benefiting the individuals involved. Public funding of international education is justified on the basis of these "external" benefits that have been well understood in relation to national systems (Weisbrod 1962). The OECD and World Bank (2010) see schemes such as the Becas Chile Programme as a highly effective use of public funds that allows "drawing on resources of other countries to fill gaps in local capacity for human capital formation" (p. 11). In such programs the state effectively becomes the purchaser of international education on behalf of selected students, seeking to align decisions about student characteristics, fields, and levels of study

and host universities with national human resource development priorities. The resulting patterns of mobility are very different from those of self-funded students, who still represent the vast bulk of mobile degree students from most countries with scholarship programs. These organizations also see scholarship schemes as "injecting a demand-side stimulus to reform of an insular system of higher education supply" (p. 11). By this they mean that domestic institutions must compete with foreign institutions to attract the best students, which they hope will lead to those institutions being much more responsive to student demand and interested in international standards. In Chile, for example, the return of graduates with advanced qualifications from abroad, the state believes, will have the effect of "stimulating productivity improvement by further opening up Chilean thinking to international best practices, internationalising the Chilean workforce and connecting the next generation of Chilean leaders to international networks" (p. 11). For these reasons the OECD and World Bank have been keen to highlight the achievements of international scholarship programs such as Chile's.

Supporting Self-Funded Students

Self-funded students, who make a substantial investment in their graduate education, tend to choose studies that they are confident will generate a return on their investment, particularly in business studies and professional fields with high salaries. As we saw earlier, China is by far the largest source country, and its government is the most active in guiding and advising self-funded overseas students. The Ministry of Education's Foreign Regulatory Information Network (which goes by the acronym JSJ) maintains a comprehensive website—http://www.jsj.edu.cn—as a resource for students and their families and publishes study warnings for students as urgent matters arise in order to prevent or assist them in resolving unexpected problems abroad. Since 2003 it has published a list of reputable higher education institutions which now extends to 43 countries. It also points students to the relevant host country websites listing registered institutions (JSJ 2013). In addition, education counselors in key destinations provide advice and consular support to Chinese students as well as advocacy when required.

In most countries where tuition fees are charged, students who are not able to fund their studies upfront are able to access loans to defer some or all of the cost of their studies, and normally these are at favorable

interest rates. These are particularly attractive for master's degree students whose programs are shorter than many other students, and so there is less time for interest to accrue. Most loans schemes, however, do not support students to undertake programs in another country. There are financial institutions in some home countries, such as India, that provide loans to fund tuition and living expenses of outbound students, and these can play a significant role in broadening access. A key limiting factor, though, is that they are commercial loans with the normal rates of interest, and such loans are restricted to students whose families have assets to use as collateral. In some host countries, such as the USA, students can obtain loans from financial institutions. One benefit is that the loan is in the currency in which costs are incurred, and students can apply for finance when and if they need it during their studies. Again, students require a guarantor with assets in the host country to use as collateral.

Novel Latin American Cost-Sharing Models

Innovative forms of financing pioneered in Latin America that introduce public-private cost sharing for internationally mobile students present major opportunities for the region. These provide a means for middle-income countries without such vast foreign currency reserves to support outbound mobility for a larger number of students through a subsidized loan scheme. Two programs for graduate students, Foundation for the Education, Science and Technology (FUNED) in Mexico and COLFUTURO in Colombia, share some key features.

First, these are creative forms of financing that share the cost burden between students and funding bodies, which may involve a combination of government agencies, business groups, and philanthropic organizations. The combination of public, commercial, and philanthropic funding finances students more flexibly than either scholarships or private funding alone is able to do. Mexico's FUNED scholarship scheme is supported by the charity Monte de Piedad (which has been providing low-interest loans to the poor since the 1770s) and the National Council of Science and Technology.

Second, the funding provided to students is conditional upon particular outcomes postgraduation, with the amount having to be repaid varying. This allows the student much more freedom than most scholarships, but also rewards certain choices. For example, in Colombia's COLFUTURO program funding must be paid back in full if the student does not return to Colombia, but if the student returns and stays in Colombia, his/her loan

amount will be reduced by half. There is a further reduction for students who return to positions in the public sector or educational institutions where salaries are often lower than in the private sector. Students are free to choose to stay abroad. If they do so they repay the loan, and the funds are made available to support another student. By using a combination of loans and grants, these schemes are able to fund a larger pool of students than scholarships alone could.

Third, like scholarship programs, these are selective, directing resources to those students and host institutions that the funding body considers the most worthy. This ensures that the funding bodies' policy objectives are met, where grants are involved, and that the funding will be able to be repaid, where it takes the form of a loan. Because the funds have strong purchasing power, they are able to broker good deals with selected institutions. FUNED, for example, supports graduate students (nearly 400 in 2012) to study in the top 200 universities or 100 programs in a particular field according to international rankings. It has agreements in place with 50 universities that grant tuition fee discounts and provide additional services to FUNED scholars.

Conclusion

The marketized nature of cross-border graduate education presents some very real challenges. While the political Right points to the wide range of study options made available by more open education systems, the Left points out how inequitable it is in practice, largely because it is so reliant on private financing, which excludes most students. Currently a small number of fortunate scholarship students are funded well by governments and institutions but the majority of students are completely self-financed. Government funding and loans that are available to support students who study in their own country are rarely portable across borders. No amount of rhetorical argument about the strengths and weaknesses of markets or whether education is a public or private good will address these challenges. What is required are financing models that extend opportunities for overseas graduate study to those students who could not otherwise fund it.

Several models have been considered. Unlike in some parts of Europe, there are no governments in the Asia Pacific region that provide free education to all foreign students or that routinely support their own students to study abroad in the same way as they support studies at home.

Scholarship recipients are fortunate but few in number, and they are constrained by rigid funding rules.

A common feature of the novel approaches from Mexico and Colombia is that they combine public and private funding sources to extend credit on affordable terms to internationally mobile degree students and forgive a portion of the debt if students return home and/or work in industries which generate public benefits but which pay lower wages, such as education or government. These schemes can considerably expand access to overseas study and can reduce the risks for students who desire to study programs that lead to less lucrative careers. Such programs take us beyond the ideological debates of the twentieth century and instead develop creative solutions that manage to harness the possibilities offered by globalization and make them more broadly accessible to students from a wide range of backgrounds.

References

Altbach, P.G. 1980. "The University as Centre and Periphery." In *Universities and the International Distribution of Knowledge*, edited by I.J. Spitzberg. New York: Praeger.

Altbach, P.G. 1998. "Twisted Roots: The Western Impact on Asian Higher Education." In *Comparative Higher Education: Knowledge, The University and Development*, edited by P.G. Altbach, 55–77. Hong Kong: Comparative Education Research Centre, The University of Hong Kong.

Altbach, P.G. 2005. "The Political Economy of International Higher Education Cooperation: Structural Realities and Global Inequalities." Paper presented at the NUFFIC Conference: 'A Changing Landscape', The Hague. http://www.nuffic.nl/nederlandse-organisaties/nieuws-evenementen/evenementen-archief/past-event-1/Downloads.

Altbach, P.G. 2006. "Globalization and the University: Realities in an Unequal World." In *International Handbook of Higher Education*, edited by J.J.F. Forest and P.G. Altbach, 121–39. The Netherlands: Spring.

Altbach, P.G. and J.Knight.2007. "The Internationalization of Higher Education: Motivations and Realities." *Journal of Studies in International Education* 11(3–4):290–305. doi:10.1177/1028315307303542.

Altbach, P.G. and andJ. Salmi, eds. 2011. *The Road to Academic Excellence: The Making of World-Class Research Universities.* Washington, DC: The World Bank.

APEC. 2012. *Statement – 2012 Meeting of APEC Ministers Responsible for Trade, Kazan, Russia*. Singapore: Asia-Pacific Economic Cooperation.

AUCC, ACE, EUA, and CHEA. 2001. "Joint Declaration on Higher Education and the General Agreement on Trade in Services." September 28. Accessed May 15, 2002. http://www.unige.ch/eua/En/Activities/WTO/declaration-final1.pdf.

Barber, E.G.1985. *Foreign Student Flows: The Significance for American Higher Education*. New York: Institute of International Education.

Bashir, S. 2007. *Trends in International Trade in Higher Education: Implications and Options for Developing Countries*. Washington, DC: The World Bank.

Bashraheel, L. 2013. "Scholarship Students: Big Dreams, Slow Change." *Saudi Gazette*. http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20130311156300.

Belyavina, R. and J.Brensinger. 2013. "Building Knowledge-based Economies in Latin America: The Role of National Study Abroad Scholarship Programs." In *Latin America's New Knowledge Economy: Higher Education, Government, and International Collaboration*, edited by J. Balán, 39–53. New York: The Institute of International Education.

Braithwaite, J. 2005. "Neoliberalism or Regulatory Capitalism." RegNet Occasional Paper No. 5. Regulatory Institutions Network Research School of Social Sciences, Australian National University, Canberra.

British Council. 2014. *Postgraduate Student Mobility Trends to 2024*. London: British Council.

Chiose, S. 2015. "International Students to Receive Additional Funding from Ontario." *The Globe and Mail*, July 9. http://www.theglobeandmail.com/news/national/international-students-to-receive-additional-funding-from-ontario/article25407883/.

Choi, P.K. 2010. "'Weep for Chinese University': A Case Study of English Hegemony and Academic Capitalism in Higher Education in Hong Kong." *Journal of Education Policy*25(2):233–52.

Denman, B.D. andK.T.Hilal .2011. "From Barriers to Bridges: An Investigation on Saudi Student Mobility (2006–2009)." *International Review of Education*57(3–4): 299–318. doi:10.1007/s11159-011-9221-0.

Department of Education. 2014. *Australian Scholarships and Support for International Students*. Canberra: Australian Government Department of Education.

European Commission. 2010. The ERASMUS Programme. Accessed June 26, 2010. http://ec.europa.eu/education/lifelong-learning-programme/doc80_en.htm.

IAU. 2012. *Affirming Academic Values in Internationalization of Higher Education: A Call for Action*. Paris: International Association of Universities.

JSJ. 2013. "To Help Students Studying Abroad at their Own Expense Correct Choice of Foreign Schools in 43 Countries Released by the Ministry of Education List of Schools." http://www.jsj.edu.cn/index.php/default/index/sort/12020.

King, R.P. 2009. *Governing Universities Globally: Organizations, Regulation and Rankings*. Cheltenham, England and Northampton, MA: Edward Elgar.

Knight, J. 2008. *Higher Education in Turmoil: The Changing World of Internationalization*. Rotterdam and Taipei: Sense.

Kuder, M., N. Lemmens, and D. Obst, eds. 2014. *Global Perspectives on International Joint and Double Degree Programs*. New York: Institute of International Education.

Lawton, W., M. Ahmed, T. Angulo, A. Axel-Berg, A. Burrows, and A.Katsomitros. 2013. *Horizon Scanning: What will Higher Education Look Like in 2020?*London: UK Higher Education International Unit and the Leadership Foundation for Higher Education.

Lin, R. andJ.Chung. 2014. "More Students Going Abroad." *Taipei Times*, March 4, p. 5. http://www.taipeitimes.com/News/taiwan/archives/2014/03/04/2003584849.

Martens, K. andP. Starke. 2008. "Small Country, Big Business? New Zealand as Education Exporter." *Comparative Education* 44(1):3–19.

McBurnie, G. and C. Ziguras. 2007. *Transnational Education: Current Issues and Future Trends in Offshore Higher Education.* London: RoutledgeFalmer.

Mok, K.H. 2007. "Questing for Internationalization of Universities in Asia: Critical Reflections." *Journal of Studies in International Education* 11 (3–4): 433–54.

Nelson, B. 2003. *Engaging the World through Education: Ministerial Statement on the Internationalisation of Australian Education and Training.* Canberra: Commonwealth of Australia.

OECD and World Bank. 2010. *Reviews of National Policies for Education Chile's International Scholarship Programme.* Paris and Washington, DC: Organisation for Economic Cooperation and Development and the World Bank.

PIE. 2013. "How has Saudi Arabia's KASP Impacted the Sector?" *The PIE Review* 2: 44–7.

Shams, F. andJ. Huisman. 2012. "Managing Offshore Branch Campuses: An Analytical Framework for Institutional Strategies." *Journal of Studies in International Education* 16 (2): 106–27.

UNESCO. 2013. "Data Centre."Accessed October21, 2013. http://www.uis.unesco.org.

UNESCO. 2014. "Global Flow of Tertiary-Level Students." Accessed July20, 2015. http://www.uis.unesco.org/Education/Pages/international-student-flow-viz.aspx.

Weisbrod, B. 1962. *External Benefits of Public Education: An Economic Analysis.* Princeton, NJ: Princeton University Press.

Wiers-Jenssen, J. 2008. "Career Impacts of Student Mobility: Stumbling Block or Stepping Stone?" In *Borderless Knowledge*: *Understanding the New Internationalisation of Research and Higher Education in Norway*, edited by Å. Gornitzka,and L. Langerfeldt, 79–101. Springer.

Williams, R., G. de Rassenfosse, P. Jensen, and S. Marginson. 2013. "The Determinants of Quality National Higher Education Systems." *Journal of Higher Education Policy and Management* 35 (6): 599–611. doi:10.1080/1360080x.2013.854288.

Ziguras, C. and G. McBurnie. 2015. *Governing Cross-Border Higher Education.* London: Routledge.

Graduate Education in Asia Pacific Higher Education: Changing Roles and Purposes

Edilberto C. de Jesus

Education policy-makers and stakeholders in the Asia Pacific region appear to agree on the need to give greater attention to graduate education. The shared concern about graduate education reflected, perhaps, simply a natural progression.

The World Conference convened in Jomtien, Thailand, in 1990 reaffirmed the 1948 Declaration of Human Rights in proclaiming that everyone had a right to education (UNESCO 2014a).[1]Launched by UNESCO

---

[1]The Education for All (EFA) movement is a global initiative spearheaded by The United Nations Education, Scientific and Cultural Organization (UNESCO); United Nations Development Programme (UNDP); United Nations Children's Emergency Relief Fund (UNICEF), and World Bank participants to provide all children access to quality basic education. In 2000, the international bodies convened to affirm their dedication to accomplishing EFA by the year 2015. However, 2015 has arrived, and the community still has to do a lot to achieve the EFA six goals, to wit:

- Goal 1: Expand early childhood care and education
- Goal 2: Provide free and compulsory primary EFA

E.C. de Jesus
Asian Institute of Management, Makati, Philippines

37

in 2000, the global campaign to achieve EFA focused only on elementary education. But even with EFA's 2015 targets not fully achieved in some countries, UNESCO had to acknowledge that it should address higher education issues to ensure the flow of qualified teachers to basic education schools.

With more pupils completing elementary education, governments throughout the world had to cope with the increasing, popular demand for secondary education. Becoming victims of their own success, governments next had to deal with more high school graduates seeking admission to tertiary-level institutions. The mass demand for higher education, beyond what their budgetary resources could support, induced governments to permit the participation of private education providers.

"Massification" thus required governments to expand the higher education institution (HEI) system, raising the demand for more faculty and, consequently, for more graduate programs to prepare professors for mentoring college and university students. This was a costly undertaking that compelled HEIs, including those supported by the state, to collect fees from students. With more private HEIs entering the market and state universities and colleges (SUCs) struggling with inadequate state subsidies, governments also had to worry about maintaining academic quality, especially of the newer and often weaker institutions.

Even the more established, elite institutions needed attention in countries that aspired to become academic centers for international students. Elevating the global ranking of their "flagship" universities became a government priority. The concern for rankings prompted the push for international accreditation, whose benchmarks called for a higher ratio of PhDs in the faculty. This further raised the premium on graduate programs, especially those that would help faculty publish doctoral research in international, peer-reviewed academic journals.

The natural progression of academic aspiration, from completion of elementary education to attainment of postgraduate degrees, converged with and supported the emergence of the "knowledge economy" to promote graduate education. Both massification and the knowledge economy gained momentum from advances in the sciences and in information,

- Goal 3: Promote learning and life skills for young people and adults
- Goal 4: Increase adult literacy
- Goal 5: Achieve gender parity
- Goal 6: Improve the quality of education.

communications, and transportation technology. Developments in these areas eroded national boundaries and established a global marketplace that stimulated stronger cross-border competition for goods, services, and human resources.

Rapid technological change and the accelerating pace of both new knowledge production and knowledge obsolescence continue to intensify the demand for research and to enhance the value and encourage the acquisition of new knowledge and skills. The accepted approach to meeting this demand was through continuing education beyond the undergraduate degree.

As Deane E. Neubauer explains in Chap. 4, the forces driving the value of graduate education also built the foundation for an international business model based on cutting-edge technology in the developed countries and educated, lower-cost labor in the emerging economies. Graduate education supports this foundation, and both developed and developing countries recognize its importance. But the differences in their levels of development, even focusing on the education space alone, lead to different perspectives on its purpose, focus, and process.

For a number of reasons, the opportunity to review graduate education is particularly timely for the Philippines. First, the Department of Education (DepEd) has allowed both basic types of education schools, those running 6 years of elementary and 4 years of high school and tertiary-level institutions, to add, at their option, a senior high school (SHS) term of 2 years after grade 10 (4th year high school). The additional 2 years becomes mandatory for students graduating from high school in 2016, beginning the transition from a K10 to a K12 basic education cycle. The belated implementation of K12, some 80 years after it was first approved, is forcing the higher education sector to reconsider assumptions about its role, responsibilities, and strategies.

The introduction of SHS will disrupt the regular flow of students—and of school revenues—to the tertiary sector. It will take some five years for this flow to normalize. Completing SHS at 18, graduates will be old enough and, presumably, smart enough to get a job. With an entering cohort of college freshmen that is presumably more mature and better prepared for higher education courses, the tertiary sector will have to upgrade its curricular offerings. At present, hardly any program can be completed in the regular eight semesters that suffice in other countries—because of the remedial work not done in high school that students have to cover in the first two or three semesters of their college years.

Second, after a dozen years of political turmoil during the terms of Joseph "Erap" Estrada (1998–2000), who had to flee the presidential palace because of a second People Power Revolution, and of Gloria Macapagal Arroyo (2001–2010), now indicted for plunder, the Philippine economy has stirred to life. Business looks to benefit from the formation of the Association of Southeast Asian Nations (ASEAN) Economic Community in 2015, but worries about the shallow pool of educated human resources from which it can draw the skills needed to realize its ambitions.

Third, while experts consider prospects for more robust economic growth realistic, academics, civil society, and religious groups, and some enlightened political and business leaders predict serious social problems if the resulting benefits continue to flow mainly to a few families at the top of the business and political pyramid. To be sustainable, growth must be inclusive, and broader access to relevant education is vital to achieve inclusiveness.

Education and Employment

Granting the importance of graduate education, questions arise about what kind of graduate education to offer, for whom, and toward which goals. All points of departure and aspirations shape the response to these questions.

The logic of the new economy suggests that graduate education should focus on raising the capacity to conduct cutting-edge research that will sustain the continuing innovation needed to stay at the top of the food chain. This would seem the fitting strategy for First World countries. They can leverage the strength of established and internationally celebrated academic and research institutions and the resources of their multinational enterprises to design products and processes whose manufacture or implementation can be outsourced to other countries with lower labor costs.

Singapore, described by the late Lee Kuan Yu as a First World oasis in the Third World, is developing the elements to pursue this strategy. It is investing in raising the research capabilities of its universities, drawing on international domain experts from the West. It is also recruiting from the developing countries lower-cost personnel to work on the shop floor or the back office, or outsourcing these tasks to partners abroad.

But this is not the track that most developing countries of the Asia Pacific want to or can follow, even if they also aspire, eventually, to climb up the value chain. In the early years of India's move into the business

process outsourcing (BPO) sector, some critics disdainfully dismissed India's success in producing "computer coolies," who drove IT devices, instead of pulling rickshaws, the modern version of the native hewers of wood and drawers of water that served the colonial regime.

But training for cutting-edge research is an expensive undertaking for both students and universities, even in the West. Supporting the new economy by providing less expensive, skilled labor has emerged in developing countries as a practical, viable option, now made more respectable by India's demonstration that the BPO industry, with its computer coolies, can build stepping stones to reach higher-level skills in information and computer technology. In the developing country setting, such as prevails in the Philippines, policy-makers, responding to public sentiment, now look for tertiary education to focus more sharply on producing graduates who can immediately secure gainful employment.

The massification of higher education in the Philippines was a product of cultural conditioning as well as a response to rising expectations. The Filipino elite were first distinguished by educational attainment, before being recognized for the possession of wealth. The nineteenth-century *illustrados*, the enlightened elite, who advocated political reform in the colony, were, first of all, men of learning. A "good education" has become, since then, the legacy that Filipino families most desired to bequeath to their children, and its mark was a diploma that testified to the completion of a 4-year collegiate degree program. But massification is also a consequence of the competition for scarce employment opportunities. The diploma has served as the virtually indispensable requirement for landing a job.

The need for college credentials stimulated the expansion of the tertiary sector. In 1996, the tertiary education sector consisted of 1348 HEIs, 159 in the public and 1189 in the private sector. While representing less than 12 % of the tertiary system, the public institutions had larger student populations, accepting some 710,000 students or nearly 27 % of the total enrollment of 2.64 million students (Commission on Higher Education (CHED) 2013).

By 2012, the system numbered 2299 institutions. The private sector expanded to 1643 institutions, a 22 % increase. Since education was a hot-button issue that brought in votes, it was not surprising that the public sector registered a bigger rate of growth. Political support pushed it to more than triple in size to 656 state campuses, which further increased public sector share of enrollment to 40 %. Further expansion in both the

No. of Higher Education Institutions	School Year									
	2009-2010	%	2010–2011	%	2011–2012	%	2012–2013	%	2013–2014	%
Private	1,573	72%	1,604	71%	1,643	71%	1,652	71%	1,699	72%
Public	607	28%	643	29%	656	29%	661	29%	675	28%
Total	2,180	100%	2,247	100%	2,299	100%	2,313	100%	2,374	100%

Fig. 3.1 Number of HEIs school years from 2009–2010 to 2013–2014 (based on CHED's "Higher Education Data: 2014")

private and public institutions was evident in 2014 as the number of HEIs increased to 2374 (see Fig. 3.1). Public and private institutions totaled 675 and 1699, respectively (CHED 2014).

High school graduates now have more tertiary-level institutions to choose from, but remain constrained in their ability to finance further studies. The local universities and colleges (LUCs), funded by provincial and city governments, and the SUCs, supported by congressional appropriations, charge the lowest fees. The private schools are almost completely dependent on tuition, but have to offer competitive prices. Almost all HEIs carry the lowest-cost academic programs.

While the accessibility of higher education has improved, access to jobs has not shown significant progress (Philippine Statistics Authority 2015a). In January 2010, a few months before the election of President Simeon Benigno Aquino III, the Labor Force Survey (LFS) of the National Statistics Office reported an unemployment rate of 7.3 % among the 39.41 million population 15 years old and over. The rate dipped in January 2013 to 7.1 % but climbed up to 7.5 % in the latest January 2014 survey. The natural calamities of 2013, according to the National Economic Development Authority, contributed to the increase. The rate dropped to 6.6 % according to the January 2015 LFS report (Philippine Statistics Authority 2015b). While this demonstrated an improvement, the Philippines clearly has a long way to go in providing employment or entrepreneurial opportunities.

An economy chronically afflicted with high rates of unemployment and underemployment made the diploma a convenient, defensible filter to screen job applications. A total of 20.4 % of the reported 2.6 million jobless people in the January 2015 survey were college graduates.

Another 603,375 newly minted graduates joined the labor market in April 2014. Adding up to, this is an estimated 567,531 students graduating

in April 2015 (CHED 2011). Not all of them will quickly find jobs. The college degree has become necessary, but not sufficient to guarantee employment, let alone a position appropriate to the training it presumably represents. A 4-year degree is not necessary to open and close doors at a hotel or to produce a cup of coffee at Starbucks. But if the country can take any comfort from the dismal figures, it can claim improvement in the quality of its unemployed.

Given the rising cost of higher education, much of it now increasingly borne by students and their parents, the plight of jobless graduates becomes particularly disturbing. The investment has not been paying off in terms of jobs; at the same time, however, employers complain that they cannot find the people they need for the positions they must fill.

This conundrum has also emerged in the USA, where it has raised concerns about the "skills gap." In a jointly authored article published in *Politico*, Jamie Dimon, Chief Executive Officer (CEO) of JP Morgan Chase, and Marlene Seltzer, CEO of Jobs for the Future, noted that 11 million Americans are unemployed, while four million jobs remain unfilled. The piece called for closing "the gulf between the skills job seekers currently have and the skills employers need" (Dimon and Seltzer 2014).

The article and its argument provoked a dismissive rejoinder from *The New York Times* columnist Paul Krugman (Krugman 2014). The lingering effects of the financial crisis, in his view, explained the high unemployment rate, not alleged inadequacy of worker skills. An Massachusetts Institute of Technology (MIT) survey supported Krugman (Shierholz 2013). It estimated that unemployment across all education levels had risen between 1.3 and 1.9 times higher than 2007, but this was due to a lack of demand rather than the workers' lack of education or skills.

A Boston Consulting Group study concluded that the so-called gap affected less than 1 % of 11.5 million manufacturing workers and less than 8 % of 1.4 million highly skilled manufacturing workers. The problem was significant only in seven states. Research thus supports Krugman's view that the skills gap in the USA is exaggerated, in his words "a zombie that will not die" (Boston Consulting Group 2012).

Education Misalignment

In the Philippines and elsewhere in the Asia Pacific region, politicians and employers and bureaucrats and academics elevate the concern over the "skills gap" to a broader, seemingly more fundamental issue of "misalignment in education." The common interpretation of this misalignment

focuses on the students' choice of studies to pursue in college. A review of these choices over the last decade offers some light on the issue (CHED 2015).

During the first decade of the twenty-first century, the enrollment in HEIs mainly flowed into five fields of study: business, education and teacher training, engineering, information technology and allied fields, and medicine and allied fields. These areas accounted for at least 62 % to as much as 85 % of the enrollment.

Business started and ended the decade as the top choice, taking 23.4 % and 26.1 % share of the enrollment. But the five fields did not remain fixed in the same position relative to each other during the decade. Students, or their parents, apparently did make career decisions on the basis of perceived employment opportunities.

The opening of the overseas market for nurses, for instance, led to a surge in the enrollment in medicine and allied fields. In 2004, this cluster of courses enrolled 445,729 students. By 2005, enrollment had risen to 544,513 displacing business from the top spot with an enrollment share of 26.1 %. Enrollment peaked in 2006, with 602,411 students, enough to retain first place ranking. Enrollment dipped to 520,026 in 2008, falling once again behind business. In 2010, its share had dropped to 15.9 %, but that was still good enough for second place (see Fig.3.2).
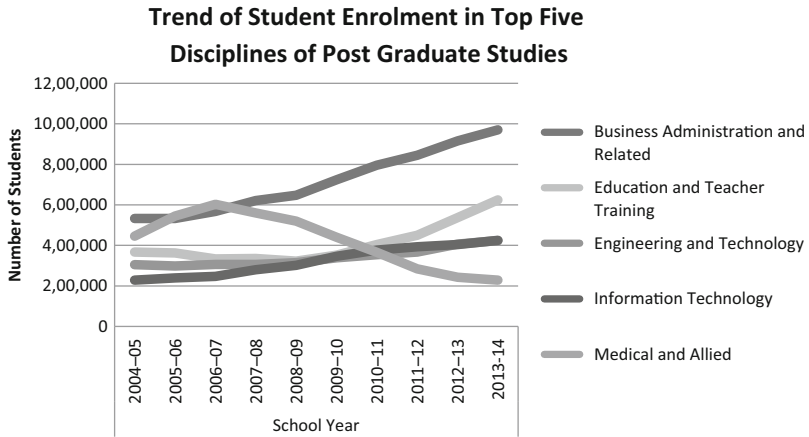

Fig. 3.2 Dominant fields of postgraduate studies (based on CHED's "Higher Education Data: 2014")

Education was the second most popular field of studies from 2000 to 2004. It slipped to third place behind medicine in the next 6 years to 2010. Two factors explain the choice of business and education as preferred fields of study. It was not expensive for HEIs to run these programs; they did not require expensive laboratory facilities and equipment or a faculty who needed extensive, specialized training. Hence, HEIs could also offer them to students at a lower cost. Business and education were thus accessible to students in several ways: they were available in most HEIs; they were affordable, 4-year programs; and they did not impose stringent requirements for admission.

On the issue of market demand, the institution offering the biggest—and, geographically, the most widely distributed number of jobs—is the DepEd, which maintains a teaching force of around 500,000. This market for basic education teachers has to grow with the need to staff the additional 2 years of K12, as well as the continuing expansion of preschool or K education.

Medicine is a postgraduate, professional program that demands a major commitment in time and substantial funding. Even the allied fields, such as nursing and physical therapy, which were offered as undergraduate majors, were expensive. They were 5-year programs that required internships with health-care institutions, for which students had to pay an affiliation fee.

The prospect of employment overseas drove the popularity of the health sciences in the 1990s and the 2000s. HEIs that had started with, and built their reputation on, engineering or IT courses opened their own nursing and health programs. Despite the costs, enrollment in these programs soared, demonstrating the responsiveness of both students and HEIs to market signals.

To what extent, then, does the high incidence of jobless graduates reflect a problem of education misalignment, in the sense of faulty career choices? The buyers of education services do try to align their course of studies with the needs of the market. They can make a mistake in their reading of the market, or fail to anticipate how quickly it can change. Some graduating cohorts get caught in the shuffle, as when the overseas market for nurses and physical therapists tightened up. But succeeding cohorts of high school graduates quickly dropped these fields and switched to other courses, and the enrollment bubble in these programs collapsed.

Critics complaining about a mismatch between the qualifications of higher education graduates and the needs of the market appear to assume that graduates would have landed a job, had they been more discerning

in their choice of discipline. They suggest that students should be pursuing the Science, Technology, Engineering, and Math (STEM) programs, which are vital to the country's economic development. This criticism tends toward blaming the victims.

Admittedly, fewer students major in math and the basic sciences. The deficiencies of the basic education system help explain why. Fewer students finish high school with the academic grounding required to prepare them for tertiary-level work in these disciplines. The system generally lacks the laboratory facilities and the expert teachers that these courses require. The truncated K10 system, pushing teachers to cover the mandated syllabi in forced-march fashion, also preclude a pace that would allow students to spend time on materials they did not understand before taking up the next lesson.

The five most popular programs of study appear, arguably, broad enough to equip the students who take them with enough skills for the job market. Medicine and teacher education, although not included in STEM, remain priority programs of the government, and STEM does include engineering and IT.

Engineering had a firm hold on the third spot in the opening years of the decade, until the ascendancy of medicine dropped it to fourth place from 2005 to 2009. In 2000, IT only had an 8.2 % enrollment share. By the end of the decade, buoyed by the growth of the BPO industry, which had already surpassed India in headcount, IT raised its market share to 12.58 %, narrowly wresting third place from engineering, which had 12.4 %. But combining their enrollment, IT and engineering already had 23 % of enrollment in 2006, beating the 21 % of business and the 15 % of education.

Business rebounded to take the top spot again in 2010–2011 and held it through 2012–2013, when it captured 27 % of the 3.3 million higher education students. But the STEM courses were not far behind at 26 %, with education steady at third place with 16 %. Up to 2013, business remained the top field with 970,558 enrollees (see Fig.3.2).

It would be difficult to prove that graduates end up jobless because they chose the wrong courses. Although they do ask what fields applicants studied, many of the firms most sought after by job seekers say that this is not the most important criterion they consider in their hiring. They are looking for graduates who can be trusted, who show command of the "soft" communication and interpersonal skills that will allow them to work effectively in teams, and who they believe can continue learning on their

own. Companies will provide the technical training new recruits will need for their assigned tasks, as well as their grounding in the corporate culture.

Periodically, the government releases information about "hard-to-fill" job vacancies. In 2012, some 150,000 such vacancies were available for the taking (Philippine Statistics Authority 2014.) As in the USA, these jobs did not require high-level, technical skills for advanced manufacturing processes. Nearly half of the jobs were for clerical and call-center positions.

In 2013, the BPO industry employed about 900,000 people and produced an annual revenue of $15 billion, or an average annual yield of $16,667 for each BPO employee. Analysts expect the labor force to approach the 1.3 million mark by 2016 (Pillas 2014). The industry aims to push annual revenues from the $15 billion earned in 2013 to a "stretch" target of $48 billion by 2020 (Pillas 2014). To reach this level, the BPO industry would need to add roughly 2.9 million more employees or radically ramp up staff productivity and earnings.

The industry believes the business is there for the taking. Industry leaders worry whether they can recruit the additional personnel required for these "hard-to-fill" slots. The low yield in BPO recruitment exposes the inadequate preparation provided by many HEIs. The industry success rate, in terms of people hired from among those interviewed, is running at between 5 % and 8 %.

If firms find graduates lacking in the generic skills they are looking for, the problem may be less in the disciplines the students have chosen to pursue, as in the quality of the education HEIs are providing. The low hit rate for successful hiring is an indictment of an educational system that cannot produce, after 4 years of college, graduates who can apply the basic thinking, communications, and relationship skills required (in this case) of call-center agents. We are facing here a different and more debilitating level of misalignment.

The promise and the problems of the BPO industry have sharpened concerns about the state of education and focused the debate on the proper direction of the effort and investment in the higher education sector. Some industry experts believe that students do not need 4 years of college to develop these skills and blame the "diploma disease" that delays productive and remunerative work in the real world until after the chase for paper credentials, which are not necessary for the tasks at hand. (For a related argument in Thailand, see Chap.11 of this volume.)

The bias against vocational/technical education persists. But the diploma disease would not be so deadly, if the 4 years of college at least

gave graduates these generic skills, while addressing other academic or "values" objectives.

Other voices concede the need for review and retooling of the tertiary education process. But they resist what they see as a thrust toward the "vocationalizing" of higher education. They recognize and appreciate the need to prepare graduates for productive jobs, but argue that higher education must address other objectives beyond equipping students with employment-related skills.

First, because too narrow a focus on mastering the vocational/technical requirements of specific jobs renders students more vulnerable to rapid changes in technology that shorten the shelf-life of occupational skills. Within a working career, a person may need to change jobs more than ten times, requiring an ability to shift mental gears and adapt to changing task and organizational demands.

Second, beyond livelihood concerns, education must prepare students for life in an increasingly more international, interconnected, and complex community. As Jacques Delors and UNESCO have been preaching, education must rest on four pillars. For the good of the individual and the future of humanity, the person must learn to know, to do, to live together with other people, and to be.

Third, it is not necessary to force a choice between vocational/technical courses and academic programs leading to a degree, especially as the K12 cycle takes root. SHS will graduate many students who do not have the interest, financial means, or academic scores to make an immediate attempt at college admission. But SHS should give them the opportunity to learn skills needed by the market. Time and resources permitting, SHS graduates can then pursue an academic degree.

Like Singapore, the Philippines is moving toward building bridges rather than barriers between vocational/technical and academic programs. Responding to the call for employable graduates, the CHED issued Memorandum Orders No. 6 and No. 34 in 2012, permitting HEIs to add a Service Management Program (SMP) into their business administration and information technology curricula. The SMP offered four elective courses: systems thinking, service culture, business communications, and BPO fundamentals.

Considered by educators, employers, and students themselves as even more important than the classroom courses was the 600-h internship component that SMP students had to serve with IT-Business Process Management (BPM) companies. In 2013, IT-BPM companies hired

an estimated 0.9 million full-time employees from various academic disciplines.

The Philippine Business for Education (PBEd) convened in February 2014 the second two-day "Education Summit," supported by the US Agency for International Development. The Summit brought together university presidents, business executives development agencies, and education officials. The 2014 Summit focused on academe-industry linkages and called for the support of a wider program of internships.

Graduate Education Profile

The thrust toward employment as the educational objective need not diminish the value of graduate education. In some sectors, a postgraduate degree still provides an edge in the competition for jobs. Applicants with the MBA distinguish themselves from the hordes of job-seekers with only a bachelor's degree under their belt. In the bureaucracy, an additional degree leads to a pay increase and/or paves the way for a promotion.

The enrollment pattern for the master and the PhD degrees (see Fig.3.3) confirms the underlying rationale for graduate education in the Philippines: to enhance competitiveness in the labor market and to boost chances for tenure, promotion, and additional compensation (Ofreneo 2014a,b).[2]

The demand for postgraduate degrees is currently not high. In the school year (SY) 2011–2012, 70,000 students enrolled for a master's program, and 8662 received the master's degree (see Fig.3.4). During the same term, doctoral programs enrolled 10,455 students and conferred the degree on 1209. Only 28 % of HEIs offer master's programs, and only 14 % offer doctoral programs. A higher proportion of SUCs than of private HEIs engages at both the master's (41 % vs. 28 %) and the doctoral (23 % vs. 14 %) levels. Postgraduate programs are costly to run. SUCs

---

[2] In preparing for the establishment of the ASEAN Economic Community in 2015, CHED formed two ad hoc bodies in 2013, the Task Force on Internationalization and the Task Force on Graduate Education (TFGRE). The TFGRE commissioned Ateneo de Manila University to do a survey of the field and submitted its report to CHED in November 2013.

Because of incomplete or anomalous data, the survey could only cover 22 % of the master's programs (3713) and 30 % of the doctoral programs (999).

The Schoolyear 2011–2012 provided the data for the enrollment and graduation. The analysis covers 76 % of HEIs that offer master's programs and 92 % of HEIs that offer doctoral programs.
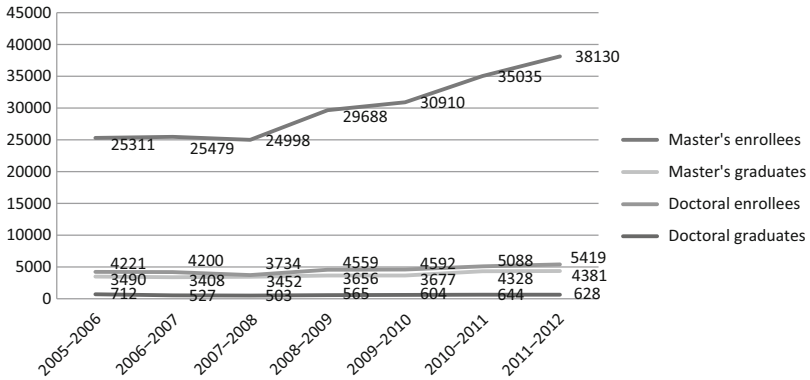
Fig. 3.3 Number of enrollees and graduates in master's and doctoral programs in school years from 2005–2006 to 2010–2011
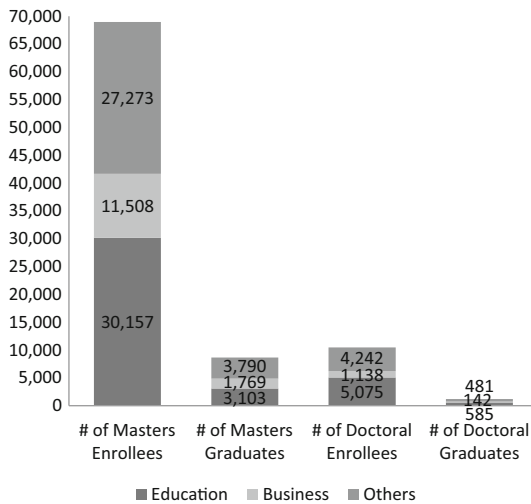
Fig. 3.4 Number of master's and doctoral program enrollees and graduates, school year 2011–2012

receive funding from the government. Private HEIs dependent on tuition need a higher enrollment base.

At the master's level, business/management and education programs accounted for 60 % of the enrollment and 56 % of the graduates. It is not easy to break down the coverage of the two disciplines, because of the

way the HEIs describe their programs. The enrollment share for education (34.6 %) and teaching (3.7 %) can clearly be combined. Similarly, we can add the number for business administration (9 %) and management (2.4 %), as well as that for public administration (5.2 %). Educational management (5.4 %) and, sometimes, educational administration can go with either block, but I have added it to the education cluster.

At the doctoral level, the education cluster (educational management, education, development education, and science education) took 48.5 % of the enrollment, while the business/management cluster (business administration, management, and public administration) 10.9 %, or 59.4 %, for the two clusters. Doctorates granted in the education cluster represented 58.4 % and those from the business/management cluster, 13.3 % of the total, or a combined share of 71.7 %.

It is at the postgraduate level that the weakness in the STEM areas is most glaringly revealed. None of the STEM subjects attracts enough students to place it among the top ten most popular programs. It will take some time and much effort to move graduate education toward the cutting-edge research, knowledge-creation model favored in the advanced HEIs of the West.

The dominance of education is even more marked at the postgraduate than the undergraduate level. The postgraduate degree is highly valued mainly in the education bureaucracy and in academe. HEIs in the Philippines and in most of the developing countries in the Asia Pacific are mainly teaching institutions, where postgraduate degrees are technically mandatory.

For the purpose of delivering undergraduate training, HEIs have not felt it necessary to exclude from the faculty those who have not yet acquired a postgraduate degree. While they all subscribe to the principle that a PhD should be a requirement for admission into the faculty of a university, they will often accept the holder of an undergraduate degree to teach on a part-time or probationary basis.

The government would also prefer PhD credentials for all faculty, but can only encourage the HEIs to increase the number of faculty who have earned their doctorates. Massification pushes governments in the other direction: tolerating lower faculty qualifications to allow the HEI to meet the demand for tertiary education.

The HEI system deploys a little over 130,000 faculty. Among the close to 40,000 faculty teaching at SUCs, 45 % have baccalaureate degrees, 40 % have master's degrees, and 15 % have doctoral degrees. Of the 90,000 in private HEIs, 35 % have no graduate degrees; 53 % have master's degrees;

and 14 % have doctorates. HEIs normally assign the faculty with advanced degrees to their graduate programs. Of the 4220 graduate faculty at SUCs, for instance, 48 % have doctorates and 35 % have master's degrees.

Governments in the region are moving to raise the quality of their tertiary education sector by tightening accreditation standards. In the Philippines, accreditation is a voluntary process, intended to enable associations of HEIs to help each other achieve their avowed purposes. CHED has refrained from imposing higher standards that all HEIs must attain, such as a requirement to maintain within their academic staff a specific ratio of professors with master's or PhD degrees. But it has issued CHED Memorandum Order (CMO) No. 46 prescribing an "outcomes-based and typology-based Quality Assurance system."

The typology distinguishes among different categories of post-secondary educational institutions, according to the mission each HEI proclaims and the academic programs that it offers. Each of the three types established by CHED—professional schools, colleges, and universities—will follow a distinctive set of standards. Institutions that have identified themselves as "universities" can retain this brand but must adhere to the new norms established for their type, such as more faculty with doctorates.

Even without government compulsion, HEIs recognize the value to the market of a faculty with a high ratio of PhDs. This has led some of them to open doctoral programs to make it easier for their own faculty to obtain the doctorate. The chase for PhD credentials also explains the popularity of programs in the education cluster. These programs require less investment to set up and to run, and are also perceived as less demanding and easier for their faculty to hurdle. But CHED is expected to move toward requiring faculty to obtain their doctorates in the disciplines that they teach. Since CMO No. 46 is outcomes based, the HEIs home-grown PhD faculty must prove their qualifications through their research and publications.

Directions for Graduate Education

The labor market does not demand applicants with postgraduate degrees. For some jobs where demand is particularly high, such as those in the teaching profession, an undergraduate degree is necessary. Many positions in the BPO sector and in the service industry generally would not even require 4 years of university education. The 2-year SHS program, if focused on the skills needed in the job market, should suffice to make their graduates employable.

Graduate programs will be needed, however, to prepare the faculty who will handle the teaching positions in the entire educational system from basic to postgraduate education levels. The thrust of graduate education must be to enable the entire system to elevate to higher levels of academic quality.

The top SUCs, such as the campuses of the University of the Philippines System, and the top private universities need government support to ensure the viability of postgraduate programs in the STEM disciplines and the humanities and the continuing flow of faculty to handle these subjects in the other parts of the system. The government might entrust to them the task of keeping the country abreast with developments in bioengineering, robotics, or nanotechnology, areas which will be costly to explore and for which demand will initially be limited.

The rest of the system should first focus on helping students at all levels learn the knowledge, values, and basic skills appropriate to their level. Unfortunately, many Philippine HEIs are failing to do the job expected of them. The study conducted by the PBEd on Teacher Education Institutions illustrates the gravity of the problem (Philippine Business for Education 2013).

Between 2001 and 2008, some three million students enrolled in programs that would grant them an undergraduate degree in elementary education or in secondary education. These eight cohorts, after 4 years, produced 504,000 graduates, a completion rate under 17 %.

Before these graduates can apply for a teaching job in private or public schools, they need to take a Licensure Examination for Teachers (LET). The national passing rates for the elementary and the secondary school examinations were, respectively, 52 % and 56 % based on PBEds LET Performance Report 2009–2013 (see Fig.3.5). Scoring below these rates were 59 % of the elementary TEIs and 63 % of the secondary TEIs. Only 10 % of the elementary TEIs and 11 % of the secondary TEIs managed to get at least 75 % of their students pass the examinations.

The figures are as difficult to accept as they are distressing to contemplate. The BPO recruitment rate and the dismal record of TEIs in the Licensure Examinations demonstrate the distance HEIs must still negotiate to achieve acceptable quality. The data speak to a different kind of misalignment: that between what the institutions are supposed to teach and what the students actually learn. Graduate education, through research and training, must take as a priority mission the correction of this misalignment.

OVERALL TAKERS
(2009–2014)

	2009	2010	2011	2012	2013	2014
Elementary	21%	18%	21%	48%	31%	34%
Secondary	29%	26%	30%	37%	40%	33%
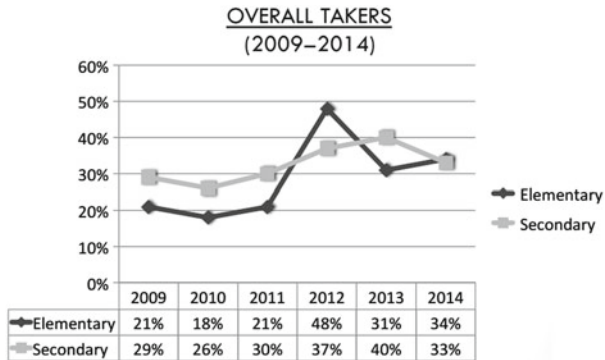
Fig. 3.5 Overall Examination Takers

REFERENCES

Boston Consulting Group. 2012. "Skills Gap in U.S. Manufacturing Is Less Pervasive than Many Believe." Accessed July 1, 2015. http://economicdevelopment.org/2012/10/skills-gap-in-u-s-manufacturing-is-less-pervasive-than-many-believe/.

Commission on Higher Education (CHED). 2011. "Higher Education Graduates by Region and Academic Year: AY 2005/06–AY 2015/16." Accessed July 1, 2015. http://www.ched.gov.ph/wp-content/uploads/2013/07/Graduates-Projections-by-Region-as-of-Novermber-2011.pdf.

———. 2013. "Higher Education Institutions." Accessed July 1, 2015. http://www.ched.gov.ph/index.php/higher-education-in-numbers/higher-education-institutions/.

———. 2014. "Higher Education Data: 2014." Accessed July 1, 2015. http://www.ched.gov.ph/wp-content/uploads/2014/temp/10-03/home/Higher%20Education%20Data%202014%20-%20Public%20and%20Private%20HEIs.pdf.

———. 2015. "2015 Enrollment Statistcs." Accessed July 1, 2015. http://www.ched.gov.ph/index.php/higher-education-in-numbers/enrollment/.

Dimon, J. and M. Seltzer. 2014. "Closing the Skills Gap." *Politico Magazine*, January 5. Accessed July 1, 2015. http://www.politico.com/magazine/story/2014/01/closing-the-skills-gap-101478.html.

Krugman, P. 2014. "Jobs and Skills and Zombies." *New York Times,* March 30. Accessed July 1, 2015. http://www.nytimes.com/2014/03/31/opinion/krugman-jobs-and-skills-and-zombies.html.

Ofreneo, M.A. 2014a. "A Profile of Graduate Education Programs in the Philippines." *Philippine Institute for Development Studies. Policy Notes,* April.

http://dirp3.pids.gov.ph/webportal/CDN/PUBLICATIONS/pidspn1406.pdf.

Ofreneo, M.A. 2014b. "Reviewing Quality Assessment Tools for Graduate Education." *Philippine Institute for Development Studies. Policy Notes,* April. http://dirp3.pids.gov.ph/webportal/CDN/PUBLICATIONS/pidspn1405.pdf.

Philippine Business for Education. 2013. "Licensure Examination Performance of Teacher Education Institutions in the Philippines." October 2009–September 2013. Accessed July 1, 2015. http://www.pbed.ph/content/let-schools-performance-table-2009-2013-let.

Philippine StatisticsAuthority. 2014. "Job Vacancies 2011–2012… A Closer Look at Hard-to-Fill Occupations." *Philippine Statistics Authority.* www.psa.gov.ph.

———. 2015a. "Labor and Employment." *Philippine Statistics Authority.* Accessed July 1, 2015. http://www.nscb.gov.ph/secstat/d_labor.asp.

———. 2015b. "Employment Rate Estimated at 93.4 Percent in January 2015." *Philippine Statistics Authority.* Accessed July 1, 2015. http://web0.psa.gov.ph/content/employment-rate-estimated-934-percent-january-2015.

Pillas, C. 2014. "BPO Revenues at \$48 Billion by 2020." *Business Mirror.* Accessed July 1, 2015. http://www.businessmirror.com.ph/bpo-revenues-at-48-billion-by-2020/.

Shierholz, H. 2013. "A Tale of Two Surveys." *Economic Policy Institute,* November 8. Accessed July 1, 2015. http://www.epi.org/publication/tale-surveys-todays-jobs-report-paints-murky/.

UNESCO. 2014a. "Education." *UNESCO.* Accessed July 1, 2015. http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-all/the-efa-movement/.

Graduate Degrees in the Emergent Political Economy of Contemporary Globalization

Deane E. Neubauer

Prologue

The varied processes that we collectively term contemporary globalization are in one way or another very much organized around and through that component we refer to as "economic globalization." Beginning in the late 1960s observers began to note significant shifts in the ways that globalization was transforming the distribution of capital, the location and pursuit of manufacture, and the distribution of labor (Wright 2002). Early in the 1990s Robert Reich, who would go on to become the Secretary of Labor under President Clinton, developed an analysis of work and labor that he held to be consistent with both the emerging information economy and contemporary globalization (Reich 1991). In a new typology he drew distinctions between white-collar and blue-collar work, the classic categories of the manufacturing era, to add that of pink-collar work—the global use of data entry workers, largely women, to input the vast data arrays that had become the commonplace of global business, especially that fraction

D.E. Neubauer
University of Hawaii, Manoa, Honolulu, HI, USA

of it wherein firms in one part of the world exported their data to another part of the world to be entered and returned to the sending entity, thereby making use of the (usually) significant differential labor costs between first world and developing world labor forces—an extension of the cost equation that had propelled manufacturing from the "first" world to the developing world in earlier decades (Bluestone and Harrison 1982). Acknowledging the rapidly changing nature of much of what constitutes "work" in a knowledge economy, he termed these roles "symbolic analysts" to refer to all work beyond simple data entry and manipulation that involves the complex creation, analysis, transmission, and distribution of symbols—that is to say: information and knowledge, and especially information effected at a distance.[1] In this view much of what "the professions," wherever they are located, *do* is the work of symbolic analysts. Also in this view much of what we have witnessed as innovation featuring the creation and transmission of information at a distance in the emergent knowledge society is equally the work of symbolic analysts...including most specifically HE, but also including—decidedly—finance.

Various analyses of the events leading up to the onset of the "Great Recession" in 2007–2008, and prefaced by the collapse of the "dot-com" economy just a half-dozen or so years previously and the Asian currency crises preceding it, served to document the extraordinary extent to which contemporary globalization has developed structures of interdependence, and linked this work together to yield such conclusions such as the assertion that "national sovereignty" was being significantly eroded by the realities of economic interdependence—to the point that even by the late 1970s and early 1980s, major political figures across the globe were beginning to point out that one feature of this global interdependence is that the degrees of freedom available within domestic policy processes of nations were being significantly circumscribed by their position within these "fields" of interdependence (Dordick and Neubauer 1985).

Increasing interdependence within the world economy was displayed across any number of dimensions, but for our purposes here, perhaps the most significant were the shift of manufacturing into developing economies and the complex processes of adaptation that were set in motion in both job exporting economies and job creation economies and the processes of wealth creation and distribution that resulted from these dynamics. Throughout the world the shift from manufacturing economies

---

[1] Some early elements of this emergence were traced by Dordick and Neubauer (1985).

to knowledge economies has been accompanied by the rapid growth of higher education (HE) leading through Trow's process dimensions of transition from elite to mass to universalization (Trow 1996; Neubauer 2011). As an integral part of this process of HE expansion, graduate education proceeded apace as did the relative status of research-intensive institutions that have become situated in the center of the HE global rankings phenomenon (Marginson 2010) and the universalist presumption that HE is a necessary ingredient of human infrastructure for economic development (Neubauer et al. 2013).

At Issue

The form and shape of this narrative are both well known and accepted, as increasingly are other elements of the contemporary global political economy such as the rapidly growing inequalities of income and wealth that have formed both within and between economies throughout the world.

In this chapter, I wish to suggest that a new global political economy is in the process of formation, propelled by the structural dynamics alluded to above. (Of the many commentaries that suggest the nature of this emergent political economy, I would recommend Reich (2010), Harvey (2010), and Steglitz (2010).) It can be framed perhaps best by the continuing aftermath of the Great Recession in the USA, that is, since 2007–2008 to the present. During that time unemployment has been slow to recover in the USA and other parts of the world, currently hovering around 5.3 % in the USA—which in reality is a significantly distorted figure because it obscures the actual number of unemployed persons who have "given up" looking for "work" and therefore are not included in official unemployment figures.[2] This "sluggish" economy, as it has been framed, is widely acknowledged and famously has found its way into popular culture and humor wherein when focused on HE it takes expression in one form or another of the collective facts that HE continues to cost more, is leading to ever more student debt, is increasingly

---

[2] As this is being written, the US economy has experienced what is termed "an uptick," with employment added to the economy over the past months reaching levels double and more that of the long relatively stagnant process of the 5 years following the onset of the Great Recession. To the extent that this development represents a major structural transformation of the economy remains open to demonstration, but for the main, the structural factors emphasized in this chapter remain in place in most of the major economies of the world.

characterized by the privatization of HE (from both new entrants to the field and the privatization of previously public education), and is characterized throughout much of the world by the inability of individuals to obtain employment after graduation suitable to their expectations or level of education and training. Yet, simultaneously in many countries the issue is raised that those individuals who do attain HE degrees are poorly equipped for the labor force needs of the country.[3] This complaint has famously come to be termed the *alignment crisis* in HE and has figured in public policy debates concerning HE throughout the world. I (and others, e.g. Hershock 2012) have previously argued that this alignment issue is not so much a problem that can be solved by judicious decision making, or improved allocation of resources, or even significant reorganization of HE, as it is a *dilemma or a predicament*, a situation that is created and recreated endlessly by the structural factors that link HE and its various missions with the societies and economies in which it is variously located. In its most simple form, the dilemma is created because education, as a whole, and HE, in particular, are framed within a set of social values and purposes that embrace those of global economic needs, but extend beyond them as well.

One portion of the dilemma arises from the historical legacy of HE and the widely accepted notions that it is meant to perform these multiple functions for the public or social good. The other portion of the dilemma arises from two sources: (1) the degree and extent to which neoliberalism has come to dominate social practices and policies, such that economic values and relationships are valued over others; (2) the fact that economic globalization itself is increasingly privileged by, and both spurred by and rationalized by, neoliberal values that place economic

---

[3] Most recently this complaint has been offered by Xinhua, which reports on comments from the second session of the 12th Chinese People's Political Consultative Conference (CPPCC): "Some delegates observed that the quality of the graduate students continues to decline. They are weak in overall skills, inter-personal relationships, hands-on experience, and the ability to deal with stress, as well as in job related fundamental theory. The statistics from a recent job fair in Jiangyin city suggested that society has a tendency in general to pursue HE. Therefore, there is a serious shortage of workers with technical skills, while the college graduates face a tough job market. Many college graduates have had to take low paying positions. Meanwhile they tend to have high expectations for a job and are unable to handle the workload they are assigned. Some delegates blamed the companies for not holding job training classes while some said that universities don't offer courses that prepare students for the job market and are not well connected with the companies that need employees."

rationalization above others in terms of social valuation.[4] When the practical dynamics of capital investment, flow, trade, and commerce play out in an increasingly interactive globalized society in which the patterns of exchange and change are themselves accelerated by the dynamics of the emergent knowledge society, both the historically productive sectors of society and those being newly introduced operate at ranges and levels of change that education—both as historically understood and within its current patterns of change—cannot keep pace. Thus the core nature of the dilemma is that education in its contemporary forms when arrayed vis-à-vis marketplace needs will *inevitably* lag behind. And in policy terms this has and will continue to lead to a host of "policy demands" on HE: demands that privilege knowledge creation and innovation, that encourage science and technology fields to be emphasized above others, that call for vocational and technical education to be revamped and made more useful to industrial processes, and so on. In the process these dynamics devalue those that are the residual of the HE equation and lead overall to a politics of reductionism for all of HE.

To this point this is just one of many competing descriptions of the alignment dilemma, an effort to describe why HE as a social activity is struggling to gain and hold its accustomed place of social and political legitimacy in a broad society in which the canons of value are shifting in the direction of the explicit needs of the productive sectors of the economy, and suggest why HE as an enterprise necessarily must lag behind in its efforts to meet the demands represented by the rapidly emerging and conflicting signals presented by the forces of the economic sector of society. I focus on the alignment dilemma in large part because it has come to frame the broader social discourse for HE, and as indicated leads toward an economic reductionist framing of the major discourses that have historically defined and framed HE. In its most simple form, the

---

[4]Within HE this means that the purposes of HE are increasingly shifted in the direction of economic values and rationalization. As John Holmwood of the University of Nottingham has put it in a well-received address at Trinity College Dublin:

> …(these) reforms are a response to the emergence of mass HE, but involve a shift away from understanding education as a social right and the expression of an inclusive public interest to an understanding of it as an investment in human capital and the expression of a private interest of individuals.
>
> This involves giving priority to the marketization of the marketization of the functions of a university and the displacement of those functions that cannot be marketized, including its functions for democracy." (Holmwood 2013)

value of HE to its participants (who have increasingly come to be themselves monetized by framing them as "consumers") is that which can be realized in the market . . . and within such markets that which can be realized by the level and value of the employment that is achieved.

When from the perspective of the alignment discourse individuals find themselves unable to obtain gainful employment with such degrees, the public policy response is divided between those who argue that "the economy" must be "stimulated" in some way to create greater employment and/or that HE needs to be altered so that it can produce graduates who "fit" more usefully into the existing economy. The first argument is most common in developing economies in which HE has produced a surfeit of graduates in the 22–35 age ranks, whereas the latter tends to be emphasized in the more mature, and technologically sophisticated economies. China, as in many such cases, resulting from its explosive growth on both the education front and the economy as a whole, is subject to both claims simultaneously.[5]

A New Economy? and What About Graduate Education?

It is useful to remember that in some respects, the alignment dilemma is a constant in a growing and technologically changing economy—which is to say that it has underlain most of mass education's history, lower and

[5] As the most dramatic instance of this, in 2014 the Ministry of Education in China announced that 600 universities would be converted to polytechnics in an effort to address the alignment gap.

In a bid to reduce the huge number of university graduates with similar academic degrees competing with each other for the same jobs, China has announced that it will turn at least half of its public universities into institutions of applied learning or polytechnics to produce more technically trained graduates.

The radical, wide-ranging move will transform the country's HE landscape, education experts said. Lu Xin, a vice-minister in China's Ministry of Education, announced the decision to turn 600 of the country's general universities into polytechnics at a meeting of college and university leaders at the 2014 China Development Forum earlier this year.

She said that in a "gradual transition" to the dual system, the new applied institutions would focus on training engineers, senior technicians, and other highly skilled workers rather than pursuing over-academic, highly theoretical studies.

There is an urgent need to reform our current education system, which has been struggling to provide high quality talents with skills and knowledge that meet demand at the production frontline, Lu said at the forum. (Sharma 2014)

higher, at least since the middle of the nineteenth century when the emergence of a factory-based industrial economy created the near-universal demand for a workforce with at least minimal literacy. And, it is useful to note that one portion of this history has been the degree of currency that is operative in the marketplace that attaches to education. To some degree, and in many instances constituting highly contested terrain in labor struggles, education has been a "counter" in labor stratification. Eliot Friedson (1994, among many others), for example, has documented the intense struggles that both the providers and consumers of *professional* education have conducted to gain the particular place within their own contested employment markets that can serve their particular interests.

In some respects, as Ronald Dore has argued (1997), the dynamics that underlay the monetization of professional degrees (generated during a period when HE was still largely an elite phenomenon) were carried forward, often with little justification, during the Trow-progression from elite to mass to universal education (Trow 1994), thus leading to what he termed the "diploma disease"—the belief that HE was a necessity for all persons in a modern society, with the inevitable assault that such a move would produce toward the historical values of HE and its traditional roles of inquiry and socialization. Certainly, variations of this progression are still alive and well, for example, in President Obama's recent proposals that we come to accept 2 years of post-high school education as the "new normal."[6] From this trajectory it is not surprising then that a variety of forces have come together to "bid up" the BA/BS degree into the MA/MS degree as yet a further extension of the "new normal," evidenced by the fact that master's degrees are the most rapidly growing sector of HE in the USA and in other portions of the world as well.

This trend of analysis accords well with the assertion that "more education" is required just to keep pace in the emerging knowledge society. We are bombarded seemingly on every front with examples of how education courses that once were adequate, for example, in engineering and medicine, are now beset by the reality that the rapidity of information and knowledge growth render much instructional material "obsolete" within a short period of time. (The classic refrain is that for electrical engineering where increasingly we are informed that "half" of what a first-year

---

[6] "In his State of the Union address Tuesday, President Obama called for expanded access to apprenticeships and improved job training programs at community colleges that are better aligned with the skills that employers demand." (Stratford 2014)

student learns will be obsolete by the time that person graduates (ENSYS 2014).) Thus, it is assumed in many sectors of society that the growth of graduate degrees is a "natural" outgrowth of this knowledge explosion. Closer examination suggests also that the growth of graduate degree *offerings* fits well into the business model of proprietary education institutions as well as institutions of mass HE in search of higher fee-paying students.

But other things seem to be at work in this emergent economy as well. What appears to be the case throughout much of the world, and certainly in the more developed, knowledge economy societies is that not only is there increased pressure for degree inflation, there also seems to be a widespread and persistent pattern of wage erosion (a phenomenon that has moved into the mainstream of political discourse in countries such as the USA and Britain). This is a complex result of many factors including the four-decade-long decline of manufacturing jobs from the older developed economies accompanied by growth in the historically lower-paid service sector.[7] The rapidly expanding global economy of the early years of the twenty-first century tended to obscure the operation of many of the dynamics that would become clearer in the aftermath of the Great Recession of which the continued rapid growth of income inequality has been a clear feature, along with slow job growth and high levels of job seeking by the well-educated, including those with graduate degrees. In the USA this phenomenon has become so prevalent that it has been assigned as one of the features of the Millennial generation (those born after 1980), who among other attributes tend to be unmarried, living at home, and unable to gain employment commensurate with an individual's educational status. (In mid-2013 that percentage according to a US Department of Labor (DOL) Study was 16.1 % with another 1.7 million not having yet officially entered into DOL statistical categories (Pasch 2013).)

One feature of this prolonged joblessness among the young well-educated has been the rapid development of quasi-employment situations. In New York City, for example, these are often referred to as the emerging "20-20-20 generation of workers," by which is meant individuals who are 20+ years old, who (unable to find "real" jobs) move from one 20-week "internship" to another, in positions that pay about $20,000 annually. These have come to be a source of cheap, but qualified labor for the industries that employ them.

---

[7] Admitting of some exceptions, Germany being the most significant.

The question I wish to pose is whether these kinds of situations are short-run, temporary aberrations within the overall economy—in many respects the "hangover" as it were, of the Great Recession—or whether these are features of the new, emergent global economy in which consistently greater, pervasive interdependence is resulting in new and persistent patterns of employment, and from this, patterns of income distribution, or is it simply another form of the kind of exploitative labor relations that have characterized modern capitalism?[8] If the latter, then the nature and future of what we have regarded as graduate degrees for many decades may need to be dramatically revised.

One needs to point out that the data are not clear in this regard. For example, in line with the preceding argument, one can point in the USA to the progressive "unbundling" in many aspects of HE, in which the typical career ladder of the professoriate is being restructured in the direction of part-time, adjunct employment (Kezar 2013). In 2011–2012, 50 % of faculty in all US degree-granting institutions were employed full-time, with the percentage ranging from 14 % in for-profit four-year institutions to 30 % in public two-year colleges and 66 % in public four-year universities (College Board 2013). On the other hand, even as "wage evisceration" and the "hollowing out of employment" continue to emerge as features of many developed economies in Asia (Japan), Europe (the UK and France), and the USA, it continues to be the case that "on balance" those who seek HE—even in the situation of seemingly constantly increasing costs—continue to enjoy a "wage premium" for this investment. For example, recent data compiled by the US Census Bureau indicate that the "premiums" to be obtained by degree level are as indicated in Table 4.1. As is clear (although these are 2009 levels), the lifetime value of graduate education to those gaining it is unassailable.

What we need to ask, however, is whether the emergent labor dynamics of the global economy are operating in ways that tend to (1) send messages throughout society cast in the frame that an increasingly complex knowledge/information society *requires* higher levels of education to gain success,[9] while (2) simultaneously operating to produce labor surpluses

---

[8] One bears in mind the topicality of the "race to the bottom" analyses that characterized global labor trends in the 1960s and 1970s as multinational corporations moved from economy to economy in search for ever less expensive labor forces (Reich 1991).

[9] For example, estimates are that 35 % of EU jobs will require "high-level" education qualifications by 2020 (Veloso 2014).

Table 4.1 Synthetic lifetime earnings by educational attainment (in USD)

Educational attainment	Synthetic work-life earnings	Margin of error
None to Grade 8	936,000	7000
Grade 9–Grade 12	1,099,000	7000
High school graduate	1,371,000	3000
Some college	1,632,000	5000
Associate's degree	1,813,000	9000
Bachelor's degree	2,422,000	8000
Master's degree	2,834,000	13,000
Professional degree	4,159,000	33,000
Doctorate degree	3,525,000	29,000

Source: US Bureau of the Census, "Work-Life Earnings by Field of Degree and Occupation for People with a Bachelor's Degree: 2011"

Note: Synthetic work-life earnings represent expected earnings over a 40-year time period for the population aged 25–64 who maintain full-time, year-round employment the entire time.

Accessed November 3, 2015. https://www.census.gov/prod/2012pubs/acsbr11-04.pdf

across national borders. The combined effect of such dynamics is to depress wage rates both within and across national borders. Two other factors figure into the equation: (1) cross-border education is globally much on the rise (estimated to reach 7.5 million in 2020) thereby making a significantly educated labor force available for global needs and expanding the "global talent" base and (2) an increasing amount of the "work" in a technology-explosive world (Riech's "symbolic analysts") can be done digitally in non-site-specific operations, from the distance-spanning operations of medical technology (which are themselves becoming increasingly a part of "modern medicine," especially with the advent of "big data" in medicine) to the increasing use of 24/7 digital workforces operating around the clock in multiple global locations.[10]

The upshot of these points is to suggest that the thrust of global labor dynamics when combined with the processes of technology innovation and diffusion and coupled with global population growth is likely to lead to situations of even greater misalignment between educational output and "workforce" needs than it currently does. *And* it needs further to be pointed out that on the whole these are circumstances that benefit

---

[10] And, it should be added, the increased use of ever "smarter" robots whose work is directed at these "knowledge-intensive" jobs.

global industry, at least in the short run. A growing surplus of higher degree holders works to hold down wage levels overall and thereby corporate costs, while simultaneously a highly competitive job market fuels the overall sense that in order to be successful in such economies, one needs to continue to gain degree-framed education validation. And, to take us back to the notion of degree inflation introduced above, we can here take note that the previous pattern tends to be repeating itself, with the "stakes of the game" elevated one level: that is, where BA holders increasingly found it difficult to find employment, they pursued graduate school with the systemic effect that the MA became the new BA, and so forth. (This pattern was perhaps first notable in California HE when the recession of the mid-1980s began to ripple across labor markets. My suggestion is that this pattern is now being replicated at the level of graduate education.)

I made the point at the beginning of this chapter that the alignment issue was a dilemma, not a problem. This analysis is intended to outline some of the primary features of this dilemma in order to suggest that *strategically* HE needs to reorganize its developmental activities as framed by this dilemma if it is to do as well as it can in the continuously evolving set of structures that is and will continue to be the global economy. At the very least, it appears evident that all HE systems and institutions need to develop some form of "forward-looking" analyses and projections that permit them to anticipate the kinds of "outputs" from HE and graduate education in particular that will retain their relevance in this constantly changing circumstance. Further, it is also very much the case that the ways in which HE organizes itself and prepares for change very likely need to undergo substantial change themselves. It is useful to recognize that were HE to react in this way, it would be moving in a direction perhaps much at odds with its historically received patterns of organization and institutionalization, for example, into the organization by disciplines, and so on.[11] This "nudge" by labor markets would simply contribute to other forces already perceptible within HE that are moving such institutions into organizational forms more

---

[11] Actually, one can see this tendency in many large research-intensive universities where the politics of turf make altering the disciplinary structure of the university very difficult, but where research relevance (and commensurate grant activity) takes place with varieties of centers and institutes wherein both dedicated research faculty and those with their permanent appointments in traditional academic departments may hold positions.

"aligned" with the dominant ways in which "problems" in the "real world" have become manifest, for example, climate change and other "boundary-challenging" issues.

REFERENCES

Bluestone, B., and B. Harrison. 1982. *The De-Industrialization of America: Plant Closings, Community Abandonment, and the Dismantling of Basic Industry*. New York: Basic Books.

College Board. 2013. *Trends HE*. Accessed March 11, 2014. https://trends.collegeboard.org/college-pricing/figures-tables/percentage-instructional-faculty-employed-full-time-over-time.

Dordick, H. S. and D.E. Neubauer. 1985. *"Information as Currency Organizational Restructuring under the Impact of the Information Revolution."* Bulletin of the Institute for Communications Research, Keio University, pp. 1–27.

Dore, R. 1997. *The Diploma Disease: Education, Qualification and Development*. London: Institute of Education, University of London.

ENSYS. 2014. "The Half-Life of Engineering Knowledge is Two Years." Accessed March 11, 2014. http://www.ensys.net/eit-half-life.htm#The_half-life_of_engineering_knowledge_is_2_years.

Friedson, E. 1994. *Professionalism Reborn: Theory, Prophesy, Policy*. Chicago: University of Chicago Press.

Harvey, D. 2010. *The Enigma of Capital: And the Crises of Capitalism*. New York: Oxford.

Hershock, P. 2012. "Information and Innovation in a Global Knowledge Society: Implications for HE." In *The Emergent Knowledge Society and the Future of HE: Asian Perspectives*, edited by D.E. Neubauer. New York: Routledge, pp. 7–25.

Holmwood, J. 2013. "Universities in Crisis: Markets vs Publics." Talk given to Trinty College Dublin, November 26, 2013. Accessed February 18, 2014. http://www.youtube.com/watch?v=PzHQCqhxQNQ.

Kezar, A. 2013. "The New Ecology of HE: The Changing Faculty." In *WASC Concept Papers, 2nd Series: The Changing Ecology of HE and Its Impact on Accreditation*. Alameda, CA: Western Association of Schools and Colleges, Senior Commission, pp. 32–38.

Marginson, S. 2010. "The Global Knowledge Economy and Culture of Comparison in HE." In *Quality Assurance and University Rankings in HE in the Asia Pacific: Challenges for Universities and Nations*, edited by S. Kaur, M. Sirat, and W.G. Tierney. Pulau Pinang: Penerbit Universiti Sains Malaysia, pp. 23–55.

Neubauer, D.E., ed. 2011. *The Emergent Knowledge Society and the Future of HE: Asia Pacific Perspectives*. London: Routledge.

Neubauer, D.E., J.C. Shin, and J.N. Hawkins, eds. 2013. *Dynamics of HE Development in East-Asia*. New York: Palgrave Macmillan Publishers.

Pasch, D. 2013. "Millennial Jobs Report." Accessed March 11, 2014. http://generationopportunity.org/press/millennial-jobs-report-youth-unemployment-at-16-1-in-june/#axzz2vgjSFOPS.

Reich, R. 1991. *The Work of Nations: Preparing Ourselves for 21st Century Capitalism.* New York: Vintage Books.

Reich, R. 2010. *Aftershock: The New Economy and America's Future.* New York: Vintage Books.

Sharma, Y. 2014. "Major Reform as 600 Universities Become Polytechnics." *University World News,* Issue 324, June 12, 2014. Accessed March 5, 2015. http://www.universityworldnews.com/article.php?story=20140612080509913.

Steglitz, J. 2010. *Freefall: America, Free Markets, and the Sinking of the World Economy.* New York: W.W. Norton.

Stratford, M. 2014. "A Focus on Job Training." *Insidehighered.com*. Accessed March 10, 2014. http://www.insidehighered.com/news/2014/01/29/obama-calls-expanded-apprenticeships-review-federal-training-programs.

Trow, M. 1994. *Managerialism and the Academic Profession: Quality and Control.* London: Open University.

Trow, M. 1996. Trust, Markets, and Accountability in HE: A Comparative Perspective. *HE Policy* 9(4): 309–324.

Veloso, E.L. 2014. "Quality through Mobility and Cross Border Cooperation." Accessed March 14, 2014. http://www.emma-project.eu/uploads/Documents/documents/presentations/9%20Mobility%20and%20cross%20border%20cooperation%20by%20E%20Lopez%20Veloso,%20University%20of%v%20de%20Compostela.pdf.

Wright, R. 2002. "Transnational Corporations and Global Divisions of Labor." In *Geographies of Global Change: Remapping the World*, 2nd Edition, edited by R.J. Johnston, P.J. Taylor, and J.M. Watts. Malden, MA: Blackwell Publishing, pp. 68–77.

Graduate Education in Comparative Country Settings

An Examination of Employment Outcomes for Graduate Education at the University of Hawaii

Pearl Imada Iboshi, Ming Zhang, Sanford Beppu, and Winnie Wu

INTRODUCTION

The University of Hawaii (UH) system is the single public, post-secondary education system for the State of Hawaii. It comprises one research-intensive university, two primarily baccalaureate campuses (one of which has 12 graduate-level programs), and seven community colleges (one of which has three 4-year programs). An important mission of UH is to prepare the workforce to serve Hawaii's needs.

Studies by the College Board and the US Bureau of Labor Statistics show that college graduates earn more than those with only a high school education and have lower rates of unemployment. Earnings are especially higher for those with graduate degrees (Baum et al. 2013; Bureau of Labor Statistics 2014).

P.I. Iboshi (✉) • M. Zhang • S. Beppu • W. Wu
University of Hawaii, Honolulu, HI, USA

73

Another study by the Georgetown Center on Education and the Workforce showed that across the 15 fields examined, individuals with a graduate degree earned an average of 38.3 % more than those with a bachelor's degree in the same field. The expected lifetime earnings for someone without a high school degree are $973,000; with a high school diploma, $1.3 million; with a bachelor's degree, $2.3 million; with a master's degree, $2.7 million; and with a doctoral degree (excluding professional degrees), $3.3 million (Carnevale et al. 2011).

Other studies have found that a large number of college graduates do not take jobs appropriate to their skills (Vedder et al. 2013). News articles highlight individuals with post-secondary degrees making a living as cab drivers, waiters, or other jobs that require no post-secondary-level training (Hope 2012).

These diverging views have spurred increasing debate regarding the efficacy of higher education, much less graduate education, especially in light of recent increases in tuition.

Data

The study from which this chapter is derived is based on data from the Hawaii Data Exchange Partnership, a state of Hawaii partnership between the Hawaii State Department of Education, the UH System, and the Hawaii State Department of Labor and Industrial Relations (HDLIR). The partnership collects and links the data from the three agencies in a longitudinal data system to study education and training-related issues.

Although the Hawaii DXP is a very useful dataset to examine labor market outcomes of graduates, there are several limitations to the dataset. First, the employment and wage numbers come from matching UH degree and certificate earners to the unemployment insurance data from HDLIR. The unemployment insurance data do not include employees that work for the federal government, work in another state, or are self-employed.[1]

Second, social security numbers (SSNs) are self-reported and not a required field for admission into UH. Although 94 % of graduates do report their SSNs, input errors may reduce the number of matches with the

---

[1] A study by the Western Interstate Commission for Higher Education showed that 16 % of Hawai'i's students could be found working in Idaho, Washington, or Oregon.

Table 5.1 Employment records summary

	2008	% of total graduates	2009	% of total graduates	2010	% of total graduates	Total	% of total graduates
Total graduates	7519		7755		7840		23114	
No SSNs	381	5.1	486	6.3	538	6.9	1405	6.1
With SSNs, but no employment records	1425	19.0	1587	20.5	1558	19.9	4570	19.8
With employment records	5713	76.0	5682	73.3	5744	73.3	17,139	74.1
But still enrolled	1903	25.3	1971	25.4	2039	26.0	5913	25.6
But < 4Qs	943	12.5	874	11.3	753	9.6	2570	11.1
Worked 4 Qs in any year in 3-year period	2867	38.1	2837	36.6	2952	37.7	8656	37.4

labor data (Table 5.1). Approximately 74 % of those with SSNs are found in the unemployment data in at least one of the 3 years after graduation.

Third, hours worked are not available; thus wage rates cannot be calculated, and the analysis was done using total earnings. To ensure that annual earnings best represented the compensation being received, annual earnings were included only for those graduates who were found in the database in every quarter in any given year. After taking out those who are still enrolled or had previous higher degrees, the dataset had 8656 records, or about 37 % of all graduates.

Fourth, information on occupation is not available. Information on the industry is provided using the North American Industry Classification System (NAICS) at the two-digit level, with the exception of education and healthcare, which are displayed separately because of large numbers. Thus, although we are able to say that a graduate in the healthcare field is working in the healthcare industry, we cannot know if they are performing professional or clerical duties.

Finally, all state and county government agencies are grouped in the job classification category of public administration. Employees in the Department of Education and the UH were moved into the education field, but all other state and county government employees are included under public administration.

One of the key variables in this study is the post-secondary program of study. The programs are separated out by levels and by the Classification of Instructional Programs (CIP) as defined by the US Department of Education at the two-digit level. The highest degree with the earliest completion is selected. Because the study is attempting to assess the impact of the degree and the field of study on earnings, all graduates that are still enrolled or previously earned a higher degree are removed from the data. The search for previous higher degrees went back 10 years. For the regression analysis, CIP codes were aggregated into seven categories, following grouping used by Complete College America (CCA) (see Appendix).

The data for all campuses and for three graduating cohorts (AY 2008–2010) are aggregated to avoid inadvertent release of sensitive information. Further, information for any program with less than five graduates is not displayed.

The other key variable is earnings. The earnings variable is calculated for all graduates for the first 3 years after graduation. Only graduates with four quarters of data in any given year are included in the analysis for that year. Hours worked are not available; so the wages in the analysis are the sum of all earnings in all four quarters. When more than one employer is found, the NAICS code of the employer who paid the highest wage in the year is used. The total wage for the employee includes the sum of wages from all employers.

Other demographic variables, including age, ethnicity, Pell Grant status (as a proxy for income), and gender, are pulled from the UH student data system for the statistical model. Age is a continuous variable, and the Optimal Binning method (Fayyad and Irani 1993) was used to get an estimate of its optimal cutoff point regarding earnings for use in the generalized linear model. The dependent variable in the statistical analysis was earnings in the third year after graduation.

Descriptive Statistics

Graduate degrees at the UH are largely concentrated in the field of education while undergraduate degrees are largely in liberal arts and business (Table 5.2). Business, health professions, and public administration are the next most prevalent graduate degrees. The percentage of students with graduate degrees found among the employed in the Hawaii unemployment insurance database (with wages in all four quarters) 3 years after graduation is significantly higher than undergraduate degree earners

Table 5.2 Largest CIP categories, by total number of graduates

CIP category	Before graduation				Year 1			Year 3		
	No. of graduates	Median earnings	No. employed[a]	% of graduates employed	Median earnings	No. of graduates employed	% of graduates employed	Median employed[a]	No. employed[a]	% of graduates employed
Certificates, associates, and bachelor's										
Liberal arts and Science, general studies, and humanities	3993	16,140	595	14.9	24,181	506	12.7	27,958	504	12.6
Business, management, marketing, and related support services	2639	13,920	874	33.1	29,000	1029	39.0	37,438	1036	39.3
Health professions and related clinical sciences	1636	12,659	513	31.4	47,387	693	42.4	70,778	773	47.2
Social science	1364	12,889	336	24.6	24,527	363	26.6	31,539	366	26.8
Other	8500	12,000	2348	27.6	25,975	2570	30.2	34,400	2526	29.7
Total	18,132	12,892	4666	25.7	28,167	5161	28.5	37,058	5205	28.7

(continued)

Table 5.2 (continued)

CIP category	Before graduation				Year 1			Year 3		
	No. of graduates	Median earnings	No. employed[a]	% of graduates employed	Median earnings	No. of graduates employed	% of graduates employed	Median employed[a]	No. employed[a]	% of graduates employed
Graduate and professional practice										
Education	1355	37,004	816	60.2	47,484	815	60.1	50,955	776	57.3
Business, management, marketing, and related support services	623	41,413	205	32.9	51,989	220	35.3	60,586	217	34.8
Health professions and related clinical sciences	340	48,029	76	22.4	49,451	121	35.6	53,913	106	31.2
Public administration and social service professions	338	33,252	173	51.2	41,750	196	58.0	46,276	187	55.3
Other	2326	19,853	857	36.8	45,363	602	25.9	54,113	624	26.8
Total	4982	31,734	2127	42.7	47,092	1954	39.2	52,469	1910	38.3

[a]Only persons who earned wages in all four quarters of a year are counted as employed.

(38.3 % compared to 28.7 % in Year 3), in part because more under-graduate degree earners are likely to be still enrolled. While the dataset is incomplete as it does not include the self-employed nor those working for the federal government, it does give some indication that degree earners in some fields, such as education and public administration for gradu-ate degrees and business and health for undergraduate degrees, are more likely to be found in Hawaii's labor force than other fields.

Not surprisingly, much of the employment for workers with graduate degrees is concentrated in the education sector (Table 5.3). The educa-tion sector employs not only those who graduated with advanced degrees in education, but also those with advanced degrees in business, public administration and social services, library sciences, psychology, social sci-ences, and biological and biomedical sciences. It is interesting to note, however, that the share of employment in the education sector declines after students receive their graduate degree from about 70 % to closer to 60 %. When looking at undergraduate certificates and degrees, the share of employment in education increases over the 3 years after gradua-tion. Other industries with large numbers of post-baccalaureate graduates saw increasing shares of employment over the 3 years after graduation. Undergraduate degree earners tend to be employed in accommodation and food services and retail before and at graduation, and shifting to other fields after graduation.

The data clearly show that those completing graduate and professional degrees make significantly more than other degree earners, especially in the first year after they receive the degree. The median wage for those with certificates, associate degrees, and bachelor degrees is close to $30,000 and below, while degree earners with graduate degrees start at a median wage between $44,000 and $50,000. The percentage increase in the next 2 years is generally lower, but the high initial wage leaves those with grad-uate degrees with significantly higher wages after 3 years.

Graduate degree earners in the health professions and related clinical sciences field had the highest median wage, while those in the mathemat-ics and statistics fields had the largest increase in median wage in the 3 years after graduation (Fig. 5.1). Several humanities degrees, including philosophy and religious studies, English language, and literature, had graduates with large increases in median wage over the three-year period. Those earning graduate degrees in engineering, business, and architecture started with relatively high pay with about 10–20 % increases over the three years.

Table 5.3 Largest NAICS industries, by number employed in year 3

Industry employed (NAICS)	Before graduation			Year 1			Year 3		
	Median wages in $	No. employed[a]	% of all employed	Median wages in $	No. employed[a]	% of all employed	Median wages in $	No. employed[a]	% of all employed
Certificates, associates, and bachelor's									
Educational services	9243	365	5.4	30,508	707	9.9	39,245	749	10.5
Healthcare and social assistance	15,261	563	8.3	34,401	980	13.8	48,059	1031	14.5
Accommodation and food services	12,789	1273	18.7	23,784	727	10.2	32,562	625	8.8
Retail trade	11,761	1042	15.3	20,954	634	8.9	27,385	537	7.5
Other	13,920	1423	20.9	29,202	2113	29.7	37,508	2263	31.8
Total	12,892	4666	68.7	28,167	5161	72.5	37,058	5205	73.2
Graduate and professional practice									
Educational services	31,672	1414	20.8	47,502	1173	16.5	51,394	1106	15.5
Professional, scientific, and technical services	32,750	141	2.1	50,202	217	3.0	62,083	213	3.0
Healthcare and social assistance	33,553	186	2.7	43,728	183	2.6	48,117	184	2.6
Public administration	45,614	78	1.1	44,516	153	2.2	52,936	167	2.3
Other	23,518	308	4.5	44,652	228	3.2	55,298	240	3.4
Total	31,734	2127	31.3	47,092	1954	27.5	52,469	1910	26.8

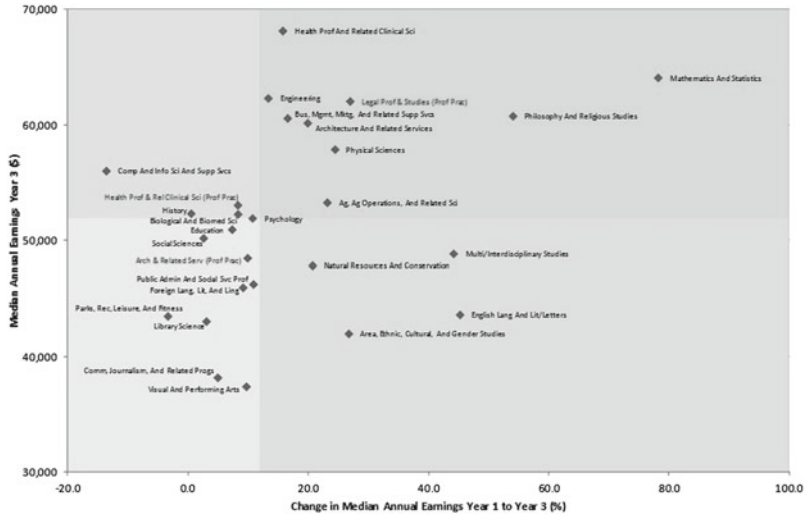[a]Only persons who earned wages in all four quarters of a year are counted as employed.

Fig. 5.1 Median earnings/change from Year 1 to Year 3, by CIP program area

Graduate degree earners in the visual and performing arts, and communications, journalism, and related programs had wages of less than $40,000 in 3 years after graduation, which was similar to the median wage for those with bachelor's degrees. Nonetheless, the median wage of these graduate degree earners was about $10,000 higher than those with bachelor degrees in the same fields.

It is also interesting to note that post-baccalaureate, professional degree earners tend to earn less in the first 3 years than graduate degree earners in the same CIP categories. For example, architects and doctors earn less than those in architecture and related studies and healthcare professionals, respectively, in the first 3 years. This is likely due to the long internship programs required in both fields.

REGRESSION METHODOLOGY AND RESULTS

The descriptive statistics, while interesting, do not take into account all of the factors affecting the wage received. The generalized linear model was used to get a more nuanced picture. The model expands the general linear model so that the dependent variable is linearly related to the factors and covariates

Table 5.4   List of variables used in regression on earnings

Categorical variables coding		Frequency
Major	Arts and humanities	1753
	Social science	1136
	STEM	862
	Health	893
	Business and communication	1424
	Trades	658
	Education	1264
Industry	Retail and wholesale	951
	Construction/utilities	329
	Finance and information	1442
	Education	2305
	Healthcare and social assistance	1377
	Accommodation and food services	874
	Public and other services	712
Degree	Certificate	217
	Associate	2559
	Baccalaureate	3269
	Master and above	1945
Pell Grant status	No	5937
	Yes	2053
Age 25 and above	Below 25	3883
	25 and above	4107
Underrepresented minority	No	5303
	Yes	2687
Gender	Male	3015
	Female	4975

via a specified link function. Moreover, the model allows the dependent variable to have a non-normal distribution. It covers widely used statistical models, such as linear regression for normally distributed responses, logistic models for binary data, log-linear models for count data, complementary log-log models for interval-censored survival data, and many other statistical models through its very general model formulation (Singer and Willett 2003). Similar to the binary logistic regression, the generalized linear model has been one of the widely used analytic tools in institutional research and labor market earnings studies (Frank and Walters 2012).

In the full model specification, "student's third-year earnings after graduation" was used as the target (dependent) variable, and major, degree, age, gender, underrepresented minority, Pell Grant status, and industry as input (independent) variables. The model, in essence, allows us to hold all other variables constant and look at the impact of each independent variable. Table 5.4 shows a list of predictor variables used in the full model specification and the corresponding number of students in each category. See Appendix for degree categories based on CIP code.

The best-fit model specification and predicator's rank of importance (Saltelli 2002) are listed below. Most of the estimated model coefficients are strongly statistically significant.

When controlling for the effect of other variables, the student's academic major and level of degree were the most important variables (Table 5.5 and Fig. 5.2). In summary:

- Student academic major is the most important factor that affects their earnings in the labor market. Healthcare-related majors had the highest annual earnings, followed by trades, education, and business and communication, while arts and humanities had the lower annual earnings. By controlling for other factors, healthcare-related majors can earn $33,900 more than arts and humanities majors on average, and trades-related majors can earn $10,800 more than arts and humanities majors. Estimates for science, technology, engineering, and mathematics (STEM) and social sciences majors were statistically insignificant;

- Academic degree is the second most important factor that affects earnings in the labor market. Graduate degrees (master's and above) had the highest annual earnings, followed by the baccalaureate. In our dataset and model estimation, the certificate graduates had higher earnings than the associate degree, mainly because the majority of certificate graduates were in the healthcare industry (practical nursing and medical assisting). By controlling for other factors, graduate degrees can earn $17,000 more than certificate graduates on average, and baccalaureates can earn $4800 more than certificate graduates. Estimate for associate degree was statistically insignificant;

Table 5.5   Parameter estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	26.840	3.2381	20.494	33.187	68.707	1	***
Major							
Education	8.879	1.7780	5.394	12.363	24.938	1	***
Trades	10.838	1.8681	7.177	14.500	33.659	1	***
Business & Communication	6.938	1.4987	4.000	9.875	21.429	1	***
Health	33.909	1.8721	30.240	37.578	328.068	1	***
STEM	3.501	1.7390	.093	6.909	4.053	1	
Social Sciences	−.916	1.6454	−4.141	2.309	.310	1	
Arts & Humanities	0						
Industry							
Public & Other Services	6.172	1.9633	2.324	10.020	9.883	1	**
Accommodation, Food Services	.171	1.8124	-3.381	3.723	.009	1	
Healthcare, Social Assistance	5.699	1.8436	2.085	9.312	9.554	1	**
Education	−.713	1.7666	−4.175	2.750	.163	1	
Finance, Information	7.224	1.6631	3.965	10.484	18.869	1	***
Construction, Utilities	24.457	2.5196	19.518	29.395	94.216	1	***
Retail, Wholesale	0						
Pell Grant Status (Yes)	−3.706	1.0335	−5.732	−1.681	12.859	1	***
Gender (Female)	−4.792	.9466	−6.647	−2.936	25.622	1	***
Under Represented Minority (Yes)	−.644	.9401	−2.487	1.199	.469	1	
Degree							
Master & Above	17.023	3.0283	11.088	22.959	31.599	1	***
Baccalaureate	4.826	2.8876	−.833	10.486	2.794	1	*
Associate	−3.008	2.8122	−8.520	2.504	1.144	1	
Certificate	0						
Age (25 & above)	8.385	.9729	6.478	10.292	74.282	1	***
(Scale)	1490.03	23.5742	1444.535	1536.958			

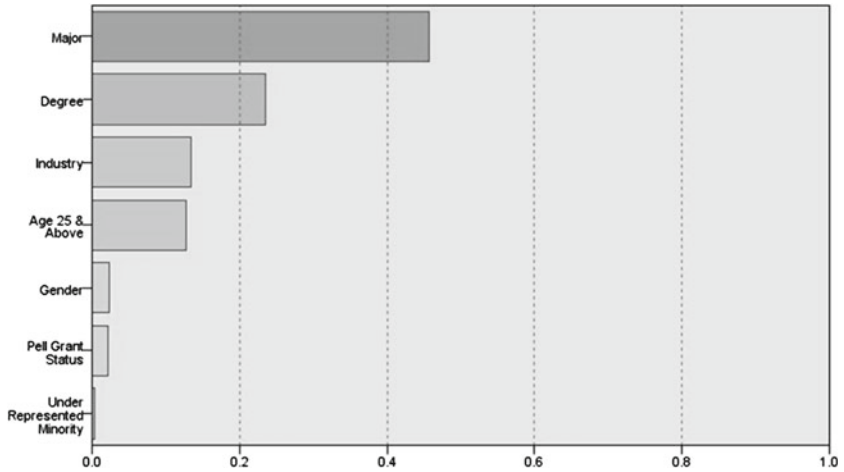*Note*: Statistical significance level: *** $p<0.001$, ** $p<0.01$, * $p<0.1$.

Fig. 5.2   Predictor Importance

- Industry is the third most important factor affecting earnings in the labor market. Construction/utilities-related industries had the highest annual earnings, followed by finance, information, healthcare and social assistance, public, and other services, while graduates working in the retail and wholesale industries had significant lower earnings than others. By controlling for other factors, construction/utilities-related industries can earn $24,500 more than retail and wholesale industries on average, and finance, information industries can earn $7200 more than retail and wholesale industries. Estimates for education, and accommodation and food services industries were statistically insignificant;
- Age at graduation is also an important factor affects earnings in the labor market. Students who graduated at age 25 and above had significantly higher earnings in the labor market (about $8400 on average) than their younger peers;
- Males usually had higher earnings than females (about $4800 on average);

- Graduates with a better family financial background (or those not qualifying for Pell Grants when they were in college) usually had higher earnings in the labor market (about $3700 on average); and
- The impact of underrepresented minority status on labor market earnings was statistically insignificant in the model, maybe because of Hawaii's unique race and ethnicity distribution.

Chi-Squared Automatic Interaction Detection Decision Tree for Interaction Effects

To analyze the interaction effects of gender and academic degree on earnings, we used a Chi-Squared Automatic Interaction Detection (CHAID) decision tree model (CHAID is a major classification decision tree model [Goodman 1979]). At each step, CHAID chooses the independent (predictor) variable that has the strongest interaction with the dependent variable. The goal of a decision tree is to sequentially partition the data to maximize the differences in the dependent variable, and to classify the data into distinct groups or branches that created the strongest separation in the values of the dependent variable. It has an advantage over regression in its ability to detect nonlinear relationships. Another advantage of decision trees over other techniques is their ability to explain results graphically. The trees are "grown" through a series of steps and rules that offer great flexibility. Categories of each predictor are merged if they are not significantly different with respect to the dependent variable. Decision tree models allow us to develop classification systems that predict or classify future observations based on a set of decision rules. The reasoning process behind the model is clearly evident when browsing the tree. This is in contrast to other "black-box" modeling techniques in which the internal logic can be difficult to work out.

Similar to the regression model, "earnings" was used as the target (dependent) variable, and the predictive variables include degree, gender, and age. We divided earnings into three evenly distributed groups: under $30,000, $30,000–$49,999, and $50,000 and above. With this decision tree, we find that a larger percentage of males tend to earn more at every degree category (Fig. 5.3). For both males and females, more than half of the holders of graduate degrees earn more than $50,000.

Age is another variable considered for interaction effects, since it is highly likely that those with graduate-level degrees were older and possibly
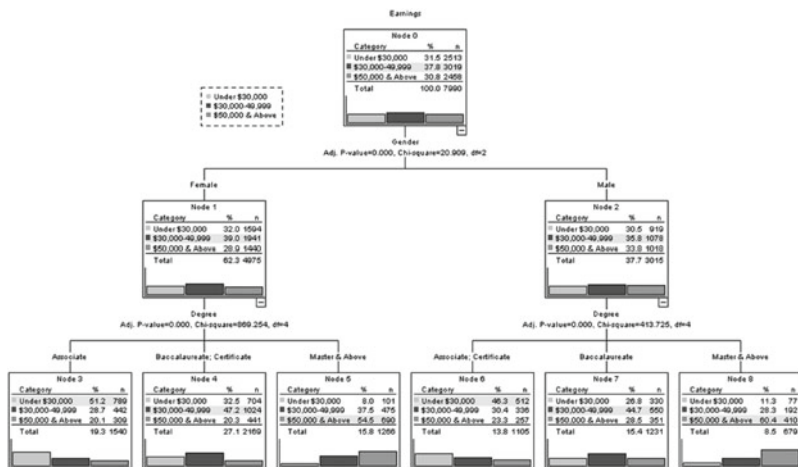
Fig. 5.3   Earnings of Males and Females by Degree Level

Fig. 5.4   Earnings of Degree Holders by Age

had more life experiences. Indeed, those with graduate degrees had a much higher share of those earning $50,000 and above at all degree levels, and especially for graduate degree holders (Fig. 5.4). For those under 25, a similar pattern prevailed with more than 60 % of those with

graduate degrees earned more than $50,000. This finding indicates that regardless of age, graduate degrees substantially increase earnings.

Conclusions

Findings from this study indicate that the field of study remains the most important aspect in determining earnings of graduates within 3 years of graduation. The regression results point to healthcare, trades, and education fields as having the most positive impact on earnings. Arts and humanities tend to have lower earnings than other fields. By controlling for other factors, healthcare-related majors can earn $33,900 more than arts and humanities majors on average 3 years after the degree was earned. This result is similar to that of other studies that found engineering, computers, and health to have the most positive impact on wages, while those majoring in art and humanities earn the least (e.g., Thorson 2005).

Degree level is the second most important aspect, with higher levels of degree attainment generally earning more. This finding is consistent with human capital theory, which would predict that graduates with the highest levels of education would be rewarded by the highest earners. The descriptive analysis does show, however, that in certain fields, certificates can result in high earnings. By controlling for other factors, graduate degrees can earn $17,000 more than certificate graduates and nearly $5000 more than bachelor's degree earners on average. This result is consistent with that of other studies, which also found that certain trade certificates can result in high salaries (Frank and Walters 2012).

Industry is the third most important factor affecting earnings in the labor market. Construction/utilities-related industries had the highest annual earnings, followed by finance, information, healthcare, and social assistance while graduates working in the retail and wholesale industries had significant lower earnings than others. By controlling for other factors, graduates working in construction/utilities industries can earn $24,500 more than in retail and wholesale industries.

Gender differences were found across all levels of degrees, as males had larger shares of higher wage earners at all degree types than females. Both males and females had significantly higher earnings with graduate-level degrees. Frank and Walters found a similar differential, but Thorson found no differential when she added in female plus married and female plus children variables into her analysis.

Likewise, age also made a difference in earnings, with older workers earning more, but graduate-level degrees significantly boosted earnings regardless of age. Other studies find that work experience is an important variable (Belfied 2000). Because this study is based on recent graduates and their wages before entering the university were not available, previous wages were not included as a variable. The age variable here may be reflecting work experience.

Graduates with better family financial resources (or not qualify for Pell Grant when they were in college) tend to have higher earnings in the labor market. Surprisingly, Grade Point Average had no impact on wages and was removed from the model. Thorson had a similar finding and conjectured the GPA may not be a good proxy for mental ability or other skills and therefore is not reward in the workplace (see, e.g., Thorson 2005).

Appendix

Complete College America Disciplines

Using the CCA classification, the following degree categories are based on the two-digit CIP codes defined by the National Center for Education Statistics Complete College American (2013). When providing data by discipline, aggregate up to the subcategory and report by subcategory as follows:

- Education
  - 13 Education
- Arts and humanities
  - 5 Area, ethnic, cultural, and gender studies
  - 16 Foreign languages, literatures, and linguistics
  - 23 English language and literature/letters
  - 24 Liberal arts and sciences, general studies, and humanities
  - 30 Multidisciplinary/interdisciplinary studies
  - 38 Philosophy and religious studies
  - 39 Theology and religious vocations
  - 50 Visual and performing arts
  - 54 History

- Social and behavioral sciences and human services

  – 19 Family and consumer sciences/human sciences
  – 25 Library science
  – 31 Parks, recreation, leisure, and fitness studies
  – 42 Psychology
  – 44 Pubic administration and social service professions
  – 45 Social sciences (Complete College America 2013)

References

Baum, S., J. Ma, and K. Payea. 2013. *Education Pays 2013: The Benefits of Higher Education for Individuals and Society.* Washington, DC: College Board.

Belfied, C.R. 2000. *Economic Principles for Education: Theory and Evidence.* Cheltenham: Edward Elgar.

Bureau of Labor Statistics. 2014. "Working in the 21st Century." http://www.bls.gov/opub/working/page6b.htm.

Carnevale, A.P., B. Cheah, and J. Strohl. 2011. "Hard Times, Unemployment, Majors and Earnings: Not All College Degrees Are Created Equal." *Georgetown University Center on Education and the Workforce*. http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/Unemployment.Final.update1.pdf.

Complete College American (2013). *Common College Completion Metrics Technical Guide Draft Update, November 27, 2013.* Boulder, CO: State Higher Education Executive Officers.

Fayyad, U. and K. Irani. 1993. "Multi-Interval Discretization of Continuous-Value Attributes for Classification Learning." Proceedings of the Thirteenth International Joint Conference on Artificial Intelligence, San Mateo, CA: Morgan Kaufmann, pp.1022–27.

Frank, K. and D. Walters. 2012. "Exploring Alignment between Post-Secondary Education Programs and Earnings: An Examination of 2005 Ontario Graduates." *Canadian Journal of Higher Education* 42(3):93–115.

Goodman, L.A. 1979. "Simple Models for the Analysis of Association in Cross-Classifications Having Ordered Categories." *Journal of the American Statistical Association* 74:537–52.

Hope, Y. 2012. "One in Two New Graduates Are Jobless or Underemployed." *Associated Press*, April 24. http://www.boston.com/news/nation/articles/2012/04/22/1_in_2_new_graduates_are_jobless_or_underemployed/.

Saltelli, A. 2002. "Making Best Use of Model Evaluations to Compute Sensitivity Indices." *Computer Physics Communications* 145(20): 280–97.

Singer, J.D. and J.B. Willett. 2003. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. London: Oxford University Press.

Thorson, A. 2005. "The Effect of College Major on Wages." *Park Place Economist* XIII: 45–57.

Vedder, R., C. Denhart, and J. Robe. 2013. *Why Are Recent College Graduates Underemployed? University Enrollments and Labor-Market Realities*. Washington, DC: Center for College Affordability and Productivity.

The Postgraduate Research Student Experience in Malaysia

Koo Yew Lie and Vincent Pang

INTRODUCTION

The Malaysian Ministry of Education (MOE) has set its mission to establish a higher education (HE) environment that will foster the development of educational excellence within a highly globalized and competitive university environment. In this regard, the National Higher Education Strategic Plan (PSPTN) and its accompanying Action Plan Phase 1 and Action Plan Phase 2 were formulated toward forging an internationalization policy for HE in Malaysia.

In line with MOE's commitment to develop evidence-based HE policy and practice to ensure quality and international standards in its provision, this study has developed a Malaysian Postgraduate Research Student Experience Questionnaire (MyPREQ) to measure the postgraduate research student experience in public HE institutions, which are the main providers of postgraduate research programs. This

K.Y. Lie (✉)
University of London, London, UK

V. Pang
Universiti Malaysia Sabah, Sabah, Malaysia

chapter reports on the conceptual framework of the instrument MyPREQ and the findings based on it. Broad implications of the role of HE in terms of graduate literacies in the knowledge economy and in broader civil society are drawn particularly as postgraduate research education has become a contested site of heightened competition regarding what matters and why.

Literature Review

The Context of Postgraduate Research Education Malaysia

Malaysia's economy has experienced a remarkable transformation process over the last two-and-a-half decades, and the main vehicle for this transformation process was undoubtedly the government's development plans. The Ninth Malaysia Plan, 2006–2010, was launched in 2006, and this national plan and the Third Industrial Master Plan, 2006–2020, underscored the importance of having "first-class" human capital, defined as that which will propel Malaysia toward a developed country status by 2020. The current Tenth Malaysia Plan, 2011–2015, re-emphasizes a commitment toward high-income status for Malaysia by 2020. One of the sub-sectors which plays an important role in this respect is the education and training sub-sector, namely HE.

Malaysia has set out its commitment to HE through the PSPTN. This document articulates the MOE's vision for the transformation of HE in Malaysia from the present to 2020 and beyond. The plan aims to bring Malaysian HE to the highest level by strengthening five key institutional pillars, namely, governance, leadership, academia, teaching and learning, and research and development (R&D).

In tandem with these thrusts, a number of strategies are formed based on a "critical agenda" approach. MyBrain15 is a Malaysian government HE project. aimed at producing top-class human capital is essential in promoting economic growth, triggering industrial development, and exploring new areas of research that can sustain Malaysia's competitive advantage over others. To achieve these objectives, a pool of up to 60,000 high-quality graduates with doctoral degrees must be created within the next 15 years. Another funding scheme to ensure academic staff with PhD qualification in Malaysian Higher Education Institutions (HEIs) provided by the MOE is the Academic Training Scheme for Institutions of Higher Learning (SLAI).

Under the "internationalization" critical agenda, the Malaysian International Scholarship (MIS) was created to attract the best brains from around the world and foster an exchange of knowledge and skills at the highest levels. The MOE has identified several key areas, the applicants for which will be given priority, including science and engineering, economics and Islamic finance, information and communication technology, biotechnology, and infrastructure and environmental studies.

Since 2007, HEIs have been subjected to new quality assessment for teaching and research. In the quest for excellence in research-related initiatives, the Malaysian Research Assessment (MyRA) system has been developed by the Ministry of Higher Education (MOHE) to assess the processes and outcomes of research, development, and commercialization. MyRA also functions as a pathway and gatekeeper for the application of research university status. The performance of universities given the research university status is evaluated through this tool. MyRA covers eight criteria in its evaluation. The criteria and respective weights are: (i) Quantity and Quality of Researches (25), (ii) Quantity and Quality of Research (30), (iii) Quantity of Postgraduates (10), (iv) Quality of Postgraduates (5), (v) Innovation (10), (vi) Professional Services and Gifts (7), (vii) Networking and Linkages (8), and (viii) Support Facilities (3) (MOHE 2010; 2011).

The National Science and Technology Policy aims to increase the national capability and capacity for R&D and technology development and acquisition. The policy strongly recommends the need to expand postgraduate education. The policy document calls for an adoption of a 60:40 ratio of students pursuing science, technical, and engineering disciplines in universities and an increment of postgraduate students' numbers in these disciplines to at least 10 % of the undergraduate population.

In connection with Malaysia's strategic priority of developing skilled human resources, the New Economic Model (NEM) was launched in 2010 to transform the Malaysian economy to be a high-income one. The Economic Transformation Plan (ETP) includes policy measures and regulatory reforms required to deliver the outcomes, which explicitly links HEIs to regional human resource development.

A review of Malaysian government policies highlights the international recognition given to world-class research and innovation as the key drivers of growth and productivity in regional and global economies. Over the last 20 years, the reviews show that the postgraduate sector has evolved to meet the changing needs of the nation, the economy, and employers to some extent.

Postgraduate Research Experiences

In developing a conceptual framework for the testing of Malaysian research student experience, references were made to some countries with similar contexts to Malaysia.

Australia

The Postgraduate Research Experience Questionnaire (PREQ) is part of the Australian Graduate Survey (AGS), an annual survey of university graduates developed by Graduate Careers Australia (GCA) (2010, 2011). The PREQ has 28 statements measuring seven aspects of postgraduates' research experiences. The first 27 statements measure the quality of supervision received by postgraduates, their experiences of intellectual climate in the department in which they have studied, the development of generic skills, quality of infrastructure at the institution, thesis examination processes, and students' clarity of goals and expectations. The final item measures their overall level of satisfaction with the research experiences received.

The PREQ is divided into seven scales with groups of statements (28 items in total) that have a similar theme, such as supervision (6 items), intellectual climate (5 items), skill development (5 items), infrastructure (5 items), thesis examination (3 items), clarity of goals and expectations (3 items), and overall satisfaction (1 item). Students are asked to express their degree of agreement or disagreement on these statements using a five-point Likert scale.

United Kingdom

The UK Higher Education Academy (UK HEA) constructed a Postgraduate Research Experience Survey (PRES) that was originally adapted from the Australian instrument PREQ (Australian National University 2008). After consultation with different organizations, including universities, the UK National Postgraduate Committee, the Quality Assurance Agency, the Higher Education Funding Council, the Research Councils, and the UK GRAD Regional Hubs, the 28-item PRES was developed (Park et al. 2007). It is designed to be a five-point response scale, with responses ranging from "strongly disagree" to "strongly agree." The instrument has two main sections. The first

section is made up of six core dimensions measuring postgraduate students' research experiences: (i) supervision (6 items), (ii) research environment (5 items), (iii) skill development (4 items), (iv) infrastructure (6 items), (v) thesis examination (3 items), and (vi) goals and expectations (4 items).

The second dimension focuses on aspects related to postgraduates' research experiences, such as professional and career development, roles and responsibilities, teaching opportunities, and personal factors.

In addition, PRES also includes quality assurance items (Oxford Learning Institute 2008) and its development is founded on the following principles (Park et al. 2007, p. 9): (i) student centered, (ii) easy to use, (iii) easy to understand and quick to complete, (iv) voluntary, (v) flexible, (vi) useful, (vii) cost effective, (viii) anonymous, and (ix) secure.

New Zealand

A PRSE survey (Auckland University of Technology 2005) was conducted at the Auckland University of Technology in 2004 focusing on eight areas of the postgraduate research experience, such as program organization, resources and facilities, supervision, research culture, research experience, research skills development, standard of research, and support services.

Hong Kong

Hong Kong is currently undergoing major education reform, and some HEIs have started to systematically evaluate student learning experiences at all levels. Zeng and Webster (2010) employed the PREQ with four additional scales to measure postgraduate students' research experiences at Hong Kong University. The authors added four more subscales established through factor analysis to test the following dimensions: (i) supervision (6 items), (ii) infrastructure (5 items), (iii) intellectual climate (5 items), (iv) skill development (5 items), (v) goals and expectation (3 items), (vi) generic skills (9 items), (vii) relationship with supervisor (4 items), (viii) communication with supervisor (4 items), (ix) supervisor's efforts to socialize students into disciplinary community (4 items), and (x) peer support (3 items).

The Conceptual Framework

MyPREQ is adapted from the PREQ developed for Australian post-graduate students and the PRES used by HEIs in the UK. Generally, in a variation of nomenclatures, postgraduate research experience is categorized into six dimensions: (1) supervision; (2) intellectual climate; (3) research skill development; (4) system, infrastructure, and research resources; (5) roles and responsibilities; and (6) proposal defense and thesis examination.

The adaptation of the instrument across nations indicates the common grounds shared by the global HE community in terms of what quality postgraduate education is about. The importance of these six scales is shared by UK HEA and HEIs such as Oxford University (Trigwell and Dunbar-Goddet 2005), Cambridge University (2011), Australian National University (2008), University of Sydney (2010), Murdoch University (Ballantyne 2004), and Auckland University of Technology, (2005). However, some of these constructs have employed a different for essentially the same scales employed in the Malaysian context.

Given the situational context of Malaysia in global HE, some new scales are used to describe the specific 'interests and needs of its HE. The new scales, (a) English language communication needs and support in a research context, (b) international exposure in a research context, (c) intercultural communication needs and support, and (d) professional development of students as knowledge workers, are developed to take account of the Malaysian HE contexts and sociocultural tapestry. The first scale recognizes that postgraduate students experience very real English language communication needs in their research journey, and hence support is crucial to ensure quality HE provision. However, this is often taken for granted and elided in native speaker English language contexts where it is often assumed that English language proficiency is a given. The second new scale "international exposure in a research context" is featured to test the extent to which Malaysia's emphasis on providing such a level of engagement is in fact experienced by the research students here. The third scale "intercultural communication needs and support" recognizes the multicultural tapestry in the Malaysian HE system and the need to develop intercultural understanding among students, academics, and supporting staff

in the system. The fourth scale "professional development of students as knowledge workers" aims to cater to the increasing need for knowledge workers who are able to match the demands of the industry and community. These additional dimensions are crucial given the situational context of Malaysia in global HE, its policy on internationalization and the nation's emphasis on global engagement and intercultural understanding (Koo et al. 2011). The conceptual framework is shown in Fig. 6.1.

Method

This mixed-method study employs a quantitative frame supported by qualitative triangulation. The instrument is MyPREQ, which consists of 117 items with 10 core elements crucial to the Malaysian postgraduate research education. It also contains open-ended items for respondents to express their views, particularly those that were not captured by the fixed-response items, which is based on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, and 5 = strongly agree). A total of 2582 questionnaires were divided proportionately and sent out to all 20 public HEIs to be administered by the members of the Council of Graduate School Deans. A total of 1370 questionnaires were returned.

The respondents come from diverse backgrounds in term of age, gender, nationality, educational background, financial background, cultures, and fields of study, among others. The respondents comprised 1215 (88.2 %) full-time and 152 (11 %) part-time doctoral students from the HEIs. There were 735 (53.3 %) male and 633 (45.9 %) female. Seventy-three percent ($n = 1007$) were Malaysians, while the rest ($n = 371$) were international students. The mean age was 33.77 years. The reliability based on Cronbach's alpha of each of the dimensions is shown in Table 6.1.

Findings

Overall PRSE

The overall means of each of the dimensions of postgraduate research student experience were tabulated and sorted in descending order in Table 6.2. It can be seen that the three most satisfactory dimensions are postgrad-

Park et al., 2007; Kulej & Wells, 2009; Park, 2009; Graduate Careers Australia, 2010

Park et al., 2007; Kulej & Wells, 2009; Curtin University, 2011

Kulej & Wells, 2009; Park, 2009; Graduate Careers Australia, 2011

Gudykunst & Kim, 2003; Guilfoyle, 2004; Lustig & Koester, 2006; Evelin, 2007; Koo, Yuan & Safinaz, 2012

Park et al. 2007; Park, 2009; Graduate Careers Australia, 2011

MOHE, 2011

Park et al, 2007; Park, 2009; Graduate Careers Australia, 2011

Brown, 2008; Essa, 2011

Park et al., 2007; Park, 2009; Graduate Careers Australia, 2011

Ballantyne, 2004; Kulej & Wells, 2009; Park, 2009

System, Infrastructure & Research Resources

Intellectual Climate

Proposal Defense & Thesis Examination

Supervision

Intercultural Communication Needs and Support

MyPREQ

Research skill Development

International Exposure

Roles & Responsibilities

English Language Communication & Support

Professional Development

Fig. 6.1   Ten scales as conceptualized in MyPREQ

uates' supervision experience, research skill development, and roles and responsibilities. The three least satisfactory dimensions are intercultural communication needs and support; English language communication needs and support in a research context; and system, infrastructure, and research resources. The strengths are more closely associated with the

Table 6.1 Reliability test for each dimension

Dimension	Number of items	Cronbach alpha
Postgraduates' supervision experience	18	0.955
Intellectual climate	10	0.945
Research skill development	9	0.927
System, infrastructure, and research resources	19	0.879
Roles and responsibilities	5	0.927
Professional development of students as knowledge workers	10	0.850
English language communication needs and support in a research context	10	0.919
International exposure in research environment	8	0.894
Intercultural communication needs and support	5	0.936
Proposal defense and thesis examination	12	0.933
Overall	116	0.982

Table 6.2 Overall postgraduate research student experience

Number	Dimension	M	S.D.
A	Postgraduates' supervision experience	4.18	0.82
C	Research skill development	4.17	0.63
E	Roles and responsibilities	4.06	0.69
J	Proposal defense and thesis examination	3.90	0.71
B	Intellectual climate	3.83	0.79
F	Professional development of students as knowledge workers	3.76	0.76
H	International exposure in research environment	3.75	0.82
D	System, infrastructure, and research resources	3.67	0.71
G	English language communication needs and support in a research context	3.66	0.69
I	Intercultural communication needs and support	3.61	0.92

Note: The responses range from strongly disagree (1) to strongly agree (5)

actual work of supervision, guidance, and mentoring, whereas the areas of concern are associated with the overall system, structure, context, and environment, which involve administration and management rather than supervisors as individuals. The findings on each of the dimensions are presented and discussed below.

Supervision

Overall, as shown in Table 6.3, the perception of supervision experiences is positive. In particular, respondents have positive perceptions of the respect, encouragement, and flexibility given by supervisors; the supervisors' interpersonal skills, knowledge, experience, and availability for supervision; their understanding of difficulties faced by students; and the extent of guidance, feedback, and support provided.

Intellectual Climate

Table 6.4 shows that the most positive aspects of institutions' intellectual climate are related to the provision to support publication of students' research work, to encourage openness in academic discussion, and to engage in lifelong learning. Indeed, to cultivate a conducive research environment and intellectual climate, it is vital to inspire intellectual ideas and develop openness and debate in academic discussion among the research community involving research students, departments, faculties, and institutions.

Postgraduates felt that they were not encouraged much to participate actively in postgraduate student societies or committees. One possible reason could be that the institutions do not have full-fledged societies or committees to serve postgraduate needs. Research students complained that they had limited opportunities to be involved in research practices in the global community and advanced research. Higher expectations of the intellectual climate may have contributed to the not-so-positive perception of research students.

Research Skills Development

The results on research skills development as shown in Table 6.5 revealed that the students have positive perceptions of their research skills development experience. The students were most satisfied with research skills opportunities but were less satisfied with leadership development.

Nevertheless, some responses for open-ended items indicate some measure of dissatisfaction with research skills development opportunities particularly in terms of students' involvement with the research community and in research training activities. Generally speaking, the students wanted more opportunities to attain research skills exposure, particularly in research collaborations, faculty-student interactions, and generic skills (analytical and problem-solving) development activities. Given their

Table 6.3 Supervision experience

Number	My supervisor(s)	<3(%)	3(%)	>3(%)	M	S.D.
A1.1	treat(s) me with respect.	42(3.1)	111(8.1)	1218(88.8)	4.41	0.80
A1.2	inform(s) me about how my thesis will be assessed.	100(7.3)	204(14.9)	1067(77.8)	4.06	0.94
A1.3	monitor(s) my progress effectively throughout the stages of my research.	90(6.6)	210(15.3)	1072(78.1)	4.10	0.92
A1.4	make(s) himself/herself/ themselves available whenever I need him/her/them.	76(5.5)	202(14.7)	1096(79.8)	4.16	0.92
A1.5	advise(s) me on the guidelines related to plagiarism.	110(8.0)	252(18.4)	1007(73.6)	3.98	0.97
A1.6	has/have good interpersonal skills.	57(4.2)	156(11.4)	1157(84.5)	4.28	0.86
A1.7	provide(s) constructive feedback on my progress.	72(5.3)	184(13.4)	1114(81.3)	4.18	0.89
A1.8	encourage(s) me to publish my work.	64(4.7)	130(9.5)	1175(85.8)	4.33	0.87
A1.9	encourage(s) me to apply research issues that are relevant to the international context.	90(6.6)	204(14.9)	1072(78.5)	4.09	0.93
A1.10	encourage(s) me to apply research issues that are relevant to the local context.	97(7.1)	225(16.4)	1047(76.5)	4.02	0.95
A1.11	make(s) efforts to understand my difficulties.	113(8.2)	219(16.0)	1038(75.8)	4.04	1.00
A1.12	provide(s) me with the necessary support to improve my language proficiency.	133(9.7)	296(21.6)	942(68.7)	3.88	1.02
A1.13	motivate(s) me to keep me going.	58(4.2)	156(11.4)	1157(84.4)	4.24	0.86
A1.14	has/have extensive experience in research.	49(3.6)	151(11.0)	1168(85.4)	4.31	0.84
A1.15	has/have the academic skills to support my research.	57(4.2)	140(10.2)	1175(85.6)	4.33	0.85
A1.16	has/have extensive experience in supervision.	59(4.3)	177(12.9)	1133(82.8)	4.25	0.88
A1.17	has/have the academic subject knowledge to support my research	69(5.0)	174(12.7)	1126(82.2)	4.22	0.89
A1.18	provide(s) me some degree of freedom and flexibility in the conduct of my research.	45(3.3)	156(11.4)	1171(85.3)	4.30	0.84
	Overall mean				4.18	0.82

Note: The responses range from strongly disagree (1) to strongly agree (5)

Table 6.4   Intellectual climate

No.	Statement [My institution]	<3(%)	>3(%)	M	S.D.
B1.1	encourages openness in academic discussion.	80(5.8)	1030(75.2)	3.96	0.88
B1.2	encourages publication of students' research work.	73(5.3)	1085(79.2)	4.13	0.91
B1.3	provides opportunities for intellectual interaction with professional communities.	129(9.4)	916(66.9)	3.80	0.96
B1.4	provides opportunities for intellectual interaction with academic communities.	113(8.3)	940(68.7)	3.84	0.95
B1.5	makes me feel integrated with my institution community.	134(9.8)	905(66.0)	3.79	0.97
B1.6	provides opportunities for me to be involved in the research practices of the global community.	163(11.9)	824(60.3)	3.68	1.01
B1.7	engages in cutting-edge research.	141(10.4)	893(65.8)	3.77	0.98
B1.8	encourages sharing of research findings with the general public.	137(10.0)	923(67.6)	3.81	0.97
B1.9	encourages lifelong learning throughout the research program.	135(9.9)	940(68.8)	3.85	0.97
B1.10	encourages active participation in postgraduate student societies or committees.	202(14.8)	811(59.3)	3.64	1.05
	Overall mean			3.83	0.79

Note: The responses range from strongly disagree (1) to strongly agree (5)

Table 6.5   Research skill development

Number	My research experience develops my…	<3(%)	3(%)	>3(%)	M	S.D.
C1.1	analytical skills.	34(2.5)	154(11.2)	1185(86.3)	4.21	0.75
C1.2	communication skills.	48(3.5)	182(13.2)	1146(83.3)	4.15	0.80
C1.3	critical thinking skills.	40(2.9)	137(10.0)	1198(87.1)	4.27	0.77
C1.4	problem-solving skills.	35(2.5)	160(11.6)	1179(85.8)	4.26	0.79
C1.5	academic writing skills.	28(2.0)	207(15.0)	1142(82.9)	4.23	0.81
C1.6	research skills.	18(1.3)	155(11.3)	1203(87.4)	4.32	0.74
C1.7	leadership skills.	84(6.1)	295(21.4)	997(72.5)	3.92	0.89
C1.8	research ethics for societal advancement.	47(3.4)	233(17.0)	1091(79.6)	4.08	0.80
C1.9	sense of professionalism for societal advancement.	44(3.2)	243(17.9)	1074(78.9)	4.08	0.81
	Overall mean				4.17	0.63

Note: The responses range from strongly disagree (1) to strongly agree (5)

concerns about writing and publication support, doctoral students as a group wanted more opportunities for their research skills development through direct experience in research. They believed that hands-on experience would provide them with a platform to learn to be and think like researchers. These findings have several implications on policy and practice of graduate programs.

System, Infrastructure, and Research Resources

Table 6.6 shows that postgraduate research students generally agree that they were provided with easy access to library facilities and services, electronic resources, and Internet facilities in their institutions. They also agreed that the institutions kept them updated on relevant training programs, research seminars, and courses. However, attention and action is needed for areas with low level of agreement in terms of satisfaction. These include the current support to provide information on a range of residential accommodation, access to external funding such as scholarships, information on the resolution of grievances and appeals, and financial support.

Generally respondents were positive about access to technical facilities, personal working space, financial support, research equipment, accommodation, the administrative system, funding, research environment, and personal safety.

Roles and Responsibilities

Table 6.7 shows that postgraduate students in Malaysia generally have positive experiences with regard to the dimension of roles and responsibilities. The main issues are the lack of clear guidelines, proper channels of communication, and attention, especially for international students.

The findings further indicate that institutions need to improve their efficiency in assisting students, such as in lodging complaints in the right department when problems arise. Many universities in fact have a department/center dedicated to student support and advice. While most respondents agreed on most of the aspects in the dimension of roles and responsibilities, there is a need for greater awareness among the students that there is institutional provision available. At the same time, institutions need to strengthen their service efficiency and provide clear feedback mechanisms for students.

Table 6.6   System, infrastructure, and research resources

Number	Statement (My institution)	<3(%)	3(%)	>3(%)	M	S.D.
D1.1	provides easy access to common physical facilities.	110(8.0)	311(22.7)	952(69.3)	3.82	0.93
D1.2	provides easy access to technical facilities.	157(11.4)	344(25.1)	871(63.5)	3.71	0.99
D1.3	provides easy access to technical services.	179(13.1)	383(28.0)	805(58.9)	3.63	1.01
D1.4	provides easy access to library facilities and services.	58(4.2)	151(11.0)	1165(84.8)	4.21	0.84
D1.5	provides easy access to electronic resources.	62(4.5)	196(14.2)	1118(81.2)	4.14	0.88
D1.6	provides easy access to Internet facilities.	82(6.0)	195(14.2)	1098(79.9)	4.12	0.93
D1.7	provides a suitable personal working space.	205(14.9)	300(21.8)	870(63.3)	3.70	1.15
D1.8	provides sufficient financial support.	365(26.6)	322(23.5)	684(49.9)	3.30	1.25
D1.9	provides easy access to the latest equipment for my research.	202(18.5)	329(30.2)	559(51.3)	3.43	1.09
D2.1	keeps me updated on relevant training programs, research seminars, and courses.	118(8.6)	319(23.2)	938(68.2)	3.82	0.95
D2.2	provides me with information on a range of residential accommodation.	292(21.4)	459(33.6)	615(45.0)	3.27	1.09
D2.3	has a well-functioning administrative system that supports my research experience.	213(15.5)	389(28.3)	771(56.2)	3.54	1.01
D2.4	provides me with access to internal funding.	286(20.9)	348(25.4)	737(53.7)	3.41	1.15
D2.5	provides me with access to external funding such as scholarships.	343(25.1)	343(25.1)	683(49.9)	3.29	1.22
D2.6	provides me with information on the process for the resolution of grievances and appeals.	282(20.7)	448(32.9)	633(46.4)	3.33	1.06
D2.7	informs me about the rules and regulations related to my research program.	153(11.2)	370(27.0)	849(61.9)	3.67	0.98

Table 6.6 (continued)

Number	Statement (My institution)	<3(%)	3(%)	>3(%)	M	S.D.
D2.8	enables me to conduct my research activities in a secure environment.	112(8.2)	333(24.3)	924(67.5)	3.79	0.93
D2.9	ensures my personal safety in the institution so that I can focus on my research activities.	125(9.1)	319(23.2)	930(67.7)	3.79	0.95
D2.10	provides capable administrative staff to support research students.	174(12.7)	370(26.9)	829(60.4)	3.66	1.03
	Overall mean				3.67	0.71

Note: The responses range from strongly disagree (1) to strongly agree (5)

Table 6.7 Roles and responsibilities

No.	Statement (Roles and responsibilities)	<3(%)	3(%)	>3(%)	M	S.D.
E1	I know who to approach if I am dissatisfied with any element of the research program.	172(12.6)	358(26.2)	838(61.3)	3.64	0.99
E2	I understand my responsibilities as a research student.	35(2.6)	118(8.6)	1216(88.8)	4.28	0.76
E3	I am aware of my institution's responsibilities toward me as a research student.	68(5.0)	238(17.4)	1060(77.6)	4.06	0.88
E4	I am aware that I must adhere to the legal, ethical, and professional code of practice in my field of study.	33(2.4)	135(9.9)	1200(87.7)	4.32	0.77
E5	My institution values feedback from research students.	138(10.1)	303(22.2)	924(67.7)	3.80	1.00
	Overall mean				4.06	0.69

Note: The responses range from strongly disagree (1) to strongly agree (5)

Professional Development of Students as Knowledge Workers

As shown in Table 6.8, the degree of agreement among the research students on the professional development of students as knowledge workers

Table 6.8 Professional development of students as knowledge workers

No.	My research experience develops my…	<3(%)	3(%)	>3(%)	M	S.D.
F1.1	linkages with the local community.	191(14.0)	334(24.4)	842(61.6)	3.66	1.06
F1.2	linkages with the alumni of the university.	253(18.5)	411(30.1)	701(51.4)	3.41	1.08
F1.3	linkages with the global community.	161(11.8)	337(24.7)	868(63.5)	3.70	1.03
F1.4	linkages with the industry.	216(15.9)	351(25.8)	791(58.2)	3.58	1.12
F1.5	ability to think about the range of entrepreneurial opportunities available to me.	253(18.5)	401(29.4)	710(52.1)	3.44	1.09
F1.6	ability to work effectively with peers.	121(8.9)	298(21.8)	945(69.3)	3.81	0.97
F1.7	ability to be knowledgeable within my area(s) of expertise.	64(4.7)	194(14.2)	1104(81.1)	4.12	0.86
F1.8	ability to manage my career progression.	85(6.2)	233(17.1)	1047(76.7)	4.01	0.92
F1.9	ability to set realistic goals for my professional development.	70(5.1)	222(16.2)	1075(78.6)	4.03	0.87
F1.10	employability skills.	115(8.4)	296(21.7)	950(69.8)	3.85	0.96
	Overall mean				3.76	0.76

Note: The responses range from strongly disagree (1) to strongly agree (5)

is fairly positive. Research students in Malaysia are most positive about the education and training that they have received from experts in their fields of study and they agree to a large extent that their research experiences have enabled them to set realistic goals for their own professional development. The results further show that research students are less positive with institutional provisions to establish or enhance linkages with the university alumni. Less than two-thirds of the students agree that there is adequate support from the university to connect with the university alumni through research programs. The students seem to disagree to the extent that they feel their universities encourage them to think of entrepreneurial opportunities.

English Language Communication Needs and Support in a Research Context

Table 6.9 shows that students are receiving adequate support from their institutions in addressing their needs with regard to English language communication. However, the majority of the respondents agree that they have

Table 6.9 English language communication needs and support in a research context

No.	Statement	<3(%)	3(%)	>3(%)	M	S.D.
	My institution provides opportunities to improve my					
G1.1	written English.	213(15.6)	322(23.5)	833(60.9)	3.64	1.13
G1.2	spoken English.	225(16.5)	323(23.7)	814(59.8)	3.61	1.14
	Statement [My institution facilitates me to]					
G2.1	participate actively in national seminars.	169(12.4)	303(22.2)	893(65.4)	3.74	1.02
G2.2	participate actively in international seminars.	236(17.3)	355(26.0)	775(56.7)	3.57	1.13
G2.3	present papers in English.	114(8.4)	270(19.8)	980(71.8)	3.95	1.01
	Statement [I have difficulties in understanding]					
G3.1	the spoken English of lecturers. (R)	268(19.7)	166(12.2)	929(68.2)	3.81	1.29
G3.2	the written English of lecturers. (R)	268(19.6)	175(12.8)	921(67.5)	3.83	1.29
G3.3	the spoken English of other students. (R)	265(19.5)	323(23.7)	773(56.8)	3.61	1.21
	Statement [My institution]					
G4.1	provides administrative staff (e.g. registrar, assistant registrar, clerk, librarian) who are proficient in English to support research students.	254(18.6)	375(27.5)	736(53.9)	3.46	1.11
G4.2	provides support staff (e.g. lab assistant, technician, science officer) who are proficient in English to support research students.	288(21.1)	393(28.8)	683(50.1)	3.38	1.13
	Overall mean				3.66	0.69

Note: The responses range from strongly disagree (1) to strongly agree (5)

considerable difficulties in understanding lecturers' spoken and written English as well as students' spoken English. It is also noted that students experience low levels of support in university administrative dealings due to the low numbers of administrative staff who are proficient in the English language.

International Exposure in Research Environment

The study found that the provision of international exposure in research environments is not very positive (Table 6.10). Although there were more respondents agreeing than disagreeing to the items on international

Table 6.10   International exposure in research environment

No.	Statement	<3(%)	3(%)	>3(%)	M	S.D.
	My institution provides me with					
H1.1	international research opportunities (e.g. attachment).	320(23.5)	413(30.3)	631(46.3)	3.29	1.16
H1.2	opportunities to participate in joint international programs.	334(24.5)	373(27.4)	655(48.1)	3.29	1.19
H1.3	international exposure on campus (e.g. conferences, seminars, lectures, webinars).	185(16.2)	301(26.3)	657(57.5)	3.57	1.10
	The international research exposure					
H2.1	helps me to become a better global citizen.	87(6.6)	261(19.9)	965(73.5)	3.93	0.92
H2.2	is important for my personal growth.	56(4.3)	183(14.0)	1072(81.8)	4.10	0.84
H2.3	helps me to build an international identity.	62(4.7)	216(16.5)	1032(78.8)	4.04	0.85
H2.4	helps me to be more employable.	71(5.4)	218(16.7)	1020(77.9)	4.04	0.88
H2.5	helps me to be an international scholar.	66(5.0)	222(16.9)	1024(78.0)	4.06	0.89
	Overall mean				3.75	0.82

Note: The responses range from strongly disagree (1) to strongly agree (5)

research opportunities, joint international programs, and international exposure on campus, the difference was not overwhelming. However, students confirm that the international exposure received has helped them become better global citizens and build international identity and will make them more employable.

Qualitative data findings show most university research students are given exposure to opportunities on an international stage. For example they are guided to participate in international conferences, involve in international collaborative research projects, and publish in international journals. Respondents from some universities commented there are challenges in terms of the lack of financial support from the university and availability of programs or events with a focus on internationalization on campus. Some respondents also agree that attending international programs will help them develop their personal knowledge, while some suggested student or industry exchange programs.

Intercultural Communication Needs and Support

The findings in Table 6.11 show that percentages of respondents agreeing outnumber those disagreeing for all five items: provides postgraduate students with opportunities to be exposed to diverse cultures in the university,

Table 6.11   Intercultural communication needs and support

No.	My institution	< 3 (%)	3 (%)	> 3 (%)	M	S.D.
I1.1	provides me with opportunities to be exposed to diverse cultures in the university.	151 (11.1)	326 (23.9)	887 (65.0)	3.74	0.99
I1.2	helps me to understand better the differences of diverse cultural groups.	162 (11.9)	377 (27.6)	826 (60.5)	3.67	0.98
I1.3	facilitates interaction between international postgraduate students and local students	207 (15.2)	365 (26.8)	790 (58.0)	3.56	1.07
I1.4	facilitates interaction between international postgraduate students and staff.	215 (15.8)	383 (28.1)	766 (56.2)	3.54	1.05
I1.5	encourages me to promote intercultural understanding at the university.	208 (15.2)	383 (28.1)	774 (56.7)	3.55	1.04
	Overall mean				3.61	0.92

helps respondents to understand better the differences of diverse cultural groups, facilitates interaction between international postgraduate students and local students, facilitates interaction between international postgraduate students and staff, and encourages respondents to promote intercultural understanding at the university.

Despite the favorable results from the quantitative section, the high amount of negative feedback given by the respondents in the qualitative section of this study suggests that Malaysian universities have not been successful in creating multicultural environments that engage satisfactorily with diversity and helping students to negotiate difference. Some students, apparently, found the campus climate to be unresponsive to their needs and educational expectations.

Proposal Defense and Thesis Examination

Table 6.12 indicates that although there were overwhelming differences in the percentages of students agreeing to all the items compared to those disagreeing, the findings indicate that there is a need to enhance the monitoring of timelines to ensure a shorter timeframe between the time a thesis is submitted and time for which the viva voce is held. Students express the need to be given more guidance at the writing stage but note that supervisors tend to be less available for guidance than students would prefer.

Table 6.12 Proposal defense and thesis examination

No.	Statement	<3 (%)	3 (%)	>3 (%)	M	S.D.
	Awareness					
J1.1	I am made aware of the assessment criteria for a proposal defense.	116 (8.7)	258 (19.3)	964 (72.0)	3.86	0.94
J1.2	I am made aware of the assessment criteria for a thesis.	106 (8.0)	248 (18.6)	977 (73.4)	3.89	0.92
J1.3	I am made aware of the appeal process involved in thesis assessment.	142 (10.7)	341 (25.7)	843 (63.6)	3.70	0.96
J1.4	I am made aware that only experts from my field are appointed as examiners for my thesis.	98 (7.4)	240 (18.0)	995 (74.6)	3.97	0.93
	Proposal defense					
J2.1	I was given guidance in preparing for my proposal defense	118 (8.9)	264 (19.9)	942 (71.1)	3.88	0.96
J2.2	I was given feedback for my proposal defense.	96 (7.3)	260 (19.9)	953 (72.8)	3.91	0.92
J2.3	The assessment of the proposal defense was transparent.	81 (6.2)	274 (21.0)	951 (72.8)	3.94	0.92
	Thesis examination					
J3.1	There is a reasonable time period (not exceeding 3 months) from submission of my thesis to the viva voce.	130 (11.2)	290 (25.0)	740 (63.8)	3.72	1.07
J3.2	I was given guidance in preparing for my viva voce.	113 (10.1)	308 (27.4)	702 (62.5)	3.71	0.98
J3.3	The examination of my thesis was completed in a reasonable timescale.	94 (8.7)	326 (30.0)	666 (61.3)	3.70	0.96
Overall mean					3.90	0.71

In the open-ended section, many commented on the ineffective arrangements currently in place to schedule their viva voce after thesis submission. Further, students suggested that more guidance is given to help students during the writing process, providing a service on formatting of the thesis for submission, and providing a quicker turnaround time in providing them with the examiners' feedback during viva voce.

Recommendations for Policy and Practice

MyPREQ has been developed after rigorous conceptualization and a pilot study. It is strongly recommended that MyPREQ should be used for subsequent tracking of postgraduate programs in public universities as well as private universities every two years. Given Malaysia's vision to be a hub of educational excellence, it would be important to ensure that this instrumentation in terms of a questionnaire survey is used to monitor and chart our progress as a provider of relevant and quality HE.

Overall, the findings of the survey indicate that the quality of postgraduate education is good with positive scores. However, Malaysia should strive for excellence. Areas of concern including intercultural communication needs and support, English language communication needs and support, and system, infrastructure, and research resources should be looked at. Concerns in research universities should be overcome through policy action. The results should be posted in a site to provide maximum visibility. The MOE should work with TalentCorp and MyAlumni to ensure that such visibility is secured in relation to the performance of its HEIs.

The overall recommendations for policy are as follows:

- The Malaysian government is to establish a coherent relationship between related sectors, ministries, agencies, and HEIs in the desired ecosystem.
- MOE is to provide clearer directions for PRSE-related policies and guidelines in Malaysian public universities.
- MOE and Education Malaysia Global Services (EMGS) are to ensure that the positive findings of research student experience in Malaysia's public universities are disseminated globally as part of their broader educational and marketing strategy.
- MOE, EMGS, R&D Critical Agenda Projects (CAPs), and internationalization CAPs are to ensure that the positive findings related to research student experience on supervision and research skill development are disseminated globally as part of their educational and marketing strategy.
- EMGS, HEIs, and internationalization CAPs are to ensure that the delivery of the promise of multiculturalism as advertised by EMGS corresponds with student experience.
- HEIs are to ensure the provision and delivery of appropriate English language communication programs to graduates on time.

- HEIs are to ensure that system, infrastructure, and research resources are improved to enhance standard.
- MOE and Malaysian Qualifications Agency are to conduct further research to examine whether the perceptions of students correspond to the situation on the ground (classroom and on-site investigations) to see the match between the plans and reality as experienced by the students.
- MOE and internationalization CAP are to improve the delivery of the support system for international students in terms of the 10 dimensions measured by MyPREQ scales.
- MOE and National Higher Education Research Institute (IPPTN) are to ensure that the MyPREQ survey is used as a tracer study once every two years.

Concluding Remarks

In view of Malaysia's vision to develop as a hub of educational excellence, the research team advocates that the PRSE conceptual framework and the MyPREQ are used as developmental and monitoring tools by the MOE, HEIs, and universities to measure, evaluate, and benchmark postgraduate students' research experiences at the institutional, national, and global level. In the knowledge economy of the future, postgraduate education is a site of heightened struggle with regard to what constitutes the necessary and required environment for fostering knowledge workers and developing citizens in culturally diverse and socially cohesive contexts.

References

Auckland University of Technology. 2005. *Postgraduates Rate Their Experience at AUT*. Auckland: Institutional Research Unit, Auckland University of Technology.

Australian National University. 2008. *Postgraduate Research Questionnaire. Graduate Destination Survey and Postgraduate Research Experience Questionnaire.* Canberra: Australian National University.

Ballantyne, C. 2004. *Survey of Postgraduate Research Student Opinion*. Perth: Teaching and Learning Centre, Murdoch University.

Brown, L., (2008). Language and anxiety: An ethnographic study of international postgraduate students. *Evaluation and Research in Education*, *21*(2), 75–95.

Curtin University. (2011). *Postgraduate research experience questionnaire scales.* Retrieved 14 February 2015 from http://planning.curtin.edu.au/local/docs/preq_questionnaire.pdf.

Essa, I. (2011). Reflecting on some of the challenges facing postgraduate nursing education in South Africa. *Nurse Education Today*, *31*(3), 253–258.

Evelin, L. (2007). Avoiding humiliation: From intercultural communication to global interhuman communication. *Journal of Intercultural Communication*, *10*, 21–38.

Graduate Careers Australia. 2010. *Postgraduate Research Experience 2009: The report of the Postgraduate Research Experience Questionnaire.* Melbourne: Graduate Careers Australia.

Graduate Careers Australia. 2011. *Postgraduate Research Experience 2010: A report of the Postgraduate Research Experience Questionnaire.* Melbourne: ———.

Gudykunst, W. B., & Kim, Y. Y. (2003). *Communication with strangers.* New York: Mc Graw.

Guilfoyle, A.M. (2004). Exploring the spaces in-between institutional services provided and international postgraduate student experiences. Paper presented at the 18th IDP Australian International Education Conference International Education: The path to cultural understanding and development, Sydney, Australia.

Koo, Y.L., V. Pang, M. Shuib, N. Azman, M.N.L.Y. Abdullah, and H.L. Hing. 2011. A Proposed Conceptual Framework for the National Study on Postgraduate Research Students Experience (PRSE) in Malaysia. *Bulletin of Higher Education Research* 18: 4–7.

Koo, Y. L., Yuen, C. K., & Zainudin, I.S. (2012).Negotiating common grounds and diversity in local-global contexts. *GEMA Online™ Journal of Language Studies*, *12*(1), 1–4.

Kulej, G., & Wells, P. (2009). *Postgraduate research experience survey (PRES) 2009 results.* York, UK: The Higher Education Academy. Retrieved 17 April 2015 from http://www.heacademy.ac.uk/assets/York/documents/ourwork/postgraduate/PRES_2009_Technical_report.doc.

Lustig, M.W., & Koester, J. (2006). *Intercultural competence: interpersonal communication across cultures.* (5th ed.). Boston, MA: Pearson.

Ministry of Higher Education Malaysia (MOHE). 2010. *Implementation Plan for Development of Innovative Human Capital at Tertiary Level.* Putrajaya: Ministry of Higher Education Malaysia.

———. 2011. *The National Higher Education Strategic Plan beyond 2020. NHESP 2: Malaysia's Global Reach: A New Dimension.* Putrajaya: Ministry of Higher Education Malaysia.

Oxford Learning Institute. 2008. *The Postgraduate Research Experience Survey.* Oxford: Oxford Learning Institute.

Park, C., A. Hanbury, M. Kulej, and L. Harvey. 2007. *Postgraduate Research Experience Survey: Final Report.* York: The Higher Education Academy.

Park, C. (2009). *The research student experience: Lessons from PRES*. York, UK: The Higher Education Academy. Retrieved 18 January 2015 from http://www.heacademy.ac.uk/assets/documents/ postgraduate/PRES2009.pdf.

Trigwell, K. and H. Dunbar-Goddet .2005. *The Research Experience of Postgraduate Research Students at the University of Oxford*. Oxford: Institute for the Advancement of University Learning. Accessed May 18, 2013. http://www.learning.ox.ac.uk/media/global/wwwadminoxacuk/localsites/oxfordlearning institute/documents/overview/research/publications/PGRreport.pdf.

Zeng, M. and B.J.Webster. 2010. "Examining Students' Research Experiences with the Postgraduate Research Experience Questionnaire (PREQ) in a Hong Kong University." In *Quality in Postgraduate Research: 9th Quality in Postgraduate Research Proceedings*, edited by M. Kiley.Adelaide: The Centre for Educational Development and Academic Methods, the Australian National University, pp. 129–142.

Learning Outcomes Assessment in Graduate Education: A Comparative Overview between the United States and ASEAN

Stewart Sutin and Somkiat Kamolpun

INTRODUCTION

Our chapter compares academic oversight practices and learning outcomes assessment of higher education institutions in the USA and three Association of South East Asian Nations member countries, namely Malaysia, the Philippines, and Thailand. The assessment and accreditation practices are examined within their historical, socioeconomic, and political contexts. We will compare the progress of Malaysia, the Philippines, Thailand, and the USA in charting national frameworks for learning outcomes assessment.

A few words about our broader socioeconomic context are in order. Globalization and regional economic integration have increased awareness of higher education institutions'(HEIs') importance in the development of

S. Sutin (✉)
University of Pittsburgh, Pittsburgh, PA, USA

S. Kamolpun
Office of the Higher Education Commission, Bangkok, Thailand

human capital within national boundaries, which "ups the ante" for high-quality research, improved pedagogy, and relevant learning outcomes-driven curricula to address the so-called skills gap and competition in global rankings. Regional organizations and trade pacts have brought about an appreciation for the relationship between quality of education and regional and national economic development. During the past 30 years, global and regional economic cooperation and competition have increased dramatically.

An increasing correlation between global and regional economic integration and movements to improve educational quality is apparent. The European Union supports standardization of oversight processes through the Bologna Reforms. Likewise, ASEAN and its member countries are working toward harmonization of qualifications and quality assurance systems through an introduction of national qualifications frameworks (NQFs), mutual recognition agreements, and the ASEAN University Network-Quality Assurance (AUN-QA). Competition to achieve institutional recognition in global rankings is palpable. The influence of information and communications technology on education and global economies has become more profound. Global and other large national corporations and services providers increasingly outsource their manufacturing process and supporting services to the most cost-effective markets. The migration to sophisticated and cost-effective manufacturing and servicing processes has drawn attention to the quality of graduates and labor forces, thereby intensifying demands for higher graduation rates and skill attainment as well as lifelong learning.

LEARNING OUTCOMES: WHAT ARE THEY AND WHO DECIDES?

Learning outcomes or general education goals appear at the institutional, school, academic discipline, or program levels for undergraduates and graduate fields of study. Nomenclature may vary. Notwithstanding terminology, the intent is to identify what students should know, or demonstrate, and the skills they are expected to acquire, as a consequence of successfully completing the study program (Allan 1996; AQF Advisory Board 2007; Bogue and Hall 2003; European Commission 2004; Kennedy et al. 2006; Moon 2004). Articulated competencies should guide curricula, course syllabi, and pedagogy and serve as the basis for assessment and subsequent evaluation of performance (Harvey and Green

1993; Kennedy et al. 2006; Thomas and Douglass 2009). They may be general in nature and embrace such variables as critical thinking; problem-solving; information literacy; written and verbal communication skills; and respect and tolerance for persons of differing beliefs, race, religion, sexual orientation, and ethnicity.

Within professional schools, one may find references to norms of behavior and technical competencies that qualify their graduates for employment and recognition within their chosen professions. Learning outcomes offer common standards and reference points that enhance transparency and accountability for quality and effectiveness of instruction (Kennedy et al. 2006). Faculty and employers play a critical role in iden-tifying learning outcomes, creating assessment methodologies to evalu-ate performance, and applying the findings toward improving academic quality. Government and quality assurance agencies, department chairs, deans, and provosts are instrumental in overseeing and documenting their effectiveness through quality assurance processes.

CHARACTERISTICS AND PURPOSES OF GRADUATE EDUCATION

According to the Association of American Universities (1998), gradu-ate education involves new learning schemes, which develop and help students to advance in academic and professional careers. It is intended to develop student abilities to make contributions to knowledge through original and independent research. Although assessment and evalua-tive processes are similar to those of undergraduate education, graduate programs normally expect "more highly integrative and research skills" (Middaugh 2010, p. 102). Graduate education in career occupations is designed to provide in-depth and intensive training which helps students to develop necessary competencies for certain professional careers. In a manner akin to undergraduate education, learning outcomes for graduate education are increasingly subject to assessment, accreditation, and qual-ity oversight processes.

Prima facie, graduate school education in the USA, Malaysia, the Philippines, and Thailand shares similar characteristics. Each offers mas-ter's, doctoral, and professional education programs with similar credit hour ranges, thesis, and dissertation requirements. In addition, graduate programs in each country have to go through quality assurance processes, including accreditation and licensure for professional areas, for instance,

in engineering, law, and accountancy. Graduate students may also have to pass written and oral examinations (Malaysia), publish articles and/or present papers at academic conferences (Thailand), and complete internship or residency programs (the Philippines) (ASEM Education Secretariat 2010). The overview of graduate education in the four countries in this study is as shown in Appendix 1.

LEARNING OUTCOMES ASSESSMENT AND ACCREDITATION IN THE USA: AN OVERVIEW

The historical context of accreditation in the USA offers a foundational basis for our analysis. Institutional accreditation in the USA evolved as an independent peer evaluation system (Eaton 2009). Six regional accreditation associations oversee all higher education institutions, inclusive of their undergraduate and graduate programs. Numerous professional associations oversee a vast array of programs such as law, education, engineering, business administration, and health career fields. Examples include: the American Dental Association, the American Bar Association, the American Medical Association, the American Veterinary Medical Association, and the National Council for Accreditation of Teacher Education. As of 2010, there were eighty recognized accrediting agencies, including six regional accrediting agencies, professional associations, and state authorities (Burke et al. 2009). Each accrediting agency has the authority to set up evaluation criteria to ensure the quality of education. According to the Council for Higher Education Accreditation, the criteria include faculty qualifications, curriculum structure, student services, and institutional financial stability. Higher education institutions pay the expenses relating to accreditation and provide faculty and administrators to voluntarily serve on visitation teams.

Neither the federal nor the state governments participate directly in the accreditation processes. They are, however, increasingly engaged in calling for accountability measured in terms of affordable tuition, relevant career-oriented programs, graduation rates, and post-graduation employment. The federal and many state governments increasingly use public subsidies and student loan programs in efforts to influence certain outcomes and accreditation processes.

Notwithstanding the scope of coverage and progress made toward assuring academic quality, the accreditation system in the USA has

been subject to increasing criticism from certain external constituents. Questions have arisen about accreditation standards, institutional effectiveness, unaffordable tuition, low graduation rates, the absence of suitable jobs for graduates, and a lack of transparency (Amaral et al. 2009; Neal 2008a, b; Schray2008). This problem has become particularly acute for doctoral degrees in certain fields of study. Some state governments have established their own criteria for subsidizing public higher education and have shifted toward the model of performance-based funding. The federal government has launched an initiative to rate HEIs and make that data available to the public. Peer review is deemed suspect by many outsiders since, by definition, evaluation teams consist of faculty and administrators from member institutions of the accrediting agencies. Some allege that peer reviewers protect member institutions by tacitly lowering evaluation standards (Neal 2008a). According to critics, this leads to an establishment of a network of institutional guilds in which institutions and programs are accredited based on relationships instead of their intrinsic quality (McGhee 2006). This hypothesis contends that accreditation does not assure quality education or accountability(McGhee 2006; Neal 2008b).

Two key tenets of institutional accreditation include institutional assessment and assessment of student learning outcomes. These standards apply to undergraduate and graduate programs alike. Institutional or program assessments embrace criteria for examining educational and resource effectiveness within the context of self-defined mission, clarity of purpose and goals, and allocation of resources in support of those statements of purpose. Oversight processes and management reporting are reviewed as integral to accreditation. Institutions, programs, and academic disciplines are expected to provide proof statements that their students are acquiring knowledge skills and competencies consistent with the stated general education goals (see Standards 7 and 14, Middle States Commission on Higher Education 2006, pp. x, xi, 25–30, 63–68). In essence, accreditation may be thought of as third-party educational audits or quality assurance processes. How effectively the accreditation associations are performing this function is a subject of increasing conjecture, especially viewed by a growing body of public officials. At the core, many elected and appointed government officials at the state and federal levels worry about the cost of higher education, its purportedly uneven quality, and lack of both accountability and transparency.

ASEAN Member Countries

ASEAN is a regional organization comprising ten countries[1] in Southeast Asia. Since the end of the Cold War in 1991, ASEAN has attempted to enhance regional economic competitiveness and reduce the development gap between member countries. These attempts led to the establishment of the ASEAN community expected to be completed by the end of 2015. This regional initiative stimulated a number of economic and education reforms at both national and regional levels, including the introduction of learning outcomes assessment and quality assurance reform. As a region, the ASEAN community will create an integrated market and production base. It will increase the volume of trade in goods, services, and skilled labor and student mobility within the region. This development will increase cross-border education and employment opportunities for students and graduates, and competition for college graduates and skilled labor among higher education institutions and corporations in member countries. In order to support and prepare for this development, student and graduate qualifications need to be embraced by higher education institutions and accepted by domestic and foreign employers.

At the national level, higher education systems in Malaysia, the Philippines, and Thailand are facing challenges of quality, transparency, and the efficiency of higher education. The quality assurance systems in these countries were heterogeneous because of a lack of the clear and consistent standards, the emergence of private for-profit institutions, and disparities across higher education institutions (Ruiz and Junio-Sabio 2010). In addition, the quality assurance systems in these countries did not sufficiently focus on the demand for graduates in the labor market, nor their necessary competencies. In fact, many university graduates do not possess necessary competencies, and their quality is deemed often unacceptable by employers. The mismatch between graduate competencies and the needs of employers has raised widespread concern over the quality, transparency, and effectiveness of higher education systems.

The governments of Malaysia, the Philippines, and Thailand have taken various measures to address the skills gap, for instance, reforming quality assurance systems and embracing government-business-university cooperation. The highlight of the reform is the introduction and implementation

---

[1] Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

of NQF. The NQF identifies domains and learning outcomes, which apply to every area and level of study.[2] The functions of NQF are to establish national standards competencies, promote accessibility and quality of education, and ensure comparability of degrees and qualifications across higher education institutions (Burke et al. 2009). Defined learning outcomes will be transparent amid a movement toward accountability among higher education institutions.

Learning Outcomes Assessment: Current Practices in Malaysia, the Philippines, and Thailand

In these countries, the governments, accreditation agencies, and professional associations are responsible for quality assurance through accreditation and licensure processes. The systems are centralized and based on self-evaluation and peer review. In the case of Malaysia, the Malaysian Qualifications Agency (MQA) was established under the Ministry of Higher Education in 2007 to implement the Malaysian Qualifications Framework and oversee quality assurance practices and the accreditation of higher education programs (MQA 2007). In the Philippines, accreditation is implemented by five accreditation agencies based on the Commission on Higher Education's requirements and standards (Ruiz and Junio-Sabio 2010). Accreditation and quality assurance in Thailand are jointly administered by the Office of Higher Education Commission (OHEC) and the Office for National Education Standards and Quality Assessment (ONESQA) (public organization). The OHEC is responsible for accrediting and granting the establishment of HEIs, as well as overseeing internal quality assurance based on the NQF (OHEC 2006). ONESQA oversees external quality assurance for education institutions at all levels.

All three countries are in the early stages of designing, implementing, and integrating learning outcomes assessment into a comprehensive quality assurance system. The implementation is modeled after the European Union and Bologna Process initiatives. The development of the NQFs and learning outcomes is based on AUN-QA, ASEAN Mutual Recognition Agreements (MRAs),[3] and qualifications frameworks in different countries.

---

[2] The scope of Thai NQF solely covers the higher education level.

[3] MRA is an ASEAN's initiative. It is a framework for developing professional practices and qualifications among member countries. The objective of MRA is to support a mobility of skilled labor and services within a region.

Each country has implemented and used the NQFs[4] as the reference point for learning outcomes' identifications and assessment. The NQFs also serve as the foundation for the development of specific learning outcomes for discrete areas of study.

Each NQF covers both academic and professional competencies. Academically oriented competencies generally focus on research and knowledge comprehension and creation and information delivery, while professional competencies treat application of knowledge and career skills. Every NQF focuses attention on outcomes that cultivate social responsiveness, such as ethical and moral awareness, leadership and self-reliance, and social skills and responsibility. The NQFs also distinguish the level of competencies students are expected to possess, based on degree levels. Students in graduate education programs are expected to have a greater comprehension of disciplinary knowledge subjects and the ability to conduct original research. Graduate students must also demonstrate communication skills and apply knowledge in multidisciplinary academic contexts and complex professional practices. Lastly, learning outcomes in each NQF allow every subject area to use them as a standard for assessment. The domains and level of learning outcomes in higher education of the three countries are as shown in Appendix 2.

In all three countries, the NQF became the standards criteria for quality assurance, curriculum design, and mutual qualifications recognition at both national and regional levels. In Malaysia and the Philippines, quality registration is done based on the NQF. In Thailand, the NQF is a foundation for higher education institution internal quality assurance. The NQF also provides for government-business-university cooperation and consultation, particularly in identifying learning outcomes for specific areas of study, for instance, hotel and tourism professionals, accountancy, and medical practitioners, which are the priority areas in ASEAN.

QUALITY ASSURANCE IMPLICATIONS IN ASEAN

Learning outcomes assessment has been integrated in quality assurance systems in all three countries. The domains and levels of learning outcomes in NQFs are now national standards for education and training. The quality assurance agencies and HEIs are obliged to use learning outcomes as

[4] They are Malaysia Qualifications Frameworks, the Philippines Qualification Frameworks, and Thai Qualification framework for higher education.

a benchmark for quality audit and assessment. Malaysia and Thailand employ learning outcome assessment as a part of internal quality assurance, which is based on self-evaluation. The Philippines uses learning outcomes assessment as a foundation for institutional quality registration and oversight. Each year, higher education institutions are required to allow public access to their annual reports. These quality assessment approaches offer a basis for quality improvement and budget preparation.[5]

Contested Views of Learning Outcomes Assessment and Standardization

Proponents of the NQF's argue that the learning outcomes assessment will facilitate quality control in higher education and will support the achievement of economic and societal objectives. With clear assessment criteria, HEIs will enhance education quality and accountability (Burke et al. 2009; Young 2007). The logic is that learning outcomes and assessments protect students from low-quality domestic and foreign higher education providers. In addition, the government may use assessment results as a basis for education policy formulation and budget allocation. The implementation of learning outcomes assessment will reduce the mismatch between graduates' competencies and the needs of employers (Bouder 2008; Cranmer 2006). It is also an opportunity to foster cooperation between government, the business sector, and higher education, which will eventually enhance economic competitiveness of the country (European Commission 2008). It provides HEIs a clear framework for curriculum design and quality enhancement. In the past, curriculum design and student assessment were based on what teachers intended to teach and how well students absorbed the content. This teacher-centered approach did not provide clear assessment criteria and was deemed ineffectual. Without these elements, it is very difficult for teachers, higher education institutions, and their overseeing bodies to benchmark and evaluate education quality. The learning outcomes assessment approach alleviates these challenges (Kennedy et al. 2006). Advocates of institutionalizing assessments in ASEAN further argue that this will facilitate internationalization of the student body, resulting in revenues from an increase of nontraditional and foreign students (Tham 2010).

---

[5] Only for public higher education institutions in Thailand.

Although the implementation of the NQFs and learning outcomes assessment has been adopted in various countries, concerns continue over their awareness and implementation. With limited expertise, HEIs and quality assurance agencies have to train their faculty and staff, work collaboratively with business sectors, and produce guidelines and reports to support and fulfill requirements for their implementation (Young 2005). The overall process increases administrative and clerical tasks in a context of an expanding organizational endeavor. Additionally, the implementation of learning outcomes assessment may distort the diversity of programs and characteristics of higher education institutions because of its centralized tendencies and standardized nature (Karseth 2010).

LEARNING OUTCOMES ASSESSMENT AND THE ROLE OF GOVERNMENT

Although the quality assurance and accreditation processes in ASEAN countries are centralized, their implementation varies. If only because higher education systems in these countries are supervised by multiple government agencies. Additionally, the individual governments treat and frame their quality and accreditation requirements for public and private HEIs differently, as suggested in Appendix 3. Hence, these countries are experiencing challenges in consistency, transparency, and accountability of quality assurance and accreditation processes. Learning outcomes assessment provides a clear framework for the evaluation and accreditation of programs and institutions. These agencies are able to use learning outcomes assessment to enhance consistency, transparency, and accountability of the quality assurance and accreditation process.

IMPLEMENTATION CHALLENGES IN ASEAN COUNTRIES

The adoption of learning outcomes assessment creates concerns among faculty and higher education administrators. Some worry that learning outcomes may limit intellectual curiosity and inquiry among students (Kennedy et al. 2006). This position holds that study at the graduate level should be multidisciplinary and open-ended. This feature of graduate education may be limited by the narrow learning outcomes assessment framework. The language and terms used in learning outcomes descriptions may also further constrain the thinking processes of students. According to this line of reasoning, misinterpretation of terms

may influence curriculum design and the learning process itself (Bouder 2008; Rauhvargers 2004).

Critics of a constrained and unified approach to learning in the three ASEAN countries question the very foundation upon which standardized learning outcomes have evolved. They cite a lack of timely, accurate, and comprehensive data on the labor market to help guide the identification of suitable competencies. Unless government officials consider labor market information at both national and international levels, the validity and comparability of learning outcomes and qualifications will be affected and may result in reduced prospects for employment of program graduates. They also believe that HEIs lack of expertise in identifying and linking learning outcomes to assessment criteria. Since learning outcomes define minimum acceptable requirements, inaccurate data may adversely influence a students' ability to pass a module or graduate. Concerns exist that many students may aim at achieving minimum requirements instead of their highest levels of performance. Lastly, government, quality assurance agencies, and HEIs lack training in adopting and implementing learning outcomes assessment processes. These challenges are evidenced not only in ASEAN but also in European and Bologna Process member states.

Concluding Remarks

Within an increasingly competitive global economy, the assessment of learning outcomes and accreditation are looked upon as essential quality control mechanisms. In this context, assessment of learning outcomes is not unique to graduate programs. Our study provides a comparative overview of prevailing practices, while leaving this important subject matter as fertile ground for advanced applied research relating to higher education policy and practices.

APPENDIX 1: GRADUATE EDUCATION IN THE USA, MALAYSIA, THE PHILIPPINES, AND THAILAND

	Malaysia	Thailand	The Philippines	United States
Degree	• Graduate diploma • Master's • Doctoral			• Graduate diploma • Profession; for instance, medical doctor, juris doctor, and doctor of dental surgery • Master's • Doctoral
General requirements				
Professional degree	Most programs are a combination of bachelor's and graduate programs. Students are not required to complete a bachelor's degree prior to the enrollment. Nevertheless, the number of credits is more than bachelor's programs in other areas		Students need to obtain the first bachelor's degree prior to the enrollment	
Master's	• To complete a degree, students need to complete at least 40 credits	• To complete a degree, students need to complete at least 36 credits	• N/A	• To complete a degree, students need to complete at least 36 credits

Doctoral	• To complete a program, students need to complete dissertation and pass oral and, in some cases, written examinations	• To complete a program, students need to complete at least 72 credits and dissertation • In some programs, publications and/or conference paper are required	• To complete a program, students need to complete required coursework and dissertation • For medical programs, students need to complete clinical clerkship, internship, and a 3–5 year residency program	• To complete a program, students need to complete required coursework and dissertation
Quality assurance approaches	• Accreditation by MQA	• Accreditation by the OHEC and professional associations • Professional licensure through professional associations' examinations	• Accreditation by the Commission on Higher Education • Professional licensure through professional associations' examinations	• Accreditation by six regional agencies, professional associations, and state authorities • Professional licensure through states and/or professional associations' examinations

Sources: ASEM Education Secretariat (2010), Burke et al. (2009), and SEAMEO RIHED (2006)

APPENDIX 2: HIGHER EDUCATION LEARNING OUTCOMES IN MALAYSIA, THE PHILIPPINES, AND THAILAND

Countries	Domains of learning outcomes	Level of learning outcomes		
		Bachelor's	Master's	Doctoral
Malaysia	• Knowledge and practical skills • Social skills and responsibilities • Value, attitudes, and professionalism • Communication, leadership, and team skills • Problem-solving and scientific skills • Information management and lifelong learning skills • Managerial skills	• Comprehension of basic principles of a field of study • Ability to argue, solve problems, and use data to support decision making • Communicate idea, problems, and solutions effectively • Demonstrate team working skills and interdependent study skills	• Demonstrate additional comprehension of knowledge in a field of study • Ability to solve problems, make a decision, and manage complex matters in multidisciplinary contexts • Ability to clearly communicate • Ability to pursue higher level of education	• Demonstrate systematic, in-depth comprehension and research ability in subject matter • Ability to use original research to create, broaden, and contribute to knowledge • Ability to analyze, evaluate, and synthesize ideas • Ability to communicate to society at large

The Philippines	• Knowledge, skills, and values • Application • Degree of independence	• Demonstrate comprehension of broad and coherent knowledge and skills • Ability to apply knowledge and skills in professional and academic work • Ability to work as a team with minimal supervision	• Demonstrate comprehension of advanced knowledge and ability to apply it in specialized or multidisciplinary contexts, professional work • Ability to work independently and be a team leader	• Demonstrate comprehension of highly advanced systematic knowledge and ability to apply it in complex multidisciplinary field of learning or professional practice • Ability to work independently with significant level of expertise and be a team leader
Thailand	• Ethics and morals • Knowledge • Cognitive skills • Interpersonal skills • Analytical skills	• Demonstrate comprehension of body of knowledge in a field of enquiry or professional practice • Ability to investigate and solve complex problem with appropriate techniques and limited guidance	• Demonstrate thorough understanding of discipline or professional practice • Ability to use advanced research techniques and use findings to solve problems • Ability to communicate in written and verbal forms	• Demonstrate thorough understanding of a body of advanced knowledge and research in an academic or professional field • Ability to create, interpret, and document new knowledge through original research, or the application of theory and research in a major contribution to professional practice

Sources: Malaysian Qualifications Framework, the Philippines NQF, and Thai Qualification Framework for Higher Education

Appendix 3: The Government Agencies Responsible for Education Administration

Countries	Responsible agencies	Quality assurance mechanism	Quality assurance agencies
1. Malaysia	• Ministry of Education (basic education) • Ministry of Higher Education (higher and vocational education)	Voluntary institution and program accreditation, unless it is required by the government	MQA
2. The Philippines	• Ministry of Education (basic and vocational education) • Commission on Higher Education	Compulsory institution and program accreditation by Commission on Higher Education	Commission on Higher Education and the Federation of Accreditation Agencies
3. Thailand	Ministry of Education	Compulsory institution and program accreditation	Ministry of Education and ONESQA

Sources: SEAMEO RIHED (2006) and MQA (2008)

References

Allan, J.1996. "Learning Outcomes in Higher Education." *Studies in Higher Education* 21(1):93–108.

Amaral, A., M.J. Rosa, and D.A.Tavares. 2009. "Supra-national Accreditation, Trust and Institutional Autonomy: Contrasting Developments of Accreditation in Europe and The United States." *Higher Education Management and Policy* 21(3):15–32.

AQF Advisory Board. 2007. *Australian Qualification Framework: Implementation Handbook*. Victoria: Australian Qualifications Framework Advisory Board.

ASEM Education Secretariat. 2010. *Credit Systems and Learning Outcomes in ASEM Member Countries*. Bonn: ASEM Education Secretariat.

Association of American Universities. 1998. "Committee of Graduate Education: Report and Recommendations." https://www.aau.edu/WorkArea/Download Asset.aspx?id=1686.

Bogue, E.G. and K.B. Hall. 2003. *Quality and Accountability in Higher Education: Improving Policy, Enhancing Performance*. Westport: Praeger.

Bouder, A. 2008. "European Qualifications Framework: Weighing Some Pros and Cons Out of a French Perspective." *Journal of European Industrial Training* 32(2): 114–26.

Burke, G., McKenzie, P., Shah, C. Keating, J. Vickers A., Fearnside, R. and Andrea Bateman. 2009. *Mapping Qualifications Frameworks across APEC Economies*. Singapore: APEC Secretariat.

Cranmer, S. 2006. "Enhancing Graduate Employability: Best Intentions and Mixed Outcomes." *Studies in Higher Education* 31(2):169–84.

Eaton, J.S. 2009. "Accreditation in the United States." *New Directions for Higher Education* 145:79–86.

European Commission. 2004. *ECTS User's Guide*. Brussels: European Commission.

———. 2008. *Explaining the European Qualifications Framework for Lifelong Learning*. Brussels: Office for Official Publications of the European Communities.

Harvey, L. and D. Green. 1993. "Defining Quality." *Assessment and Evaluation in Higher Education* 18(1):9–34.

Karseth, B. 2010. "Qualifications Frameworks for the European Higher Education Area. A New Instrumentalism or 'Much Ado about Nothing?'" *Reencuentro* 58:6–16.

Kennedy, D., Á. Hyland, and N. Ryan. 2006. *Writing and Using Learning Outcomes: A Practical Guide*. Brussels: Raabe Academic Publishers.

Malaysian Qualifications Agency. 2007. *Malaysian Qualifications Framework*. Kuala Lumpur: Malaysian Qualifications Agency. http://www.mqa.gov.my/mqr/english/ePengenalanMQF.cfm.

———. 2008. *Proceedings of the ASEAN Quality Assurance Agencies Roundtable Meeting*. Kuala Lumpur: MQA.

McGhee, G.S. 2006. *Supplemental Testimony*. Lynn Haven, FL: Florida Higher Education Accountability Project. http://home.earthlink.net/~fheapblog/id20.html.

Middaugh, M.F. 2010. "Assessing General Education Competencies within Academic Disciplines." *Peer Review* 12(1):102.

Middle States Commission on Higher Education. 2006. *Characteristics of Excellence in Higher Education*. Philadelphia, PA: Middle States Commission on Higher Education. http://www.msche.org/publications/CHX06_Aug08REVMarch09.pdf.

Moon, J. 2004. "Using Reflective Learning to Improve the Impact of Short Courses and Workshops." *Journal of Continuing Education in the Health Professions* 24(1):4–11.

Neal, A.D. 2008a. "Dis-Accreditation." *Academic Questions* 21(4): 431–45.

Neal, A.D. 2008b. "Seeking Higher-Ed Accountability: Ending Federal Accreditation." *Change* 40(5):24–9.

Office of the Higher Education Commission. 2006. *National Qualifications Frameworks for Higher Education in Thailand: Implementation Handbook*. Bangkok: Office of the Higher Education Commission.

Rauhvargers, A. 2004. "Improving the Recognition of Qualifications in the Framework of the Bologna Process." *European Journal of Education* 39(3): 331–47.

Ruiz, A.J. and C. Junio-Sabio. 2010. "Quality Assurance in Higher Education in the Philippines." *Asian Journal of Distance Education* 10(2):63–70.

SEAMEO RIHED. 2006. *Higher Education in South-East Asia*. Bangkok: UNESCO Asia and Pacific Regional Bureau for Education.

Schray, V. 2008. *Assuring Quality in Higher Education: Key Issues and Questions for Changing Accreditation in the United States.* Washington, DC: Department of Education. The Secretary of Education's Commission on the Future of Higher Education. http://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/schray.pdf.

Tham, S.Y. 2010. "Trade in Higher Education Services in Malaysia: Key Policy Challenges." *Higher Education Policy* 23(1):99–122.

Thomas, G. and J.A. Douglass. 2009. "Decoding Learning Gains: Measuring Outcomes and the Pivotal Role of the Major and Student Backgrounds SERU Project and Consortium Research Paper." In *Research & Occasional Paper Series: CSHE.5.09.* Berkeley, CA: Center for Studies in Higher Education.

Young, M. 2005. *National Qualifications Frameworks: Their Feasibility for Effective Implementation in Developing Countries.* Geneva: ILO.

Young, M. 2007. "Qualifications Frameworks: Some Conceptual Issues." *European Journal of Education* 42(4):445–57.

Challenges and Strategic Development of PhD Education of Fu Jen Catholic University

Shang-Shing P. Chou, Chih-Hsien Yang, and Gregory S. Ching

Introduction

Within the past decade, Taiwan's population has been steadily dropping. This is largely due to the continuous record of low yearly birthrates. Many researchers fear that the steady drop in Taiwan's population will eventually force many higher education institutions (HEIs) to close down (AFP 2009). In reality, this drop of student enrollees is perhaps most strongly experienced within the PhD programs. Recent statistics show that PhD student applications are at an all-time low. Data show that PhD program applicants for the five best national universities in Taiwan (National Taiwan University, National Tsing Hua University, National Chiao Tung University, National Cheng Chi University, and National Cheng Kung University) have dropped from about 3000 in 2009 to around 2000 in 2012 (33 % decrease) and are still dropping. The worst situations are actually experienced within the PhD

S.-S. P. Chou (✉) • C.-H. Yang • G.S. Ching
Fu Jen Catholic University, New Taipei City, Taiwan

programs of private HEIs. It is feared that if the current trend persists, many universities in Taiwan will eventually close down their PhD programs.

It is noted that the declining numbers of prospective PhD applicants are partly due to the current surplus of PhD graduates in Taiwan tandem with much uncertainty about future employment prospects. Government statistics show that there were a total of 271,306 PhD graduates from 1991 to 2009. Additional statistical data from 2011 show that the percentages of employment for PhD graduates of science and social sciences backgrounds are 64 % and 40 %, respectively. It seems that the fear for unemployment has started to plague the vast majority of PhD students.

Fu Jen Catholic University (FJCU) also faces the problem of a declining number of PhD applicants. Therefore, in order to better understand the current and future challenges of FJCU PhD programs, the authors conducted a series of focus-group interviews with doctoral candidates, current and prospective doctoral students, graduate program directors, and top-level university administrators. Issues discussed included the present and future challenges faced by FJCU PhD programs and how FJCU can face these challenges. In addition to the focus-group interview results, various background and statistical data from FJCU graduate school programs were also collected and analyzed.

Background of FJCU

FJCU is a comprehensive university founded by the Holy See of the Vatican originally in Beijing in 1925 and re-established in Taiwan in 1961. Currently, the university has 11 colleges: liberal arts, arts, education, communication, foreign languages, science and engineering, human ecology, law, social sciences, management, and medicine, comprising 48 departments, 47 master's programs, 22 in-service master's programs, 11 PhD programs, and 16 departments in the School of Continuing Education. The land capacity of the university is about 35 hectares, and current student enrollment is approximately 26,000. The university has 287 sister schools worldwide. The university strives to provide students with a diversified, holistic, interdisciplinary, and international learning environment.

The work reported on employed the descriptive research paradigm, a research method that focuses on how what is present in current circumstances relates to some preceding event that has influenced or affected a

present condition or event. According to Best (1970), descriptive research is concerned with conditions or relationships that exist; practices that prevail; beliefs, points of views, or attributes that are held; processes that take place; effects that are felt; or trends that develop. Such studies look at individuals, groups, institutions, methods, and materials in order to compare, contrast, classify, analyze, and interpret the entities and events that constitute their various fields of inquiry.

In addition, this study also used a focus-group interview method in collecting the data. Focus-group interviews are among one of the most widely used qualitative research tools in social sciences studies. The focus group represents a number of interacting individuals having a community of interest, while an interview allows the presence of a moderator who uses the group as a device for eliciting information (Stewart and Shamdasani 1990). The use of a focus group also means that the interviews are limited to a small number of issues (Smith 1954). Focus groups are unique in that they openly call for respondents to interact with one another in formulating responses to interviewers' questions. In the case of the current study, participating groups consisted of graduate students (master's and PhD), college deans and department heads of PhD programs, and top-level university administrators.

Process and Participants

This study was initiated with the consensus that there is indeed a need to understand and analyze the current doctoral programs in FJCU. Hence, three separate focus-group interview sessions (FG1–FG3) were conducted in February and March of 2014. For FG1, a total of 31 graduate students participated, including doctoral candidates, current, and prospective doctoral students. Various questions and information regarding the students' present and future challenges were discussed and collected. After consolidating responses to the various issues and themes gathered from FG1, a session (FG2) for the college deans and department heads was then organized, comprising 20 school administrators (see Table 8.1 for more details) from which comments and summaries of more general discussion were collected. Lastly, after the data from FG1 and FG2 were consolidated, a final session with the top administrators was conducted. FG3 was composed of 12 top-level administrators in charge of the overall (future) direction of the university. Different issues were discussed, and possible solutions were proposed.

Table 8.1 Participants of the study

Session	Status/position	n
FG1	PhD candidate	11
	PhD student	9
	Master student	11
FG2	Vice president	1
	Dean (administrative)	1
	Dean (academics)	6
	Associate dean (administrative)	1
	Department/program head	11
FG3	President	1
	Vice president	3
	Dean (administrative)	5
	Associate dean (administrative)	1
	Director (administrative)	2

DATA ANALYSIS

Data from the FG1, FG2, and FG3 groups were analyzed using the Miles and Huberman's (1994) methods for generating meaning from transcribed and interview data. Their methods consist of noting patterns and themes, clustering items into categories, building logical chains of evidence through noting causality and making inferences, and making conceptual coherence that allow typically large amounts of qualitative data to be reduced (Cohen et al. 2007). In addition, Glaser's (1978) notion of constant comparison was also used when reviewing previous results of the focus-group sessions, subsuming particulars into more general categories, and forming similar categories into indicators.

RESULTS AND DISCUSSIONS

In order to understand the various current issues and future challenges faced by FJCU PhD programs, the data were organized into three categories, namely graduate students' concerns, administrators' concerns and strategies, and institutional goals and directions.

Graduate Students' Concerns

In the student session, the majority of those participating mentioned four key issues: financial concerns—issues related to the university's tuition fees and the availability of scholarships; future employment—career

counseling, internships, and in-campus employment opportunities; resource allocations—issues related to course subjects, dissertation advisors, and educational resources; and communications channels—communications within their departments (graduate program) and with university administrators. Table 8.2 provides a more detailed description of these various concerns.

Financial costs and the uncertainty of future employment are the two most important issues that concern graduate students. Comparing public (national) universities in Taiwan, the tuition fees of private universities are

Table 8.2   Students' major concerns and issues

Theme	*Specific issues*
1. Financial concerns	1.1 Tuition fees too high even for in-service (on the job/working) students
	1.2 Limited scholarship as compared to public universities
	1.3 Limited in-campus work opportunity
	1.4 Limited financial support in attending international conferences
	1.5 Too many restrictions when applying financial support for international conferences
2. Future employment	2.1 Decreasing number of university teaching positions
	2.2 Limited in-campus teaching opportunity
	2.3 Too many restrictions to obtain the instructor certificate (license)
	2.4 Limited post-doctoral positions
	2.5 Teaching assistant job opportunities are mostly given to master students
	2.6 Over qualification of PhD graduates to work in industry
3. Resource allocations	3.1 Students research/seminar room allocation
	3.2 Inconveniences such as noise and location of library
	3.3 Joint courses with master students
	3.4 Limited availability of courses
	3.5 Quality, availability, and maintenance of instructional facilities
	3.6 Faculty to student ratio
4. Communication channels	4.1 Limited opportunities to voice out opinions regarding academic and administrative issues
	4.2 Communications are mostly limited to dissertation adviser
	4.3 Lack of university-wide communications
	4.4 Lack of interdepartmental (interdisciplinary) communications

about 50 % higher. In addition, funding for attending international conferences is also limited. Besides the fallacy that national university graduates might have a better chance of getting a job as compared to those from private universities, these two issues have apparently become the most important determining factors for school choice. More importantly, the average age PhD student is already in their late 20s or early 30s. Many full-time PhD students claimed that it is quite disappointing that they would face joblessness after they graduate. However, even for the in-service students, struggling between work and research is still a tough undertaking.

With regard to resource allocations, students mentioned the quality of instructional facilities and the allocation of research rooms. More important, in order to keep certain course subjects open due to low student enrollments, joint master and PhD course subjects are being increasingly used. This means that some PhD course subjects would allow master degree students to enroll and attend in advance. However, PhD students noted that these joint courses with master students would tend to delimit in-class and hinder quality discussions. Students also focused on issues such as the number of advisee/supervisory students a faculty member would have to take. Many students have expressed their concerns with the quality of graduate supervision.

Lastly, issues regarding communication channels were also brought out. Students actually commended the opportunity to voice their thoughts and opinions through the focus-group discussions. Graduate students all agreed that some sort of forum is needed and should be held periodically. They believe that through proper communication channels, many issues that need to be solved can be thoroughly discussed.

Administrators' Concerns and Strategies

Table 8.3 shows that the most immediate issue for administrators is the enrollment of FJCU PhD programs. The falling number of student applicants has been consistently observed the past few years. One possible cause

Table 8.3   Administrators' concerns

Theme	*Specific issues*	
1. Enrollment concerns	1.1	Decreasing number of doctoral student applicants
	1.2	Difficulty to retain excellent homegrown master's students

has been the drop of the total number of PhD applicants nationwide, which actually opened up more opportunities for FJCU homegrown master degree students to be accepted in PhD programs offered by the national universities (instead of remaining in FJCU).

To this point, we have focused primarily on the negative issues that were raised by FG1. Table 8.4 indicates the responses of department administrators and program coordinators (FG2) to these various students concerns and suggestions. Department heads unanimously agreed that the provision of scholarship funds would indeed attract potential and more capable PhD students. However, *providing scholarships* (partial or even full scholarships) might increase the enrollment temporarily, but a more serious concern is whether the job market (industry) could accept the many PhD students that would result from this form of subsidy. Some other important responses that might address this employment issue include purposefully aligning the courses (or even the entire PhD program) with the needs of given industries and assisting students in their career planning so as to bridge the gap between graduate education and industry.

Some students suggested an expansion of the in-service master programs, since many of the in-service master's students are actually untapped resources of the university. They not only increase the income of the university, but are also able to provide useful information and resources for finding future employment. In addition, these in-service master's students are also a viable source of future PhD enrollees, yet with lesser financial difficulties.

Besides the various strategies mentioned in Table 8.4, many departments actually have their own specific schemes for helping the students. Some departments have already offered teaching opportunities for their PhD students, which are highly commended by the students. It seems that the intrinsic differences of some PhD programs and their related markets produce somewhat different approaches to solving their problems. Therefore, one objective of this study has been to open up communications between the university and the students. On closer inspection, many issues can be resolved within their own departments, as long as discussion and consensus between the students and department can be accomplished.

Institutional Goals and Directions (FG3)

In order to define the institutional goals and directions of FJCU, it is quite important to determine the university's classification with various higher education discourses. The Carnegie Foundation's classification criteria hold

Table 8.4   Administrators' (FG2) responses to students' concerns and suggestions

Themes	Students' request	Specific strategies
1. Financial concerns	• Establish more scholarship	• Full scholarship for excellent students • Additional scholarships from the earnings of in-service master programs • Additional financial assistance to the students in need
	• Provide additional work opportunities	• Part-time teaching positions (instructorship) • Increased teaching assistantship
2. Future employment	• Increase the employment opportunity	• Alumni assistance in employment and internship • Increasing post-doctoral positions (partner universities, research institutes, etc.)
	• Assist in career preparation	• In-campus internship • Co-teaching with professors • Lessen the instructor license requirements
	• Provide career guidance	• Experience sharing of the alumni • Establish the job market database • Increase of career guidance and planning activities
3. Resource allocations	• Improve the quality of graduate students' research rooms and facilities	• To be discussed and implemented by each department
	• Increase the number of faculty	• Set the student-teacher ratio and the number of advisee students • Increase the number of part-time faculty
	• Cooperation of the faculty with the industry	• Encourage and support the faculty to cooperate with the industry
	• Strengthen interdisciplinary learning opportunities	• Enhance the interdisciplinary PhD programs • Collaborate with partner institutions • Establish networking for graduate students
4. Communication channels	• Increase communication opportunities	• Periodic dialogs with graduate students • Establish a system of knowledge and experience sharing
	• Increase the reputation of FJCU PhD programs	• Promote programs' uniqueness and strengths • Disseminate the information about the PhD programs

(continued)

Table 8.4   (continued)

Themes	Students' request	Specific strategies
5. Enrollment concerns		• Provide scholarships to encourage enrollment • Full scholarships for excellent students • Expand the in-service master programs • Interdisciplinary graduate programs

that if an institution conducts doctoral programs and awards at least 20 doctorates each year, the institution deserves to be classified as a Doctorate-granting University or Research University (DRU) (Shulman 2001). Hence, FJCU is considered a research university. With this clarification, discussions that involve institutional goals and directions are much clearer and easier to achieve.

In the top-level administrative session, two major themes were discussed: the *future direction of the PhD programs* in FJCU and the *development of graduate students and increasing their employability*. With regard to the future direction of PhD programs, issues were raised regarding the different application, enrollment, and acceptance rates of various programs. Some PhD programs have a high demand (judged by their very low acceptance rate), while others have the problem of low enrollment. With a consensus that closing down some of the PhD programs was not an option, the *reevaluation of a program's core offerings* was suggested. Participants noted that developing a program's competitive advantages and uniqueness while meeting the demand of the job market should be of constant consideration.

In addition, the possibility offering of interdisciplinary PhD programs should be taken into account. Various studies have noted the importance and advantages of developing interdisciplinary PhD programs, especially given the rapid pace and reach of the information and knowledge revolution (Rice 2003; Washington State University 2008). Furthermore, recruitment of international PhD students from various sister institutions (including universities from Mainland China) and from the Association of Christian Universities and Colleges in Asia (ACUCA) member schools could also help build up FJCU's diversity. Last, in order to maintain a balance between the PhD programs of high and low demand; the number of PhD openings per program should be dynamically adjusted. This would be accomplished by treating the quota for incoming PhD students as flexible.

Hence, programs with high demand could increase their student number, instead of having to turn down willing applicants, while programs with low demand could reduce their student number.

As for the development of the graduate students and increasing their employability, besides the strategies mentioned at the departmental level, additional provisions were also made, such as analyzing the average years for PhD students to graduate within various programs and researching the reasons for and numbers of PhD students who are unable to graduate.

Conclusion

In summary, overall reviewing the state of the higher education system in Taiwan reveals a number of critical issues including those dealing with PhD programs. The phenomenon of decreasing numbers of PhD students is not a problem specific to FJCU as it is actually a national and global issue. Therefore, a consensus view at FJCU is that institutions should cooperate and help one another to face the future challenges of PhD education. In order to solve these problems, HEIs should not only look outside at the job market, but also look within the university itself to review the nature, quality, and suitability of doctoral programs. Ultimately, knowing one's strength and accepting one's limitations are the first steps in seeking a good solution. As an HEI in Taiwan, FJCU stands to embrace these challenges with an open mind for change and a determination to enhance the core competencies of the PhD students.

References

AFP. 2009. "Dwindling Taiwanese Birth Rate Causes Worry." *Taipei Times*, November 24.

Best, J.W. 1970. *Research in Education*. Englewood Cliffs, NJ: Prentice Hall.

Cohen, L., L. Manion, and K. Morrison. 2007. *Research Methods in Education*. New York: Routledge.

Glaser, B.G. 1978. *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Mill Valley, CA: Sociology Press.

Miles, M. and M. Huberman. 1994. *Qualitative Data Analysis*, 2nd ed. Beverly Hills, CA: Sage.

Rice, M.L., ed. 2003. *Recruiting and Training Future Scientists: How Policy Shapes the Mission of Graduate Education*. Lawrence: University of Kansas, Merrill Advanced Studies Center.

Shulman, L.S. 2001. *The Carnegie Classification of Institutions of Higher Education*. Menlo Park, CA: Stanford.

Smith, G.H. 1954. *Motivation Research in Advertising and Marketing*. New York: McGrawHill.

Stewart, D.W. and P.N. Shamdasani. 1990. *Focus Groups: Theory and Practice*. Applied Social Research Methods Series, vol. 20. Newbury Park, CA: Sage.

Washington State University. 2008. "The Future of Interdisciplinary Doctoral Education at Washington State University." Accessed March 10, 2014. http://svr.gradschool.wsu.edu/Documents/PDF/InterdisciplinaryDoctoral EducationFinal2.pdf.

Improving the Quality of Contemporary Graduate Education: A Proposal for Nurturing Future Civic-Minded Professionals

Farrah Dina Yusop

INTRODUCTION

Acquiring a postgraduate degree has become increasingly popular in today's culture. Many factors generate interest in this career path, including the general perception of achieving higher income along with government support and encouragement offered through various types of financial assistance, support-of-study leave to pursue a graduate degree, and higher social status, just to mention a few. As a consequence, enrollment in graduate programs has increased over the past few years.

Contemporary graduate education tends to be focused on preparing students to become scholars. Curricula of a graduate education will therefore typically consist of extensive coursework to ensure mastery of content in a specific field as well as a series of research methodology courses to enhance their skills in the conduct of research. This approach, preparing

F.D. Yusop
University of Malaya, Kuala Lumpur, Malaysia

graduate students as stewards of the discipline (Richardson 2006), also applies to many professional programs such as medicine, engineering, accounting, and many more, but with an additional emphasis on mastery of specific technical skills appropriate to the field of study.

Because graduate students are expected to study a topic of interest in depth and have been pressured to complete their studies in a relatively short time, many graduate education programs have focused on exposing students only to certain knowledge and skills deemed to be relevant for their future careers as academics or professionals in the field. This career-centric approach has led academics in higher education to give priorities to authentic pedagogical models that mirror actual practices and challenges students will likely face in real workplaces (Yusop and Correia 2012). Examples of such models are the studio-design model most popular in arts education, the action-learning model especially popular in teacher education, and the cognitive-apprenticeship model most often used in science-based courses.

These pedagogical models are undoubtedly effective in simulating real tasks and challenges students will encounter in their future careers. They also allow students to improve their problem-solving skills as they navigate through the many challenges of completing their course assignments. However, this chapter argues that such an authentic approach is still somewhat inadequate for graduate education. By focusing only on enriching students' knowledge about the profession they will enter and by sharpening the many skills necessary to complete their tasks at hand, the programs have neglected the main and central purpose of higher education, which is to prepare students as functional agents of social change. This chapter thus further argues that the missing element in contemporary graduate education is preparing students to be civic-minded professionals (CMPs), that is, consciously aware professionals being taught how to utilize their knowledge and expertise to bring about positive changes to society. This concept of professionalism is better known as civic professionalism.

The next section discusses concepts of civic professionalism practiced by CMPs as advocated by many scholars, especially those involved in sociology and philanthropic studies (Hatcher 2008).

Conceptions of Civic Professionalism and CMPs

According to Hatcher (2008), the concept of civic professionalism has been discussed in the context of many disciplines, including education (e.g. Kennedy 2005; Peters 2004), history (e.g. Kimball 1996), philosophy

(e.g. Dewey 1927), political science (e.g. Dzur 2004), nursing (e.g. Day 2005), and law (e.g. Halliday 1999). However, its roots can be traced back to the popular American philosopher Dewey (1927) in his book *The Public and Its Problems.*

John Dewey, an American philosopher of the early twentieth century, described a CMP as one with the public interest at the forefront of his or her professional work and a sense of civic responsibility to conduct this work for the advancement of the social good (1927). Dewey believed that professionals can serve as critical intermediaries to educate the public on the effects of larger social and economic forces and, consequently, can shape them to accommodate public needs (Dzur 2004).

Unlike Tocqueville et al. (2000), who stressed the importance of public participation and task sharing between professionals and the public both in township government and in the judicial system, Dewey (1927) was more interested in the idea of professionals as catalysts supporting public participation in democracy.

Specifically, Dewey (1927) thought of professionals as experts who do not just "represent and act for the public," but rather would "facilitate the public's solution to social problems" either directly—by "providing analysis for motivated community groups," or indirectly—by "influencing the conduct of other professions" (Dzur 2004, p. 11).

Thus Dewey rejected the liberalist's view of knowledge and intelligence as an "individual possession" (1927, p. 47). Rather, he advocated for the concept of social "scientific intelligence" that refers to the "egalitarian distribution of the capacity for scientific thinking and its incorporation into democratic decision-making in the polity, workplace, and elsewhere" (Westbrook 1991, p. 187). From this point of view, knowledge is considered to be a social asset of the society (Boyte 2003) that needs to be shared through dialogic conversations and interactions (Hatcher 2008).

Sullivan (2004, 2005) has expanded on Dewey's (1927) civic professionalism by proposing two concepts of professionalism: technical and civic. Technical professionalism supports the view of professionals as experts with specific knowledge and skills. These professionals are considered as "purveyor(s) of expert services" (Sullivan 2005, p. 9). Conversely, civic professionalism refers to the ideal of social reciprocity between professionals and the public, that is, the people they profess to serve, in which "professionals … learn to bring their particular expertise into a larger, more complex deliberation about ends as well as means" (Sullivan 2005, p. 279). What really distinguishes each concept is the ethical dimension

of professionalism that is "institutionalized in the profession's social contract" (Sullivan 2005, p. 23) with the public. For Sullivan (2004, 2005), this dimension is the most essential, yet most jeopardized, dimension of professionalism.

Sullivan (2004) has further argued that professionals and their professions are directly pledged to the ideals of public service. Professionals make an implicit pledge and social contract with the public that they will deploy their skills and expertise to advance "the social values in the interest of those they serve" (Sullivan 2004, p. 15). He argues that this responsibility and orientation toward public values are the important characteristics that distinguish professionals from other knowledge workers. From this point of view, an individual professional acts as a community or social trustee of knowledge.

In addition, Sullivan contended that being a professional is not limited to being a member of a professional organization and achieving certain public status and authority. Professionals also need to assume their civic identities by ensuring that their work contributes toward adding "to the public value for which the profession stands" (2004, p. 23). Assuming such civic identities requires the application of two things. First, professionals must show that their intentions are "public-regarding" (Peters 2004, p. 48). Second, the practices that professionals undertake must be for "public-regarding ends and in a public-regarding way" (Hatcher 2008, p. 25). This is crucial because the public expects that professionals will contribute to sustaining and improving public values or, in economic terms, "public goods" such as "health care, civil regulation and social justice, technological safety, and environmental regulation, publicly available information that is reliable and comprehensible, and high-quality education" (Hatcher 2008, p. 4). In other words, civic professionals are and should be "active participants in civic life," who "cast their identities, roles, and expertise around a democratic, public mission, suffusing their technical competence with civic awareness and purpose" (Peters 2004, p. 48).

Civic professionalism emphasizes social reciprocity between professionals and the public. This reciprocal relationship is vital because most of the critical social issues cannot be resolved without drawing upon professional expertise. Similarly, professionals' lack of understanding of social contexts may not be useful in solving public deliberations. This is why "furtherance of civic orientation among professionals is becoming increasingly significant" (Sullivan 2005, p. 279).

Additionally, Sullivan's (2004, 2005) civic professionalism held individual professionals accountable for their own ethical actions. This concept stems from the perspective of ethics of virtue or character derived from Aristotle's "conception of practical rationality" (Sullivan 2005, p. 265) and was later influenced by pragmatists like John Dewey and George Herbert Mead. Its concern is on "ethics upon character and mores, those shared habits of character upon which individual responsibility and virtue depend" (Sullivan 2005, p. 265).

In sum, Sullivan (2004, 2005) views a CMP as an active participant in civic life, who (a) acts as a community or social trustee of knowledge with the public he/she professes to serve and (b) utilizes his or her technical expertise to contribute to enhancement of public goods and solving public or social problems. He also points out the concept of "civic identity" of a CMP, defined as (a) having the intention to serve the public and (b) translating this intention into actual practice. This chapter shares this perspective.

Characteristics of CMPs

Sullivan's (2004, 2005) conception of civic professionalism establishes solid ground on which to further define the qualities or characteristics of CMPs. However, little empirical research has previously been done to offer a working definition of the term "CMPs" (Hatcher 2008). To address this gap in the literature, Hatcher (2008) conducted a study to help operationalize that term. Drawing from three bodies of literature—philosophy, political science, and philanthropic studies, Hatcher constructed a set of 31 characteristics of CMPs. These characteristics are clustered into the three main categories: knowledge, skills, and dispositions that made up Hatcher's CMP scale. Knowledge of the 31 characteristics of a CMP is useful in understanding the qualities of civic-minded instructional designers, as discussed below.

Hatcher's (2008) framework for CMP consists of three components: knowledge, skills, and dispositions. A CMP must be aware of current social problems and related opportunities to volunteer and perform pro bono work. Hatcher's work laid a good foundation for operationalizing the concept of a CMP. Yusop and Correia (2012) further add to this framework by proposing three interdependent contexts or settings that one's professional work will relate to each other. Adapting from Kaufman's (2009) organizational elements model (OEM) with three levels of organizational planning, they contend that a professional civic-minded instructional

designer functions in three interrelated contexts—micro, macro, and mega. Any professional working in one context not only functions in that particular context, but also will indirectly impact others working in the other two.

The micro context refers to an individual's immediate environment, such as the organization in which he/she works, the neighborhood in which he/she lives, or the school he/she attends. The macro context refers to an individual's extended environment, beyond the immediate environment, in which he/she is directly involved and to which he/she attributes membership. Examples include the country in which he/she lives and his or her socioeconomic status. The mega context refers to an individual's larger cultural environment in which he/she may be indirectly involved and to which he/she belongs at a level beyond the macro context.

They propose that a CMP should first consider problems existing within the immediate or micro context and design practical solutions to solve them. This work should also be applicable to the other two—macro and mega—contexts. For instance, a civic-minded instructional designer might develop instructional materials to educate members of the community in which he/she resides regarding actions to be taken in the case of natural disasters (i.e. the micro context). Using appropriate technologies, he/she may distribute these materials to wider audiences, for example, to people in other states (i.e. macro context) and/or countries (i.e. mega context), so that they, too, can benefit from them. In this example, the civic-minded instructional designer has utilized his/her instructional design knowledge and technological skills to convey knowledge of one important issue, safety, to others beyond his/her immediate context.

Service Learning as an Alternative Pedagogical Approach for Graduate Education

Up to the present, service learning has been widely recognized as the main pedagogical approach powerful enough to prepare students to become CMPs. Despite the absence of a unified definition of service learning, it has several characteristics to help distinguish it from other approaches.

Buchanan et al. (2002) outlined seven main principles of service learning: (1) students learn the course content as the result of service; (2) the application of course content is in a community setting; (3) there is allocation of time for reflection on experience; (4) there is mutual collaboration among participants; (5) the service is with, rather than for, the community

partner; (6) there are mutual benefits both for the students and the community; and (7) service learning is done in an area of one's expertise.

Advocates of service-learning assert that it can boost students' personal outcomes in such ways as increasing their personal efficacy, their ability to work well with others, and their development of leadership and communication skills (Eyler et al. 2001). In addition, service learning increases students' desire for community involvement (Manley et al. 2006). It also can be seen as a means to re-center students' education on human relationships rather than merely on course content (Matthews and Zimmerman 1999). By immersing themselves in service-learning projects, students can develop and enhance their sense of social responsibility and commitment to service. It allows them to discover their potential capabilities and to change the social and political systems in which they live. It also prepares them to work in culturally diverse contexts (Boyle-Baise and Kilbane 2000). Thus, service learning is the perfect instructional approach to directly connect graduate students and universities within the community and simultaneously prepare them for their future workplaces.

Service learning has been institutionally implemented in a majority of higher education institutions in the USA, including many prestigious universities such as Tulane University, Indiana University-Purdue University Indianapolis, Michigan State University, and the University of Massachusetts, Boston, to mention just a few. These service-learning programs are embedded within their actual academic programs, predominantly at the undergraduate level.

It would seem to be the case service-learning curricula at the graduate education level have not yet been formally institutionalized at all broadly. However, in 2005 a group of service-learning advocates and scholars formed the International Association for Research on Service-Learning and Community Engagement (IARSLCE). Currently housed within the Tulane University Center for Public Service (IARSLCE 2014 as per entry in the references list), its overall purpose is to promote "research and discussion about service-learning and community engagement," and it has proceeded to do so. The Graduate Student Network (GSN) of IARSLCE was subsequently established to support graduate students interested in conducting research related to service learning. Of particular interest is that GSN provides and monitors a systematic mentoring system for students in which members will be paired with and mentored by prominent scholars who will share their own research experiences and provide advice and guidance

with respect to conducting service-learning research. Such a direct research mentoring system is essential to grooming future scholars in the field.

What follows is an overview of exploratory case studies at three graduate education service-learning programs in three countries—the USA, Canada, and Malaysia. These case studies can provide understanding as to what to expect if an institution were to mandate the service-learning curricula in their own current graduate education programs. The focus is on the instructors' perspectives of the pedagogical models and on the benefits and challenges encountered in implementing such curricula in the context of a professional program.

The US Case Study

Students of the CIT 6113 Instructional Design course were required to work on self-chosen projects having social significance. The projects must provide a practical solution to a specific problem experienced by a disadvantaged group in the community. The students themselves were appointed to be the project managers of their respective projects. They were responsible for understanding the scope of the project and its alignment with the course content, for establishing and sustaining communications with the identified community group, and for working with them in the development of agreeable solutions. Among the projects was one involving design and implementation of hands-on training for community volunteers in proper sandbagging techniques in the event of flooding. Another was a project on educating financially at-risk pregnant young women about the importance of being insured so they could receive proper medical treatment during pregnancy, delivery, and the baby's first health inspections. Students also worked on designing an effective approach for training online school teachers responsible for teaching dropout school students via an online portal (Yusop and Correia 2013). All these projects were implemented within one 14-week interval of an academic session.

The Malaysia Case Study

The Malaysian academic program was modeled after the US academic program, but with a stronger emphasis on educating students with respect to civic professionalism. The first few weeks of the course were dedicated toward the discussion about that concept and making sure that the students

understood their social roles. As in the US study, students were fully in charge of their projects, but with close supervision from the instructor.

Because the Malaysian students were teachers and part-time adult learners in a greater majority than the US students, the instructor's main challenge was to ensure that the projects were manageable and relevant to their existing contexts. The project locations were thus limited to two settings in which the students spent the most time—their workplace and their residence areas. Some of the projects involved developing an online one-stop portal providing information about available financial assistance and work-at-home opportunities for single mothers, designing and developing online motivational audio books for blind college students, developing an instruction kit on premarital sex education for at-risk teenage girls, and developing an instructional blog to educate parents of young children about online predators.

The Canadian Case Study

The projects in the Canadian setting were quite similar to those in both the USA and Malaysian settings in terms of social significance; they were different in that the course was split between two 14-week semesters. In the first semester students would learn the theories, models, and other foundational components of Instructional Design, and in the second semester work on their projects. By splitting the course into two semesters, students were able to gain strong foundations in both theoretical and applied aspects of the course. Unlike in the US and Malaysian situations, Canadian students worked on one big project pre-identified by the instructors. Negotiations on the scope and outcomes of the project had therefore been discussed and agreed upon by both the instructors and the community group prior to the start of the semester. Because of this, the students' main focus was on designing and developing appropriate solutions for each community group's problem. Projects included website design and development for a senior citizens' organization, information design for an association working with people with intellectual disabilities, and redesign of a fetal alcohol syndrome publication related to First Nations people (Correia et al. 2010).

Lessons Learned

Despite the slight variations in the various models of implementing service-learning curricula at the three universities, the instructors found that students across all settings achieved a strong foundational understanding of

the course content as well as improved technical skills to be applied to their professional tasks. They also found that the students have a better awareness of and interest in their own community settings. As reported elsewhere in the service-learning literature, the experiences working with disadvantaged populations had enhanced their civic-minded instincts. Most important, the students in all three settings agreed that the experiences raised their appreciation of the professions they were about to enter because they could now better see how to utilize their professional knowledge and skills to contribute toward the improvement of society at large. These are the summarized versions of the findings. Details of the experiences will be given in a future publication.

The positive responses all instructors received from their students were accompanied by a set of instructional challenges. The most challenging requirement was finding enough time for very detailed and thorough planning and implementation, especially for the Canadian instructors who prenegotiated their students' projects long before the semester started.

For both the US and Malaysian instructors, the biggest challenge was to keep students motivated and inspired to continue with their projects, especially when their community partners' interest in active participation declined. Hence, the instructors simultaneously played dual roles of both class instructors and counselors. This aspect of the project sometimes was very intellectually and emotionally draining as instructors worked very hard to closely monitor student progress. Instructors also had to be available both offline and online almost 24×7—24 hours a day, 7 days per week—in case students needed help and advice in dealing with their community partners.

Nevertheless, all instructors at the three universities agreed that teaching and working with their students as well as with the community partners were truly rewarding experiences. They all felt that the students had become better connected with their community as active social members of the society who had meaningfully contributed to community advancement.

Conclusion and Final Thoughts

This chapter has argued that educating CMPs is one possible way to enhance the quality of an institution's graduate education programs. It has also highlighted service learning as an imperative instructional approach that should be seriously considered and implemented to achieve the grand

purpose of higher education, to prepare students to function as civic-minded positive-change agents for the society.

The latter sections of the chapter described three case studies that delved in-depth into the thoughtful, rewarding, and challenging experiences of instructors who had implemented service learning in their respective classrooms. These real accounts of those experiences give readers an overview of what it might be like to implement service learning in their own contexts.

As previously mentioned, implementation of service-learning curricula requires active participation in students' works by the instructors themselves. If such curricula were to be mandated at an intuitional level, three other important issues should first be considered. First, there is a critical need for providing scholarly work produced by such instructors with new expectations and definitions, along with the resources faculty may need to accomplish their goals. Contemporary definitions of scholarly work would generally fall into three areas: teaching, research, and community works. In the case of service learning, the bulk of an instructor's efforts are teaching and community works and less on formal research publication. The main products of this work are the projects on which they and their students worked. Evaluation of such work does not fit neatly into the present system in research universities where the main focus is on research publications. Administrators should consider an alternative faculty evaluation system, one not limited to just academic publication, but that also acknowledges product development artifacts to be scholarly works.

With respect to publications, another issue lies in the relative lack of publication opportunities for service-learning work. This perhaps can be attributed to the nature of the research methodology, represented by vehicles like in-depth qualitative case studies, which make it comparable only to similar types of research. The author's understanding and her experience indicate that not all journals and their reviewers positively accept and value qualitative research methodology because of its small sample size, and they thus question the general applicability of the research. This phenomenon can significantly demotivate service-learning faculty-researchers from conducting and publishing this type of research, and it thus indirectly denies the faculty-researchers' opportunities for academic promotion in their respective universities.

Second, an institution should more consistently consider rewarding service-learning instructors. The rewards could be in the form of financial assistance or seed grants to help cover transportation as well as the costs of

product design and development of the resulting instructional products. The reward could also be in the form of paid research leaves and teaching release time. Such privileges would be important in supporting and sustaining service-learning instructors' motivation to carry on their work.

References

Boyle-Baise, M. and J. Kilbane. 2000. "What Really Happens? A Look Inside Service-Learning for Multicultural Teacher Education." *Michigan Journal of Community Service Learning* 7:54–64.

Boyte, H.C. 2003. "A Different Kind of Politics: John Dewey and the Meaning of Citizenship in the 21st Century." *Good Society* 12(2):1–15. http://muse.jhu.edu/journals/good_society/v012/12.2boyte.pdf.

Buchanan, A.M., S.C. Baldwin, and M.E. Rudisill. 2002. "Service Learning as Scholarship in Teacher Education." *Educational Researcher* 31(8):30–36.

Correia, A.-P., F.D. Yusop, J.R. Wilson, and R.A. Schwier. 2010. "A Comparative Case Study of Approaches to Authentic Learning in Instructional Design at Two Universities." Paper presented at the Annual Meeting of the American Educational Research Association, Denver, CO, April 30–May 4.

Day, L. 2005. "Nursing Practice and Civic Professionalism." *American Journal of Critical Care* 14:434–37.

Dewey, J. 1927. *The Public and Its Problems.* New York: H. Holt.

Dzur, A.W. 2004. "Democratic Professionalism: Sharing Authority in Civic Life." *Good Society* 13(1):6–14. doi:10.1353/gso.2004.0026.

Eyler, J.S., D.E.Giles, C.M. Stenson, and C.J. Gray. 2001. *At a Glance: What We Know about the Effects of Service-Learning on College Students, Faculty, Institutions,and Communities, 1993–2000,* 3rd ed. Nashville, TN: Vanderbilt University.

Halliday, T.C. 1999. "Review: Politics and Civic Professionalism: Legal Elites and Cause Lawyers." *Law & Social Inquiry* 24(4):1013–60.

Hatcher, J.A. 2008. "The Public Role of Professionals: Developing and Evaluating the Civic-Minded Professional Scale." PhD diss., Indiana University, Purdue.

International Association for Research on Service-Learning and Community Engagement (IARSLCE). 2014. "IARSLCE Reaffirmation Statement 2014." IARSLCE. http://www.researchslce.org/about/2014-reaffirmation-statement/.

Kaufman, R. 2009. "Mega Thinking and Planning: An Introduction to Defining and Delivering Individual and Organizational Success." *Performance Improvement Quarterly* 22(2): 5–15.

Kennedy, K.J. 2005. "Rethinking Teachers' Professional Responsibilities: Towards a Civic Professionalism." *International Journal of Citizenship and Teacher Education*1(1):3–15.

Kimball, B.A. 1996. *The True Professional Ideal in America: A History*. Lanham, MD: Rowman & Littlefield.

Manley, T., Jr., A.S. Buffa, C. Dube, and L. Reed. 2006. "Putting the Learning in Service Learning: From Soup Kitchen Models to the Black Metropolis Model." *Education and Urban Society* 38(2):115–41.

Matthews, C. and B. Zimmerman. 1999. "Integrating Service Learning and Technical Communication: Benefits and Challenges." *Technical Communication Quarterly* 8(4):383–404.

Peters, S. 2004. "Educating the Civic Professional: Reconfigurations and Resistances." *Michigan Journal of Community Service Learning* 11 (1):47–58.

Richardson, V. 2006. "Stewards of a Field, Stewards of an Enterprise: The Doctorate in Education." In *Envisioning the Future of Doctoral Education: Preparing Stewards of the Discipline*, edited by C.M. Golde and G.E. Walker, 251–67. San Francisco, CA: Jossey-Bass.

Sullivan, W.M. 2004. "Can Professionalism Still Be a Viable Ethic." *Good Society* 13(1):15–20.

Sullivan, W.M. 2005. *Work and Integrity: The Crisis and Promise of Professionalism in America*. San Francisco, CA: Jossey-Bass.

Tocqueville, A.D., H.C. Mansfield, and D.Winthrop. 2000. *Democracy in America*.Translated, edited, and with an introduction by Harvey C. Mansfield and Delba Winthrop. Chicago: University of Chicago Press.

Westbrook, R.B. 1991. *John Dewey and American Democracy*. Ithaca, NY: Cornell University Press.

Yusop, F.D. and A.P.Correia. 2012. "The Civic-Minded Instructional Designers Framework: An Alternative Approach to Contemporary Instructional Designers' Education in Higher Education." *British Journal of Educational Technology* 43(2):180–90.

Yusop, F.D. and A.P. Correia. 2013. "On Becoming a Civic-Minded Instructional Designer: An Ethnographic Study of an Instructional Design Experience." *British Journal of Educational Technology* 45(5): 782–92.

Industry-Oriented Graduate Programs in Thailand: A Review

Bundit Fungtammasan

INTRODUCTION

In 2011, the World Bank upgraded Thailand's income categorization from a middle-income economy to an upper-middle income one. Indeed, spanning half a century from the early 1950s, Thailand had been regarded as one of the most successful world economies, with annual GDP growth hovering close to 10 % in the early and mid-1990s. However, the recent performance of Thailand has been quite the opposite, with an 11-year average annual growth of only about 4 % dating from 1997. This decline, coupled with lower medium-term growth prospects, indicates fundamental problems with the country's current state of development, raising the possibility that Thailand might now be falling into a "middle-income trap" (Jitsuchon 2012). Some would even argue that Thailand has already been caught in a middle-income trap for more than 20 years, as it has been unable to compete against advanced economies while also facing increasing competition from lower income economies (Phongpaichit and Benyaapikul 2012). The main cause of this is believed to be the continued dependence of Thailand

B. Fungtammasan
King Mongkut's University of Technology Thonburi, Bangkok, Thailand

on the "cheap labor" development model with a low level of technological innovation. One of the reasons for Thailand to be perpetuating this mode of development is that the Thai education system has been unable to equip graduates with relevant skills to meet the challenges of global competition, be they technical skills or soft skills such as thinking skills, communication skills, and leadership (Jitsuchon 2012). In engineering education in particular, the tightly structured and teacher-directed nature of education has been turning out graduates that generally lack strong analytical and problem-solving skills needed for the real world (Ziguras 2001; Ku et al. 2005). A low level of R&D activities and spending, which has been stagnated at 0.2 % of GDP for a number of years, is another hindrance for the country to advance to the next level of competition where more product and process innovation is needed (Jitsuchon 2012).

This observation is consistent with the assertion of a World Bank report (World Bank 2012) that in an open and integrated world environment, the role of higher education (HE) in economic growth has taken on much greater significance because it provides the high-level skills and research to apply current technologies and to assimilate, adapt, and develop new technologies. Based on a development study of a number of countries in East Asia including Thailand, the report found that HE in most of these countries does not sufficiently provide its graduates with the skills and quality that firms need to increase their productivity and growth. HE in these countries also fails to provide the type of research needed to boost technological upgrading in firms. Universities in Thailand, for instance, are believed to be leading in acquiring technological innovations (in a broad sense) by only 1 to 2 % of firms. The report identified "five disconnects" in the HE systems of these countries as major reasons for the aforementioned failures. Two of these disconnects are

- a gap between HE institutions and the skill needs of employers, and
- a weak research and technology nexus between HE institutions and companies.

Thai educators and research funding agencies have recognized these gaps and inadequacies for quite some time. Various bottom-up and top-down attempts have been made to bridge those gaps and redress the inadequacies both at undergraduate and graduate levels. Thus various forms of "work-integrated learning" and industry-oriented, research-focused graduate programs have been tried.

This chapter reviews the nature, benefits, and shortcomings of some of these programs at the graduate level in Thailand. We begin with a description of the various forms of graduate master's and doctoral programs as prescribed by the Thai Higher Education Commission (HEC). This is then followed by a review of the Science and Engineering Practice School (SEPS) programs being run by King Mongkut's University of Technology Thonburi (KMUTT) and industry-oriented, research-based master's and PhD programs operated by the Thailand Research Fund (TRF).

STANDARD FORMAT OF GRADUATE PROGRAMS

In 2005, the Thai Ministry of Education issued an announcement on the revised Standard Guidelines for Graduate Education (Commission on Higher Education 2005) covering graduate certificates, advanced graduate certificates, master's programs, and doctoral programs. The general philosophy and objectives of master's and doctoral-level programs, as prescribed in the guidelines, stress the importance of educating and training academics and professionals with advance knowledge and capabilities in various disciplines through research training. Graduates are expected to possess the capacity to seek and acquire knowledge independently, as well as to produce scholarly and/or creative work and the ability to continually integrate his/her own field of expertise with other fields. Graduates are also expected to maintain a standard of high moral and ethical behavior and to have a high standard of academic and professional integrity and etiquette.

An overwhelming majority of graduate programs follow the bi-semester system in which each semester spans a 15-week period. In this system, one semester credit hour is equivalent to 15 contact hours of lecture, 45 hours of internship/field practice, or 45 hours of independent study or thesis study, over a normal semester. For a master's course, the minimum number of credit hours required is 36. The program structure is of two categories: research-oriented (category A) and taught course-oriented (category B). Category A is further subdivided into A.1, which requires at least 36 credit hours of thesis study, and A.2, which requires a minimum of 12 credit hours of thesis study (or about one-third of total credits) plus at least 12 credit hours of course work. For category B, a minimum of 3 credit hours and a maximum of 6 credit hours of independent study are required, instead of a thesis. Most science and engineering courses are of category A, and predominantly category A.1, while an overwhelming majority of management and IT-oriented courses are within category B.

Doctoral programs are also of two categories: I and II. Category I is research intensive requiring a minimum of 48 credit hours of thesis study for students with a master's degree background and 72 credits for those with a bachelor's degree. Category II is less research intensive, requiring a combination of thesis and taught courses. Category II.1 is for students with a master's degree, and it requires a minimum of 36 credit hours of thesis study and at least 12 credits of taught courses. Category II.2 is meant for students with a bachelor's degree background. It requires a minimum of 48 credits of thesis study plus at least 24 credits of course work. Most doctoral programs in science and engineering are of category II.

It is obvious that in Thailand there is a strong emphasis on academic research and scholarly activities in graduate studies in science and engineering. Even at the master's level (category A), students are required to have their thesis research findings or part of the findings published or accepted for publication in journals recognized by the OHEC, or presented in a conference with proceedings, as a prerequisite for graduation. As can be expected, the publication requirement at the doctoral level (both categories I and II) is more stringent as the research findings must be published or be accepted for publication in peer-reviewed journals recognized by the respective profession only.

SCIENCE AND ENGINEERING PRACTICE SCHOOL PROGRAMS

KMUTT is Thailand's leading university of technology. Founded in 1960, it has earned a reputation for practical excellence in both engineering education, where work experience in the industry for students is encouraged during their study, and in research, where industry-relevant research is valued. At KMUTT, different forms of practice-oriented programs have been offered at both undergraduate and graduate levels. At the graduate level, KMUTT is well known for its "practice schools" in engineering, with features that fit the description of work-integrated learning-focused programs (Keleher et al. 2011), whether it be work-based learning, workplace learning, or practice-based learning. The very first such program, called "Chemical Engineering Practice School" (ChEPS) (Ku and Thonglek 2011), was introduced in 1997. Modeled after the Massachusetts Institute of Technology's (MIT) David H. Koch School of Chemical Engineering Practice, which has about 100 years of experience behind it, ChEPS was aimed at overcoming the above-mentioned deficiencies. The objective of ChEPS was to educate and train well-rounded engineers, as well as researchers, who possess strong

technical expertise and problem-solving skills, can communicate effectively, and have good English proficiency, which is a very important attribute in the context of Thailand where students generally have rather poor English skills and where foreign direct investment in engineering and manufacturing businesses constitutes a very significant component of the economy. Thus the goal of ChEPS is more than supplementing classroom studies with practical training in an industrial environment, which was the original goal of the MIT model. A comprehensive review of the MIT model and other practice school programs around the world, including the KMUTT's ChEPS, is presented by Ku and his colleagues who are involved in running ChEPS (Ku and Thonglek 2011). The purpose here is to give a brief account of the nature of the program and how it answers the skills needs and the innovation needs of industry.

ChEPS is an intensive, two-year international master's program with one semester of compulsory industrial internship or practical training. Strictly speaking, it is a category B master's program according to the HEC's definitions. The program begins with a pre-program summer semester in which students are given intensive training in the English language and the use of various process-oriented simulation software tools that are often used in industry. The first two formal semesters in the first year are dedicated to classroom lectures and problem-based learning (PBL) on campus. Problems for the PBL, mainly design based, are often sourced from companies that host internships and the learning process is mentored by faculty members. The second year is devoted to industrial practice and research. During the first semester, which is the internship semester over a five-month period, students live and work on an industrial site under the supervision of a "site director" who is a full-time faculty appointed by the university for this specific task. Students work in teams of two to tackle two problem-solving projects based on real-world problems, under the guidance of the site director(s) and a company-based supervisory committee comprising a division manager, engineers, and operators/technicians. Typical projects involve troubleshooting, cost savings, energy minimization, product yield improvement, and so on. At the completion of the project, students are required to make an oral presentation to the supervisors and company staff. In the second semester, students are back on campus to pursue an in-depth thesis study worth 6 credit hours over a six-month period and write the dissertation in English. Some of the thesis topics are based on requests from industry. It is believed that the quality of these theses is on par if not better than those 12-credit dissertations

written by students in conventional programs who spend two semesters or more for the study (H.M. Ku, private communication).

In comparison to conventional programs, running ChEPS involves much higher costs. External funding is needed to cover the wages of the program director, the site directors, and their onsite living expenses; visiting professors; and most significantly, the provision of scholarships to well-qualified students, as a measure to attract high-performing students and to remain competitive. As a matter fact, about two-thirds of the students are covered by either full or partial sponsorships. Those who are not qualified for full scholarships are offered no-interest soft loans. Initially the program was funded by two public agencies: the National Science and Technology Development Agency and the Energy Policy and Planning Office, and a non-profit organization: the Petroleum Institute of Thailand. Funding from participating companies, mainly in the petroleum and petrochemical industry sector, is also crucial particularly when the initial funding from the public sector and NGO is depleted.

The program admits 22 students per cohort on average. To date it has enrolled 17 cohorts or about 370 students. It is noteworthy that, because of the uniqueness of the program and the enhanced employment prospects by their host companies once they graduate, the program has been able to compete for a finite pool of talent in this field with an applicant-to-acceptance ratio of roughly five to one. Admitted students typically rank in the top 15 % of their respective classes with an average Grade Point Average well above three. The majority of ChEPS alumni work for large refinery, chemical, and petrochemical companies. According to surveys conducted by the practice school with the site companies and employers, the main attributes of ChEPS graduates that employers find superior as compared to graduates of conventional programs are: shorter learning curve, maturity and self-confidence, better problem-solving and presentation skills, and more significantly, English proficiency (Ku and Thonglek 2011). About 15 % of the graduates went on to pursue PhD degrees.

The success of ChEPS has been cited by the Technology and Development Program at MIT as a success story in Thailand. Indeed it has inspired the creation of five additional practice-based master's programs within KMUTT, namely the Food Engineering Practice School (FEPS), Starch Engineering and Process Optimization Program, Bioinformatics, Biotechnology Practice School, and Biotechnology Business Management Program (bio-entrepreneurship). Ku et al. (2005) also gave a comprehensive review of the graduate-level science and engineering practice schools

at KMUTT. The practice school concept has also been extended to PhD level in 2007, though with much less success in attracting candidates.

Industry-Oriented, Research-Focused Master's and Doctoral Programs

The TRF is a major research-granting agency in Thailand. In addition to providing funding for competitive applied and basic research, the agency also plays a role in improving the quality and increasing the number of young researchers by providing PhD fellowships and small research grants for master's theses. Initially these programs were aimed at academic excellence. However, having recognized the need to promote industry relevance in these support programs, the agency added industry-oriented PhD and industry-oriented master's thesis grant programs. These are elaborated in the following sections.

Industry-Oriented Master's Program

TRF began providing master's thesis grants in 2004 (Varichasawad-Lohtongkum, private communication).Over the period from 2004 to 2006, it made 224 grants available out of which 15 were linked to industry. In 2007, the Office of Small and Medium Enterprises (SMEs) Promotion, Ministry of Industry, began to provide funding for TRF to support industry-oriented, research-focused master's and PhD education. At the master's level, the objectives of the program were fourfold:

1. Develop knowledge and quality research that could be utilized by firms for proactive business development.
2. Motivate the industry sector to pay more attention to R&D in science and technology.
3. Equip master's degree graduates with research skills and the capacity to effectively apply knowledge in professional practice.
4. Motivate and foster research environments in HE institutions and support academics and students in establishing collaborative partnerships with industry.

Funding was meant primarily to support industry-linked 12-credit (or more) theses, though tuition fee and stipend are partially covered. The theses topics could originate either from industry or from the supervisors,

but the latter must be accepted by industry. In any case they must be proposed by the supervisor for the approval of TRF's independent screening committee. Note that acceptance by industry could be in the form of a letter of intent from industry expressing the interest to make use of the research results. In the first year of operation, 2007, 226 grants were awarded, and 198 companies were involved. From 2008 to 2012, when the industry was asked to contribute a fraction of the financial support in cash, 589 companies were involved out of a total of 665 grants. The scheme was well received by SMEs, particularly where product innovation and production process improvements are involved. Innovation examples include ready-to-eat well-known Thai dishes, nutraceuticals from tamarind extracts, and innovative design of extrusion dies for rubber products that resulted in a reduction of losses and increased exports (due to improved quality).

Industry-Oriented, Research-Focused PhD Programs

Prior to introducing the industry-oriented PhD program, TRF had been running a highly successful academic-based PhD fellowship program called the Royal Golden Jubilee (RGJ) PhD program (Coovattanachai 2010). Initiated in 1996 with government funding, the program aims to boost the number of locally trained PhD graduates and of international quality research publications and patents, promote research collaboration among Thai and foreign researchers, and strengthen graduate education in the Thai university system as a whole. Hailed as Thailand's most ambitious research training programs, the RGJ program targeted to train 5000 PhDs over a 15-year period from 1998 to 2012. The fellowship quota was first allocated to suitably qualified academics who had passed stringent selection criteria, particularly with respect to publication record. The selected academics with the given quota then recruit students, whose qualifications in turn must be scrutinized by TRF. One of the key features of this program is the requirement for international collaboration. A co-supervisor from a recognized, foreign institution or laboratory must be appointed so that the PhD student can be attached to such co-supervisors' institution or laboratory for 6–12 months to conduct part of his/her research, with the support of the program. Travel costs for the exchange of visits of the supervisor and co-supervisor are also provided. PhD candidates must have published at least one paper in a recognized international journal before they are allowed to proceed to graduation.

Through such stringent quality assurance measures and competitive selection process, the program has been able to recruit high-performing students, normally with an honors degree at the undergraduate level or in the top 20 % of the class. By the end of 2010, roughly 1200 academics have qualified for fellowship quotas; more than 2500 foreign collaborators (co-supervisors) have been enlisted; and about 3000 fellowships have been awarded. The program has delivered more than 1600 PhD graduates and more than 4000 international journal publications (or more than 2 publications per graduate on average), plus about 60 patents awarded or filed. The impacts of the program on Thailand's HE and research cannot be overstated. This is evidenced by the fact that about 900 graduates or 55 % of the total have so far entered into teaching and research in HE institutions, where approximately 1000 academic staff are retiring each year. About 35 % are being employed by public and private research institutions, with the balance going on for post-doctoral research, some at world's leading research institutions. According to an independent review (Chulawattanathon 2009), the quality of RGJ PhD graduates is generally on par with those graduating from internationally recognized institutions, and an overwhelming majority of the graduates could conduct independent research upon graduation. However, while the ability of the program to nurture high-quality researchers is indisputable, the review also noted that the research outputs that can be directly utilized for economic benefits are few.

Recognizing this shortcoming, TRF obtained funding in 2007 from the Office of SMEs Promotion, Ministry of Industry, to embark on a new program called the Industrial RGJ PhD Program (Coovattanachai 2011), which was, in essence, an extension of the existing RGJ program. The objectives are to increase research output that would add value directly to the economic and/or social system and to strengthen R&D capacity in business and industry. As in the case of the industry-oriented master's degree program described earlier, one of the preconditions to qualify for the grant is the involvement of industry in either directly posing research questions as thesis topics or expressing interest in using the research results in a letter of intent. In the first five years, no financial contributions from industry were required. Instead the companies involved have to demonstrate their full commitment to cooperating with the program. Therefore, the screening of project proposals for theses in this case is more meticulous as compared to the normal RGJ program. Other procedures are similar to the normal RGJ, except that the thesis supervisors, in addition to the scholastic and research record, must have demonstrated some capability in dealing with

industry-based R&D or technical services projects. Student applicants with industrial experience are preferred. The program is regarded as a variant of the various types of the so-called "industrial PhDs" being practiced in Europe (Ori 2013). Over a four-year period, from 2007 to 2010, a total of 311 qualified academics were selected to submit project proposals and candidate students for TRF's approval. A total of 164 proposals were eventually funded, involving 125 academics and 116 participating firms/institutions (N. Coovattanachai, private communication).

A preliminary assessment of the success of the program found the following: (1) contrary to public perception, private companies were quite keen and prepared to engage in "longer-term" engagement of 3–5 years R (2) the number of academics who have relevant industrial experience and the willingness to conduct research that would solve industry problems was more than expected; and (3) all the graduates of the program have so far been able to publish their results in reputable international journals in compliance with the RGJ's requirements. The industries involved were spread over a wide spectrum of sectors with about a quarter being in the agriculture and agro-industry sectors. It is also noteworthy that more than half of the participating firms were SMEs.

The Research and Researcher for Industry Program

Following the initial success of TRF-supported industry-oriented master's and PhD programs, TRF won government support for a new program called Research and Researcher for Industry Program (Pinsuk 2013; Degelsegger and Sukprasertchai 2014). The goal is to train 10,500 PhD and 11,400 master's graduates with experience in conducting industry-relevant research, over a 15-year period beginning in 2013. In addition, about 1000 research projects and 400 inter- and intra-university networks of researchers are expected to be established. The nature of the program is similar to the forerunner industry-oriented, research-focused master's and industrial RGJ PhD programs, except that the application procedures and program management have been formalized and institutionalized with TRF setting up a new administrative unit dedicated to this task.

Conclusions

The inadequacies of Thai HEIs in contributing to economic growth and competitiveness in an open and integrated world environment, through the provision of high-level skills and research relevant to Thai industries,

have been increasingly recognized, particularly by economists. In recent years some Thai HEIs and research-funding agencies have introduced programs aimed at redressing such deficits in education and research at the graduate level. Among the more prominent programs are the SEPS and the industry-oriented, research-focused master's and PhD programs. These efforts represent small but significant steps in bridging the gap between HEIs and industry, thereby educating graduates with technical and soft skills, as well as research skills that are better suited to industry. Such programs have demonstrated that research results of tangible economic value could actually be delivered or be derived from further developments based on those results. Assessments have shown that both the participating students to the programs and the firms involved found the experiences worthwhile. However, there remains much scope for expanding the programs to involve more students, more curricula, more disciplines, and more academic staff.

Finally, the industrial PhD program has also proved that, contrary to popular belief, publication of findings from the industry-based theses in scientific journals could be done without much difficulty.

References

Chulawattanathon, M. 2009. "Study on the Researcher Status of PhD Graduates Supported bythe RGJ PhD Fellowship Program." Final report (in Thai) submitted to Thailand Research Fund (TRF), Bangkok, March.

Commission on Higher Education. 2005. *Announcement on Standard Guidelines forGraduate Education (Revision)*. Thailand: Ministry of Education.

Coovattanachai, N. 2010. "The Role of the Royal Golden Jubilee (RGJ) PhD Program in Promoting Collaboration between Thai and Foreign Researchers." International Conference on Agriculture and Agro-Industry: Food, Health and Trade, Mae Fah Luang University, Chiang Rai, November 19–20.

Coovattanachai, N. 2011. "Benefits Derived from the TRF RGJ Industrial PhD Fellowship Program" (in Thai). *TRF Research Community Bulletin*, 97: 4. http://rescom.trf.or.th/display/keydefault.aspx?id_colum=2654.

Degelsegger, A. and W. Sukprasertchai. 2014. "Innovation in Thailand." Presented at SEA-EU-NET Partners in Science Seminar, Bangkok, January 21. Accessed July 2, 2015. http://www.nstda.or.th/eng/index.php/news/news-a-announcements.

Jitsuchon, S. 2012. "Thailand in a Middle-income Trap." *TDRI Quarterly Journal*, 27(2): 13–20.

Keleher, P., A. Patil, and R.E. Harreveld. 2011. *Work-Integrated Learning in Engineering, Built Environment and Technology: Diversity of Practice in Practice*. Hershey, PA: IGI Global, Information Science Reference.

Ku, H.M. and S. Thonglek. 2011. "Running a Successful Practice School: Challenges and Lessons Learned." In *Work-Integrated Learning in Engineering, Built Environment and Technology: Diversity of Practice in Practice,* edited by P. Keleher, A. Patil, and R.E. Harreveld. Hershey, PA: IGI Global, Information Science Reference.

Ku, H.M., S. Thonglek, A. Thipayarat, and S. Cheevadhanarak. 2005. "A Graduate-Level Science and Engineering Practice School Model in Thailand." Paper presented at the 2005 Regional Conference on Engineering Education, Johor, December 12–13.

Ori, M. 2013. "The Rise of Industrial PhDs." *University World News*, Global Edition Issue 300. Accessed June 17, 2015. http://www.universityworldnews.com/article.php?story=20131210130327534.

Phongpaichit, P. and P. Benyaapikul. 2012. "Locked in the Middle-Income Trap: Thailand's Economy between Resilience and Future Challenges." Friedrich Ebert Stiftung Economy of Tomorrow, March.

Pinsuk, U. 2013. "Research and Researchers for Industry." *Research Community (in Thai)*, 18(105): 62–65. Accessed July 2, 2015. http://rescom.trf.or.th/display/keydefault.aspx?id_colum=2882.

World Bank. 2012. *Putting HE to Work: Skills and Research for Growth in East Asia*. Washington, DC: World Bank.

Ziguras, C. 2001. "Educational Technology in Transnational HE in South East Asia: The Cultural Politics of Flexible Learning." *Journal of Educational Technology & Society* 4(4): 8–18.

Diploma Disease in Thai HE

Prompilai Buasuwan and Michael E. Jones

INTRODUCTION

Various studies and an extensive literature have suggested that education has long been linked to economic growth and has consistently shown to be positively correlated with gross domestic product (GDP). The level of educational attainment has also been used as a key measurement indicator for international comparison on national development and economic competitiveness. Investment in education is a form of human capital upon which many countries base policy initiatives for economic growth, which not only benefits individual income, but also contributes to the economy as a whole through the creation of skilled labor, leading to increased socioeconomic development.

There is an enduring belief that Higher Education (HE) is a key driving force to economic growth. Many developing countries have expanded their tertiary education systems to provide increased access to higher learning. Global HE participation and enrollment have increased considerably since 1970. It has been forecast that by 2030, the number of students

P. Buasuwan (✉)
Kasetsart University, Kasetsart, Thailand

M.E. Jones
Chulalongkorn University, Chulalongkorn, Thailand

enrolled in HE will rise from 99.4 million in 2000 to 414.2 million in 2030—an increase of 314 % (Calderon 2012). However, there is little concrete evidence to support that expansion of HE actually leads to long-term economic growth (Holmes 2013).

Since it is widely believed that educational attainment is linked to skilled labor, currently job placement is significantly dependent on certificates, degrees, and diplomas. To be competitive in the labor market of a modern economy, many people predicate their future career on a HE degree. This phenomenon leads to the spread of the diploma disease, the term popularized by Ronald Dore in 1976 with the publication of *The Diploma Disease*. According to Dore, "The 'bureaucratization of economic life' in all modern societies is making selection for jobs/careers by educational attainment more and more universal" (Dore 1980, p. 1). This phenomenon is not new but rather has been made more prevalent by the kinds of credentialization of education that are linked to the modern economy. The aims of education and schooling in the modern economy have become blurred and seem to be overshadowed by economic purposes. Dore makes the distinction between schooling that educates and schooling that is mere qualification-earning for work. He argues that the effect of schooling, the way it alters an individual's capacity and will to do things depend not only on what is learned or the way in which it is learned, but also on why it is learned. According to Dore, "most people when they speak of 'education,' have in mind a process of learning . . . which has mastery as its object . . . it is mastery of the knowledge itself which counts" (Dore 1980, p. 8).

Dore's central concept of the Diploma disease is closely associated with a country's encounter with modernization processes and reforms, the extent to which educational certificates are crucial for job allocation, the quality of learning and teaching, and the potential of education to develop skills relevant to the needs of developing societies (Little 1998). Since Dore advanced his original thesis in the 1970s, Brown et al. (2006, p. 325) have argued that the phenomenon has worsened because the worldwide expansion of HE has taken place behind the slogan "learning is earning." While education reform has been expected to alleviate this so-called disease, backwashes of a reform overwhelmed by neoliberalism might prove the contrary (Suebnusorn 2010). Education has increasingly responded to the commercialization of degrees, which then emphasizes quality standards (UNESCO 2006). Barlow and Robertson (1994, p. 79),

in an American take on the link between economies and education, assert that there are three goals of industry in relation to education:

> Secure the ideological allegiance of young people to a free-market world view . . . gain market access to the hearts and minds of young consumers and to lucrative contracts in the education industry . . . and transform schools into training centers producing a workforce suited to the needs of transnational corporations. (Barlow and Robertson 1994)

As documented by Wanwisa Suebnusorn (2010), the diploma disease in various forms has existed in Thailand since 1960. In her view, although educational qualifications or an HE certificate has not been the only requirement used for the recruitment process, "[a] certificate in this level is more desired by the Thai in general since it becomes increasingly important as a prerequisite for several occupations after the education reform of 1999."

Although, at the time, Dore was most concerned about associate and bachelor's degrees, various evidence in Thai society supports the proposition that the MA is the new BA leading to the overall phenomenon of *credentialism*, a lack of alignment, the privileging of the symbolic value of graduate degrees, and so on. Thailand is experiencing a rising number of postgraduate students, especially within social science fields. Some professions, especially civil servants, use the level of degree and educational attainment as prerequisites for job placement and career advancement. More employers have also complained about the lower quality of graduates at all levels of educational attainment and the mismatch of workforce alignment. In order to have a worker with the needed skills, it is increasingly held, a higher degree is required.

Criticisms of the diploma disease in Thai postgraduate studies have focused on the issues of quantity, quality, and workforce alignment. Thai HE institutions have been criticized as certificate-issuing factories and with the assertion that the acquisition of a given certificate is of doubtful value. Qualification inflation has also intensified the lack of workforce alignment. To shed lights on the issue of diploma disease in Thai HE institutions' graduate education, this paper will examine: (1) the situation of diploma disease in Thai HE since the education reform period, (2) rationales of diploma diseases in Thai society, and (3) the effects of diploma disease in Thai society. This chapter argues that Diploma disease at the postgraduate level in Thailand is part of a domino effect of HE reform.

Modernization, HE Growth, and the Influence of Market Forces

The significant growth of Thai HE over the last three decades was driven primarily by economic changes and by occupational growth in areas for which a secondary school education was no longer sufficient. The demand for highly educated individuals to fulfill expected economic growth requirements and meet student aspiration and social expectations elevated the professional role of HE into the spotlight. Its widespread growth throughout the country has spurred over the last two decades by widespread national and international disapproval of the quality of Thai HE in preparing students for the varied onslaughts of contemporary globalization. As a reaction, market gains became *essentialized*, and the skills and professional knowledge acquired through HE were seen as the enablers of success (Beerkens-Soo and Vossensteyn 2009).

The increasing demand for HE by high school graduates coupled with the perceived need for highly skilled labor for economic prosperity have been the two key driving forces for mass HE. But the government's educational budget cuts from 2009 to 2012 dropped from 4.6 % of its GDP in 2009 to 3.8 % in 2010, 3.9 % in 2011, and 3.8 % in 2012 (Office of National Education Commission (ONEC) 2014), posing a challenge to the continued expansion of HE. The privatization of HE has become the trend, and as of 2015, out of 156 Thai HE institutions, 74 are private universities, institutes, and colleges. This number has doubled from 33 private HE institutions since the 1999 reform (Office of HE Commission 2015).

The complex structure of HE in Thailand allows institutions to offer graduate and postgraduate degrees in seven different types of systems. Prior to the reform period, Rajabhat universities served as teacher colleges, and Rajamongkol universities were polytechnic colleges offering high diploma and associate degrees. In recent years, their status has been elevated to that of universities in order to offer a wider selection of disciplines awarding bachelor's and postgraduate degrees to regional students. Private HE institutions have also played a significant role in expansion, having increased in their percentage of total Thai university students (2003–2008) from 11.3 % to 14.8 % for bachelor's degrees, 9.5 % to 11.3 % for master's degree, and 1.3 % to 9.7 % for doctoral degrees (ONEC 2004, 2006, 2007, 2009). Additionally, public universities, autonomous universities, and open universities are the three principal providers of degrees at the master's level, and public and autonomous universities remain the

Table 11.1   Categories and enrollment of Thai HE institutions

Types of institution	Master's degree		Doctoral degree	
	Humanities and social sciences	Sciences and technology	Humanities and social sciences	Sciences and technology
Public university	11,479	4900	827	753
Rajamongkol	552	232	16	0
Autonomous	6835	6920	764	943
Open university	8688	463	244	0
Rajabhat	2606	287	172	7
Private university	3322	866	261	69
Private college	376	29	26	0
	33,858	**13,697**	**2310**	**1772**

Source: Data derived from the database of Office of HE Commission (2015)

principal providers of doctoral degrees. As indicated in Table 11.1, the ratio of participation in master's degrees in humanities and social sciences as opposed to sciences and technology is almost 3:1 and almost 2:1 for doctoral degrees. Public universities, autonomous universities, and open universities have the highest share of students. Categories and enrollment in Thai HE institutions are shown in Table 11.1.

Trends in graduate studies in Thailand can be traced back to the modernization period of Thai education when The Education Act 1999 served as the framework for educational reform and the advancement of HE. One of the primary goals of the reform was to achieve a national commitment to achieve the United Nations Education, Scientific and Cultural Organization (UNESCO) goals articulated in education for all. The reform guaranteed 12 years of free basic education with a requirement for 9 years of mandatory basic education. This resulted in a large increase in high school graduates and the great demand for an expanded HE system to serve them. It is projected that by the year 2016 the number of secondary school graduates and first-year university intake will increase by about 2.5 to 3 times that of 2001 (Kirtikara 2001).

It was also thought that the 1999 educational reforms would improve the quality of Thai HE institutions, but the consensus among critics is that Thai HE is still amiss and possibly unanchored and adrift due to an overconcern by institutions to market their programs for economic sustainability and referring to their students as customers and by creating student-friendly programs and curricula (Tangchuang 2011), while ignoring national labor force

needs (Rupavijetra 2011). So while HE institutions were previously unable to prepare enough students for industries facing global pressures, the current verdict is similar in that Thai HE is unable to provide a suitably qualified workforce needed to engage in regional and global market competition.

In response, Thai HE has developed a second five-year strategic (2008–2012) plan that emphasized quality education that produces students capable of being knowledgeable, productive, and innovative. Science, Technology, Engineering and Mathematics (STEM) and Information and Computer Technology (ICT) majors are prioritized, and collaboration with the drivers of economic growth is encouraged. However, as of 2010, the number of students graduating stood at 33 %, while engineering and science degree graduates were the most unemployed at 40 % (Rupavijetra 2011) despite the fact that HE has emphasized science and engineering majors. Phetcharee Rupavijetra (2011) describes this as "the irrelevant situation between employment and labor," as "graduates from social science oversupply the needs of the market, while graduates from technology science and health science are scarce." She concludes that the link between education and industry remains weak and advocates the further development of cooperative education programs in the curriculum to link academics with workplace skill and practical experience in order to develop workplace skill transference to satisfy students' career aspirations and industry needs. This remains possible only if there is collaboration between industry and HE as an institution for apprenticeships with solid fundamentals taught in the classroom, support from industry, adequate supervision and mentoring, and the government facilitating this collaboration.

Thai Higher Education's Graduate Education Enrollment and Degrees

The enrollment ratio of HE students in Thailand compared to the age group of 18–21 year olds is on the rise. In 2002, there were only 27.4 % of students in this age group who participated in HE, which was relatively low when compared to other Asian nations. However, this figure has been steadily and significantly increasing to 41.0 % in 2010, 64.9 % in 2011, and 60.0 % in 2012. As indicated in Fig. 11.1, there has been a continuously rising trend in bachelor's degree holders, while at the same time there is a declining trend in diplomas and a downward trend in higher diplomas since 1999–2012. A comparison of numbers of graduates by degree types from 1999 to 2012 is shown in Fig. 11.1.
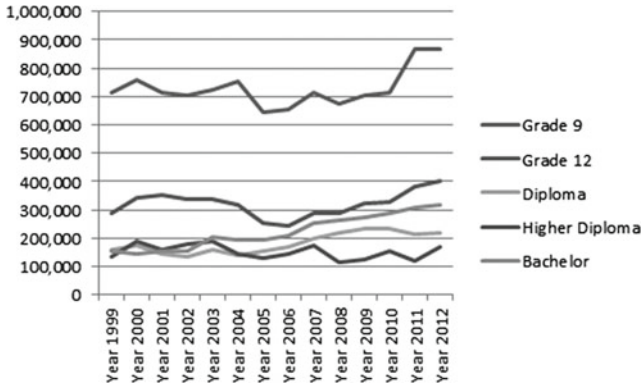
Fig. 11.1 Comparing number of graduates by degree types from 1999 to 2012. *Source*: Data from ONEC (2004, 2006, 2007, 2009, 2010, 2012, 2013). Table created by authors

Although Thailand has been experiencing a decline in the number of new student enrollments in HE at all degree levels, it may in part be due to the decline in population growth of the school age group. The ratio of students enrolled in bachelor's degree programs as opposed to those enrolling in high diploma programs is on the rise with 41.0 % in 2010, 64.9 % in 2011, and 60.0 % in 2012. Also as indicated in Fig. 11.2, enrollments in master's degrees and doctoral degrees have also been increased steadily and significantly from 2003 with its peak coming in 2010, followed by a slight drop in the subsequent years. The number of master's degree students increased from 120,116 in 2003 to 206,668 in 2010 (an increase of 41.8 %) and from 8040 to 20,667 (an increase of 61.0 %) during the same period. A comparison of the numbers of HE students by degree types from 2003 to 2012 is shown in Fig. 11.2.

Phasina Tangchuang (2011) points out that even though the number of students enrolled and graduating with degrees has been rapidly increasing, only 20 % of the Thai workforce possesses HE degrees. In comparison to Singapore, Thai enrollment in science and engineering programs is 20 % while Singapore has a 40 % student enrollment (UNESCO data in The Economist Intelligence Unit 2012) in these programs. Thailand's enrollment strength is in social sciences, business, and law with nearly 60 %—unusually high for the region, which averages about 25 %. Correlatively, Thailand's future workforce need for engineers is predicted to be 100,000
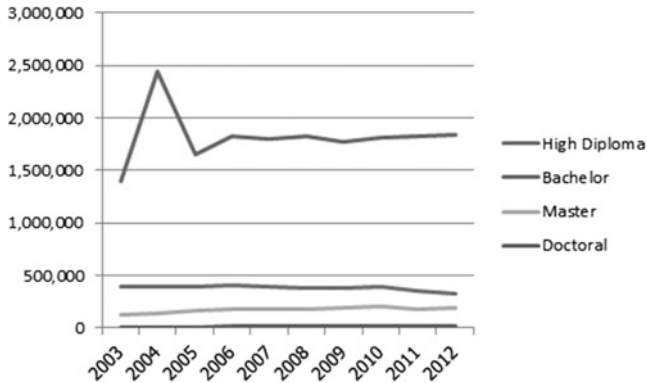
Fig. 11.2 Comparing number of higher education students by degree types, 2003–2012. *Source*: Data from Office of National Education Council (2004, 2006, 2007, 2009, 2010, 2012, 2013). Table created by authors

with another demand for 200,000 senior administrators, managers, and technicians, particularly in the newly burgeoning fields of biotechnology and alternative energy sources—a mismatch between labor market needs and HE supply (Tangchuang 2011).

Rationales of Diploma Diseases in Thai Society

Although various literatures suggest a linkage of job placement and a motive for higher learning, this may not be the only reason, especially in the case of Thailand. A study by Chanida Phethongkham (1999) revealed that factors contributing to a student's motivation to study in a master's degree program consisted of seven factors: (1) self-development, (2) environment conducive to social interests or affiliations, (3) vocational interests and aptitude, (4) institutional reputation, (5) proximity to close relationships, (6) adoption in valued peer groups or associations, and (7) teacher qualification.

The importance of sociocultural aspects cannot be emphasized enough. Thailand is a country of social connection, and one's personal relationships play an important role in career advancement. Many people pursue their higher degree(s) in a particular institute to gain access to social connections that can facilitate their career advancement. Many institutions are also using this cultural feature as a strategy to attract students. As revealed in the study of Phethongkham (1999), social connectivity is ranked the first priority as a motive for applying to a master's program. Some universities

create a program for social networking such as the "millionaire program," the "executive program," the "young MBA program," and so on. These programs are designed to meet the needs of particular interest groups.

It is evident that the motivations of students are cultivated within the context of their educational environment and the objectives of its program, determined to conform to the psychological design of their own aspirations that are shaped and influenced by the sociocultural environment of their institutional affiliation and the quality of its mentoring. Although the variations in universities and their influence on motivating students may be the basis for rationalizing a universal standardized HE system, students investing energy in strategies to conform and perform well in their institutional context still often have a difficult time in performing and adapting well outside of that context. Their intense desire to excel within their adapted environment usually precludes them from having time to work or seek the experience of exploring different points of view. As noted in the World Bank report (2012), educated workers do not appear to be the most skilled. Technical skills and experience are turning out to be far more important in hiring decisions than educational achievement.

While students work toward completion of their degrees to enhance their job prospects and HE institutes are concerned with increased enrollments, employers expect graduates to possess skills at higher cognitive and technical levels. Due to students' life and work inexperience, their lack of cognitive acumen acquired from their field of study, and employers' inability to offer competitive wages, graduates often are found in jobs that are not related to their discipline and change jobs looking to match their interests and skills with their aspirations. This adds to the cycle of employers continually searching for talent from a labor pool that is replete with people who do not match employers' job expectations or the personal aspirations of graduates.

CREDENTIALISM: JOB PLACEMENT AND CAREER PROSPECTS

Although Dore argued that diploma disease is a consequence of a bureaucratic economic structure that uses education degrees as a credential for job placement, our work finds inconclusive results to support this claim at postgraduate levels. While some professions require a master's degree as a prerequisite for a job position—especially in government sectors—many do not. In general, many human resource staff will concede that although a diploma is an important criterion for job placement, they would rather consider an applicant who has a bachelor's degree with working experience than a person with a higher degree and no experience.

A graduate degree, however, can also be used for career advancement or new career options. Many in the private sector pursue graduate studies with a purpose of launching a new career, while others in the public sector use the acquisition of a higher degree to obtain a salary adjustment. When education as a commodity is exploited, many educational institutions and education businesses employ various strategies to attract students to post-graduate study. One such strategy is convincing prospective students by associating postgraduate study and career potential. Statements captured from a website[1] on "Reasons for Doing Post-graduate Study" declare that "a postgraduate degree can give you the opportunity to:

- further your career—it may not always increase your starting salary, but studies show that the majority of postgraduates earn more than undergraduates over their careers;
- change career direction—many postgraduate courses can act as conversion courses if you want to enter a different sector;
- pursue a passion for a particular subject—you can explore your personal interests, as most courses that are taught will allow you to select modules;
- 'Research courses will allow' to "Pursue interests in greater depth";
- enter a profession that needs a specific qualification—some vocations demand a postgraduate qualification as an entry requirement. Lawyers, doctors, teachers, librarians, and physicists are just some examples; and
- gain a clear insight into the industry and create invaluable contacts—although this may not be your main reason, postgraduate degrees will uncover industry contacts and work experience opportunities."

Another Thai website[2] also uses the same strategy by providing information about "when to seek a certificate or diploma." According to this website, you need certification when:

- you need to acquire skills quickly to launch a new career;
- you already hold a bachelor's degree but seek to launch a new career not related to that degree; and
- you need to meet state or national licensing requirements.

---

[1] http://www.prospects.ac.uk/postgraduate_study_why_do_postgraduate_study.htm.
[2] r.

This website also states, "if any of the above criteria mirror your circumstances a certificate will be your quickest—and least expensive—course of study. A certificate will help you get educated—and get on with your life."

In addition to career options and job placement, in Thailand there is a clear linkage of salary level with degree attainment by each sector. Satit Wonganannont (2011) has charted the first placement salary level of bachelor's, master's, and doctoral degrees between private and public sectors (as of 2010) as shown in Table 11.2.

Prakalp Puntapalangkul (2013) has charted the survey of the first salary by Personal Management Association of Thailand and Business Management Company in 2013 as indicated in the Table 11.3. Here, the starting salary for a master's degree is a result of a government salary adjustment policy

Table 11.2 First placement salaries by degree level

Qualification	Salary of first placement	
	Private	*Public*
Bachelor's	11,518	8700–8970
Master's	16,868	12,000–12,360
Doctoral	24,691	16,200–16,690

Source: Satit Wonganannont (2011)

Table 11.3 Salaries of graduates by degree

Qualification	Fields of study	2012	2013/P50	2013/P75
Diploma	Technical	9500	9800	12,000
	Commerce	9300	9700	11,000
Higher diploma	Technical	10,500	11,000	14,000
	Commerce	10,000	10,500	12,000
Bachelor degree	Engineering	18,000	18,000	21,000
	Science	15,000	16,000	18,000
	Computer	15,000	15,500	18,000
	Accounting	14,000	15,000	17,000
	Business administration	13,000	15,000	17,000
	Social science	13,000	15,000	17,000
Master's degree	Engineering	20,000	22,000	25,000
	Science	19,000	20,000	22,000
	Computer	18,000	20,000	23,000
	Accounting	18,000	19,000	21,000
	Business administration	17,000	19,000	21,000
	Social science	15,000	18,000	20,000

Source: Prakalp Puntapalangkul (2013)

for bachelor's degree holders in the public sector, which is an average of 15,000 baht per month. In the field of engineering, the starting salary for a bachelor's degree holder is 18,000 baht, 64 % higher than a higher diploma, which is at 11,000 baht per month. Although there are many positions available, industries are having a hard time finding workers with the diploma-level qualification because most of them pursue bachelor's degrees to gain a higher salary. A master's degree in the field of engineering yields a starting salary 22 % higher than that of the bachelor's degree.

Symbolic Value and Social Recognition of Graduate Degree

Fry (1981) argued that there is a psychological and ritualistic value of diplomas and degrees for students and families of lower and disadvantaged social backgrounds. Many people pursue postgraduate studies to fulfill their personal aspirations or that of their families'. Parents of low socioeconomic background can often be heard to say: "We did not have an opportunity to go to school; we want our children to have the highest level of education that they can." Some master's degree students in education from lower socioeconomic backgrounds are oft to be heard saying, "People in my village are looking forward to my graduation because I will be the only one who graduates with a master's degree in my village."[3]

Arguments made by Amano (1997) that the democratization of the Japanese economy after the World War II led Japan to become a "which school" credentialing society rather than a "which level" one is a point well taken in the Thai context. Because of the widespread growth of Thai HE and the lack of quality standards in HE, Thai employers have steadily begun to pay attention to not only the level of certifications, but also the nature and status of the institutes offering them. More frequently, another motivation to pursue a master's degree is to graduate from a highly ranked institution that can facilitate the capture of a student's dream job/life.

Credibility of the Diploma

Because of the higher demand for diplomas and certification for job placement, some businesses exploit this situation by providing services that lead to the issuance of a fake degree and certificate. These are proverbially known as

[3] Interviewed by author on March 2, 2014.

accreditation mills, and their growth, aided by online and advanced technologies, is able to produce authentic looking documents that are backed by spurious data that are difficult to discredit. *Diploma mills* and unaccredited HE institutions are also prevalent and offer falsified academic records, degrees, and diplomas. Many of these operations will claim to give academic credit for relevant life experience. The numbers of unaccredited HE institutions are increasing in Thailand, and the Office of HE has established the center for suppressing unaccredited HE institutions to counter this corrupt growth. Currently, four international institutions (with Thai partnership) are listed as unaccredited and ten more international institutions of unidentified origin, also unaccredited. This situation may worsen when the Association of South East Asian Nations (ASEAN) free trade area of education takes its full effect.

Another business that is blooming as a result of the diploma disease is the "pay for your thesis." Many thesis-consulting businesses are available, and many graduate students hire them to do their thesis. Some evidence points to educators themselves who provide such services to students. In the past, thesis-consulting businesses would make copies of thesis outlines and/or retrieve and substitute texts within theses, but in the near future technology will allow the online capture and transference of copied and completed texts in hours. These businesses are not only becoming more prevalent, but their services are becoming more immorally perfected (Thongroj 2013).

Revisiting Dore's Diploma Disease

Dore, in re-examining his initial diploma disease findings, believed that the phenomenon occurs when job qualifications begin rising in direct proportion to the overproduction of educated, but unemployed graduates. Industries begin to "cherry-pick" the highest credentialed graduates from a wide talent pool in order to drive the economic wagon into expanded regions of productivity in the new fields of technology and information management. The inflatable education industry is mandated to produce increasingly larger quantities of raw talent designed specifically to work and obey sociocultural norms, but rarely is it delegated to produce individuals who pursue academic edification for personal development or for any social benefit outside the interests of the economy. Dore referred to these types of institutions as peddlers of *reluctant schooling*, or ritualized academic centers that entitle students with the necessary qualification and sociocultural conformity to gain employment. Dore believes that while these select credentialed graduates have a proclivity toward adapting to

established norms, it does not mean that they are the most innovative, gifted, or most public-minded workers. Dore also reminds us that along with the rituals of *credentialization* come expensive reforms and the filtering mechanism of exams and testing.

Thailand's own history with diploma disease has followed many of the international patterns of developing countries, but its remarkable economic success came first, before educational reforms were used to shore up its economic fortunes. Since the reforms, Thailand has been fortunate to have the world's lowest unemployment rate until very recently. Combined with this low unemployment were insufficient numbers of low-skilled workers and an oversupply of academically overqualified university graduates (Jones 2014). This precarious situation was a demonstration that efforts to increase less labor-intensive work and higher incomes were successful, but also led to a glaring transition whereby HE became driven by social impulse, and not entirely by economics. Research by Suebnusorn (2010) found that the phenomenon has been persistent in Thailand, and Thai policy-makers have been aware of this problem; however, the concrete research to identify its scope and degree of seriousness is quite limited.

The argument can be made that the Thai social impulse for HE was driven by a desire for credentialization to access modernized living standards and all that goes along with that—urbanization, consumption of goods, social status, the promises of a more sophisticated life, and a modicum of wealth. But industry, as it became more susceptible to global reach and the demand for technological growth, demands larger numbers of workers who are middle school educated, have attended vocational school, or possess advanced technological skills (Jones 2014). In 2011, it was estimated that over 100,000 students were unable to find suitable jobs (Chalamwong and Archapiraj 2011). For 2013 and 2014, the Thai government projected a shortfall of approximately 350,000 workers, and according to the Thai Labor Department, 95 % of which will need to possess vocational skills (Bangkok Post 2013).

Workforce Alignment: The Mismatch and the Paradoxical

As seen before in the seemingly lockstep replication of reforms and decentralization occurring worldwide in the 1980s and 1990s, developing countries were led to believe by economists that reforms would foster global commerce, democratic impulses, modernization through

human capital development, and integration into the global market through the sociocultural patterning of competitiveness (Jones 2009). Kaufman and Nelson declared, "investments in education became one of the highest priorities of the World Bank, the Inter-American Development Bank, and other international financial institutions" (2004, p. 252). In short, policy-makers were convinced of the necessity for educated, skilled labor and radical changes "in what is learned and how it is learned, even though there is little evidence that this change is or will be accompanied by positive social transformation" (Stromquist 2002, p. 61) and represents economic ideology more than it does the movement toward public good or the enrichment of HE. The strategic formula seen then, and which we are seeing now, is the portrayal of education as inadequate to function in a globalized world, a manufactured fear of the competitive nature of this problem forcing prompt and impulsive responses, and a conversion operation to *economize* the problem with the solutions largely energized and influenced by economists.

Currently, many appear to hold the assumption that the role of HE is to supply graduates with the complete set of skills and competencies required by employers. Influential economists certainly portray this as the desired picture with the dire consequence of universities failing to supply industry with graduates well endowed with problem-solving skills, creativity, and technical skills. For example, the Economist Intelligence Unit wrote in their 2012 report for the British Council:

> At present, HE is simply not delivering enough graduates in the necessary disciplines or with the required generic workplace abilities, and if there is no reform then the shortage of graduates with the right skills will only intensify. Investment in three areas—capital and machinery, research and development, and training and education—will be critical to the success of Thailand's economic plans.

Further, economists from the World Bank in their East Asia and Pacific Regional Report (2012) assert that Thai HE has failed in fulfilling its potential due to the "disconnected" management of institutions that act within an independent model, internally (departmentally) as well as independent from "firms, research institutions, and earlier levels of education." But as we have seen throughout this paper, students have set their aspirations to the ceiling provided by the centrally aligned government education system. And while there is truth to the great need of far greater

cognitive and technical skills in students, employers are more realistic in their expectations and in what universities should be doing.

In findings from the 2011 survey by Tangchuang, employers responding to the survey did not believe universities were providing the skills their industry needs—in fact they were "useless"—but also did not have the expectations of universities providing *off-the-rack* graduates prepared to fulfill complex job requirements. Further, they believed that job skills were gained within the context of the job itself and that universities are incapable of producing ready-made workers. Surveyed employers believe it is not the duty of universities to train graduates for jobs—it is the right and duty of the employers only to provide in-house, job-specific training in the workplace. The employers' attitude is that educated graduates learn the jobs quicker; philosophically, education is essential in order to develop the capacity for breadth and depth of reasoned thought, decision-making, mature behavior, and fundamental technical skills for graduates to successfully advance through their jobs, careers, and lives. So, the paradox here is that while employers have short expectations from education related to job preparation, they also have long expectations about what students should gain from HE. It is even more paradoxical that both economists and universities embrace a more *vocationalist* stand.

Vocationalism and the Goals of Education

The vocational model of HE emphasizes practical, occupational, or job skill instruction. In current global trends, many vocational and HE institutions operate in a *competitive state*, or as an institution closely aligned with the market-oriented policies and state operations dependent on economic growth and the will of the market. Employment is the guiding principle of the competition state, and a rich pool of talent is essential for its fluctuating shape. The main objective of vocational education is to bring a sense of occupational purpose in order for HE to forge links with society, industry, and government. The criticism from the Economist Intelligence Unit report (2012) is that Thai universities are too detached and independent-oriented, ignoring their student component by failing to provide the means to gain sufficient employment skills, and also denying the needs of industry. Inevitably, some Thai universities appear to be adopting a market-oriented approach in which industry and economies are served, while others adopt a university-isolated approach in which a form of elitism separates the institution from society at large—the proverbial ivory tower. The approach advocated by

UNESCO is a more balanced approach by which the economy-oriented view and a human-oriented approach work toward a knowledge society with a prevailing attitude toward lifelong learning (Maclean 2007).

The debate in Thai HE regarding increase in the number of vocational institutions versus that of academic institutions is relatively quiet. The market-based approach seems to have curried favor among many universities and along with that comes the competency-based philosophy of preparing students for occupations and consumption of information, not the curious enrichment of individuals through the exposure to knowledge and the cultural facets of one's humanity. Thai HE's attempt at cooperative learning appears promising. It could be the bridge that binds employers to HE, but it will take more than half-hearted efforts to realize and will require a concerted effort by the government, universities, and industry to make it beneficial. It will also require Thai HE to ask what is its purpose and how will it go about realizing its objectives?

Although Thai HE has been subject to considerable criticism, less debate has focused on its philosophical goals, its relationship with industry, the effects of vocationalism and market-oriented tendencies at universities, or the responsibility toward Thai society. Additionally, Tangchuang (2011) believes the entire objectives of the 1999 reforms are to be questioned and become part of the discussion surrounding the quality of Thai HE. Unless the educational foundations of HE are put into perspective, resolving the problems facing HE will be mysterious and haphazard at best. As noted by Alain Mounier and Phasina Tangchuang (2010):

> We are not aware, for example, of the fact that, it is unclear whether the education reform undertaken within the framework of the 1999 Education Act was intended to improve the quality of education in the sense of raising the quality and scope of the knowledge transmitted within a didactic concern or in the sense of better satisfying the need of the economy for a "ready to work" labor force. Probably both objectives were intended at the same time.

HE is at a crossroads and faces challenges to aid in creating a productive knowledge society equipped with employer-valued twenty-first-century skills. In place of a spreading diploma disease, HE institutes will need to go deeper beyond economic interests and narrow, reactionary bureaucratic responses as a substitution to developing intellectual capital. HE must question what constitutes a meaningful education in order to prepare Thai society for the inevitable changes emerging from contemporary

globalization. Thai graduates will need to be provisioned with intellectually curious attitudes, perceptive insight, problem-solving acumen, and a depth and breadth of life intelligence that can only come from a sound HE experience that expects a student to be grounded in more relevant academic work intermingled with enriched life and job encounters. Without these, Thai society and industry might as well rely on futuristic and reliable robots to perform work tasks or face the possible departure of industries seeking more lucrative regional sites with a learned and skilled workforce.

Concluding Reflections and Recommendations

Where is the Life we have lost in living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in the information?
Excerpt from *The Rock: A Pageant Play*, T. S. Eliot (1934)

In examining Thai HE and the diploma disease, the pattern Dore described is a problem acknowledged by the Thai government and one that runs rampant throughout the Thai education system, creating mismatches of academic talents and the proficiencies necessary for employment. There are large increases in HE enrollments in Thailand, which are spreading to graduate levels; while at the same time, there is a decline in diploma and technical school graduates—both of which are in greater demand than university graduates. Although there are motivations beyond mere certification for acquiring a graduate degree, the motivations still seem to be related to modernization and graduates seeking to reach higher income brackets and social status. While there is education for all in Thailand, it is very standardized, and the quality must be questioned, particularly if students are predominately asked to prepare for exams and cultural indoctrination, but not to be prepared for life in a competitive, multicultural world. Earlier in this chapter, the point made by employers was that even if a graduate has a high degree and is an academic award winner, this does not make him/her the best candidate for a job because often these students have spent endless hours studying for exams and obeying norms, but lack creativity, open-mindedness, depth of character traits, the ability to work collaboratively, and a deeper maturity that can ripen into wisdom.

The Ministry of Education (MOE) and universities must ask if students' school experience produces world-ready adults who know how to learn. Are

universities churning out graduates merely as *industrial fodder* in an effort to secure the promise of uncertain economic well-being? Are the expectations of society realistic in assuming all must go to university to try to get ahead? Is this a problem of a rigid social structure that is unshakable and makes it difficult for meritocracy to allow those without money, or gaining status to have a fair opportunity? Is university experience as it currently stands another fatalistic barrier for realizing human development and social equality in Thailand? Is it a means to make it impossible for social change as so many graduates enter the labor force at low wages and no incentive to advance? Are graduates prepared mentally, emotionally, and spiritually for university? Are universities prepared to continue churning out graduates that excel at test taking and are well-versed in outdated notions of what it means to be educated, but not fully functional in job/life situations? Do graduates have enough experience to make their education relevant when they look for a job or do get employed?

It is not at all certain that the Thai government is making a serious effort to stem this academic disease. It is not apparent whether the government and universities have determined whether universities should pursue vocational and market-based models, maintain the "Ivory Tower" isolated institution model, a hybrid of both, or try a whole new approach. There is no philosophical foundation to establish the meaning of Thai HE, and therein lies much of the problem. Related to the lack of philosophical keystones, the responsibility of Thai HE to Thai society and to the industry is a vacant discussion. The discussion assumes that the university is a personal, individualistic benefit to oneself or one's family that one can purchase, but one that ignores responsibility and obligation of the learning community itself. Is it any wonder that industry and employers opine that Thai HE has failed when it prepares students to be isolated consumers of information and market products, to purchase their degree and credentials? If students are only prepared to be consumers with no obligations to create community and public good, are we not setting them up to be failures? Are we not asking the system to become dysfunctional? Are we not asking for the corruption of society?

The lapses in Thai HE are also an indictment on the whole Thai education system. Without a robust philosophical framework, Thai reform has provided education for all and indoctrinated students into believing that education is everything you need to advance in society and that experience is nothing short of an interference to consumerism. Thailand saw great economic growth facilitate urbanization over the last 25 years, and the

wealth that oozed out of big cities made modernization a lucrative pros-
pect. Along with that came the masses of high school graduates seeking
the fruits from the belief that one must be a university degree holder to
enjoy modern life. Now the disease has extended to postgraduate studies,
and our research for this chapter indicates there is no conclusive proof
that graduate-level degree holders are acquiring the advanced skills that
will answer the call for high-level reasoning, intercultural, managerial, or
language skills. Research must be conducted in order to assess the value
and academic strength of current graduate degree holders and whether
they satisfy the needs of industry, future economic growth, intellectual
esthetics, or the moral advancement of human development. Do Thai HE
institutions merely believe that contextual-less memorized information
is the highest form of academic edification and is something useable by
employers? Are Thai students enslaved in a system that equates informa-
tion to knowledge by rewards of grades in order to feel some sort of false
achievement or as a step toward certification for the dream job? We are
left with many more questions, but seek the most fundamental answers in
balancing the needs of education, industry, and Thai society, particularly
given the context of a unified ASEAN region.

The following points are things that may make a difference in arresting
the development of the diploma disease:

Education

- Thailand must establish its philosophical framework for HE, what
  model it wants to use, preferably a model that incorporates coopera-
  tive programs, part-time work programs, and universities that com-
  bine and/or link vocational subjects and rigorous academic courses
  that teach twenty-first-century skills and critical thought. The
  emphasis on testing needs to be eradicated, and values and critical
  thought need to be emphasized at all grade levels through student-
  centered and project-based classes. Interdisciplinary courses across
  disciplines should be encouraged and supported. Lifelong learning is
  to be encouraged throughout Thai society in order to make it truly
  a knowledge society.
- Thai youth would benefit greatly by beginning to learn the value of
  work from an early age. Students ideally would begin work for pay in
  their mid-teens and work their way through university studies. Once
  a university or vocational major is established, students would find

great value in working part-time at a company related to their interest or at jobs that teach them other work-related values.

- Thai youth would find great significance if they were to become active in large, organized team-related sports or community activities to learn the value of cooperation and collaboration. Perhaps since shopping malls are so popular among the youth, the malls could put on sport or creative learning and collaborative events within the mall to encourage individual and team play and learning.

- Career counseling is lacking in most Thai educational settings, and if a career counseling center were to be established in every Thai late middle school, high school, and university, Thai students would be given an opportunity to explore his or her interests in life. Good counselors are skilled in suggesting activities and even part-time work opportunities to facilitate the intellectual and moral development of students. Overseas or regional student exchanges could also be emphasized and encouraged. Students should be required to report to their counselors regarding things they learn in their jobs, and counselors should lead workshops to teach students performance expectations, problem-solving, courtesy, diligence, care, respecting others with different points of view, and so on.

Addressing Workforce Alignment

- Thai policy and planning sectors need to establish how to address vocational issues by balancing HE and the needs of the workforce, perhaps by offering various degrees of hybrid programs—part academic and part vocational. Universities could invite industry into the classroom workshops to teach specific work skills, particularly new techniques and technologies. They should welcome businesses in, by offering classroom space and time to teach certain job-specific skills training. Perhaps as an alternative, universities could have studio classes on campus and workshops at business sites.

- Policy planners must examine possible alternatives to running education predicated strictly on market-based assumptions and that are not entirely isolated institutions either. HE, businesses, industry, and government should cooperate in reaching a fair, balanced, and progressive HE plan, agreeing to assist HE to become meaningful. In looking at things that are untouchable because they represent *the Thai way*, it would be advantageous to examine these matters in a

new light in order to de-emphasize indoctrination and instead promote *planetary values* and outlooks. Local schools and businesses would do well to collaborate on multiple projects.
- HE and vocational schools should encourage apprenticeships, perhaps even at early university levels.

Pay Structures

- The salary structure must be adjusted to attract students in diploma degree programs.
- All positions should offer better salary structures, cooperative-like arrangements, or profit-sharing plans.
- The introduction and encouragement of meritocracy throughout society would add much to the Thai social structure. All individuals must feel the right to advance in their life depending on the quality of their work, not their social ranking.

Research

- HE institutions should invite world/regional economists and other academic professionals in to share data and help university students in learning the finer aspects of research labor-related economics and its various social implications. The introduction of economists in particular to businesses could be mutually beneficial in gaining an understanding of employers' real needs and some means to make options viable economically. A hearty collaboration between economists, HE institutions, and businesses would help all involved.
- HE institutions should offer to conduct research focusing on innovation and development, and to supply local businesses with research data they need, perhaps as a means for student researchers to make money or to promote the university, its programs, and its beneficial aspects to the community. At the very least, the university needs to be more present in local communities and focus on their needs, too.

Vocational and Diploma Programs

- Once the philosophical goals of HE are established, the conversation might more productively turn to meeting employer needs, vocationally and academically. Universities could develop a vocational program

on campus or at branch centers. The university would work closely with the program to bring local businesses together to make all three institutions relevant and meaningful.

• The university could offer a variety of diploma and certificate programs, as long as they satisfied both rigorous academic standards and work requirements. The programs should be associated with internships, business-led workshops, or part-time work in the area of certification.

Conclusion

Although great economic growth and social mobility have come as a result of the increase in HE, the value of HE in time has tumbled due to an over-supply of graduates and an undersupply of intellectual capacity. If Thai HE is to continue to benefit individuals and the nation at large, it must move beyond economic development as a model for expansion and cultivate intellectual philosophies and support industrial and trade skills. The academies and industries must walk hand in hand to develop strong minds and talented hands for a skilled workforce—a workforce that can fashion an adept society capable of creating its own future well into the next century.

References

Amano, Y. 1997. Education in a More Affluent Japan. *Assessment in Education: Principle, Policy, and Practice* 4(1): 51–66.

Bangkok Post. 2013. "Thailand Facing Severe Labor Shortfall of 300,000 This Year." *Bangkok Post.* Available online at: http://www.bangkokpost.com/business/news/355028/thailand-facing-severe-labour-shortfall-of-300000-this-year. Accessed: July 15, 2013.

Barlow, M. and H.J. Robertson. 1994. "Class Warfare: The Assault on Canda's Schools." In *Education for Global Citizenship and Social Responsibility*, edited by J. Andrzejewski and J. Alessio. *John Dewey Project on Progressive Education: Progressive Perspectives, 1989-99 Monograph Series* 1(2). Available online at: http://www.uvm.edu/~dewey/monographs/glomono.html. Accessed: July 2, 2015.

Beerkens-Soo, M. and H. Vossensteyn. 2009. *HE issues and trends from an international perspective*. Report prepared for the Veerman Committee, November 19, 2009.

Brown, P., J.A. Dillabough, A.H. Halsey, and H. Lauder. 2006. Introduction: The Prospects for Education: Individualization, Globalization, and Social Change. In *Education, Globalization and Social Change*, eds. P. Brown, J.A. Dillabough, A.H. Halsey, and H. Lauder. New York: Oxford University Press.

Calderon, A. 2012. "Massification Continues to Transform HE." *University World News.* September 2012: 237.

Chalamwong, Y. and S. Archapiraj. 2011. "Shortage of Low-Skilled Labour in Thailand has Reached Critical Point." *The Nation.* Available online at: http://www.nationmultimedia.com/2011/06/14/opinion/Shortage-of-low-skilled-labour-in-Thailand-has-rea-30157702.html. Accessed: July 2, 2015.

Dore, R.P. 1976. *The Diploma Disease: Education, Qualification and Development.* London: George Allen & Unwin.

Dore, R. P. 1980. "The Diploma Disease Revisited." *IDS Bulletin* 11(2). Available online at: https://www.ids.ac.uk/files/dmfile/dore11.2final.pdf. Accessed: July 2, 2015.

Eliot, T.S. 1934. *The Rock: A Pageant Play.* Boston, MA: Houghton Mifflin Harcourt.

Fry, G.W. 1981. Degreeism: Disease or Cure? *HE* 10(5): 517–527.

Holmes, C. 2013. Has the Expansion of HE Led to Greater Economic Growth? *National Institute Economic Review* 224(1): R29–R47.

Jones, M. 2009. *The Social Movement of Spiritually Engaged Alternative Education in Thailand Against the Background of Reform and Globalization.* Boca Raton, FL: Universal Publishers.

Jones, M. 2014. *Learning to Live Together and Media Literacy in the Thai National Curriculum. Learning to Live Together through Education in the Asia-Pacific Region.* Paris/Bangkok: UNESCO.

Kaufman, R., and J. Nelson, eds. 2004. *Crucial Needs, Weak Incentives: The Politics of Health and Education Reform in Latin America.* Baltimore, MD: Johns Hopkins University Press.

Kirtikara, K. 2001. "HE in Thailand and the National Reform Roadmap." Paper presented at the *Thai-US Education Roundtable.* Bangkok, January 9, 2001. Available online at: http://www.kmutt.ac.th/pi/backup/fileKK/higher%20Edu%20Reform520Roadmap.pdf. Accessed: June 5, 2014.

Little, A.W. 1998. International Education: Diploma Disease. In *Education: The Complete Encyclopedia (CD-ROM)*, eds. B.R. Clark, T. Husén, T.N. Postlethwaite, and G. Neaye. Oxford: Pergamon Press.

Maclean, R. 2007. "Vocational and HE: Issues, Concerns and Prospects." Paper presented at *'CIMQUSEF' 2007*, Casablanca. Available online at: http://www.unevoc.net/fileadmin/user_upload/docs/RMPaperCasablancaApril07.pdf. Accessed: March 23, 2014.

Mounier, A., and P. Tangchuang. 2010. *Education and Knowledge in Thailand: The Quality Controversy.* Chiang Mai: Silkworm Books.

Office of National Education Commission. 2004. "Thai Education Statistics 2003." Available online at: http://www.onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=985. Accessed: March 10, 2014.

———. 2006. "Thai Education Statistics 2004." Available online at: http://www.onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=955. Accessed: March 10, 2014.

———. 2007. "Thai Education Statistics 2005." Available online at: http://www. onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=988. Accessed: March 10, 2014.

———. 2009. "Thai Education Statistics 2008." Available online at: http://www. onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=990. Accessed: March 10, 2015.

———. 2010. "Thai Education Statistics 2009." Available online at: http://www. onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=1024. Accessed: March 10, 2015

———. 2012. "Thai Education Statistics 2010." Available online at: http://www. onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=1111. Accessed: March 10, 2015.

———. 2013. "Thai Education Statistics 2011." Available online at: http://www. onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=1164. Accessed: March 10, 2015

———. 2014. "Thai Education Statistics 2012-2013." Available online at: http:// www.onec.go.th/onec_web/page.php?mod=Book&file=view&itemId=1361. Accessed: June 10, 2015.

Office of HE Commission. 2015. "HE Institutions under the Supervision of Office of HE Commission." Available online at: http://www.mua.go.th/. Accessed: June 15, 2015.

Phethongkham, C. 1999. *Analysis of Motivating Factors in Studying a Master's Degree of Students in Private HE Institutions in Bangkok*.Master's Thesis, Srinakharinwirot University.

Puntapalangkul, P. 2013. "Survey of Salary by PMAT and BMC 2013." *OK Nation*, Available online at: http://www.oknation.net/blog/khunpatt/2013/10/14/ entry-1. Accessed: March 12, 2014.

Rupavijetra, P. 2011. "Linkage between HE and Labor Market in Thailand: Collaboration between HE Institutions and Workplace to Develop Students and Personnel's Skills." Paper presented at the *International Seminar on Skills Development for the Emerging New Dynamism in Asian Development Countries under Globalization*, March 5-7, 2011, Nagoya University, Japan.

Stromquist, N. 2002. *Education in a Globalized World: The Connectivity of Economic Power, Technology, and Knowledge*. Lanham, MD: Rowman & Littlefield Publishers, Inc.

Suebnusorn, W. 2010. *The Diploma Disease and HE Reform during Economic Crisis: A Comparative Analysis of Diploma Disease in Thailand before and after the HE Reform of 1999*. Sweden: Institute of International Education, Department of Education, Stockholm University.

Tangchuang, P. 2011. "Linkage between HE and Labor Market in Thailand." Paper presented at the *International Seminar on Skills Development for the Emerging New Dynamism in Asian Development Countries under Globalization*,

March 5-7, 2011, Nagoya University, Japan. Available online at: http://www2.gsid.nagoya-u.ac.jp/blog/anda/publications/files/2011/08/2-phasina_tangchuange38080.pdf. Accessed: March 16, 2014.

The Economist Intelligence Unit. 2012. "Skilled Labour Shortfalls in Indonesia, the Philippines, Thailand, and Vietnam: A Custom Research Report for the British Council." Available online at: http://www.britishcouncil.org/labour_market_shortfalls_in_sea_eiu_final_18_july.pdf. Accessed: March 16, 2014.

Thongroj, P. 2013. "Reveal! Innovative Practices of Companies Providing Services for Thesis." Available online at: http://www.manager.co.th/QOL/ViewNews.aspx?NewsID=9560000054426. Accessed: March 22, 2014.

United Nations Educational, Scientific, and Cultural Organization (UNESCO). 2006. *Guidelines for Quality Provision in Cross-Border HE.* Paris: UNESCO.

Wonganannont, S. 2011. *Policy Salary Adjustment for Bachelor's Degree Holder to Fifteen Thousand Baht: Different Perspectives.* Research and Information Division: Senator Secretariat Office.

World Bank. 2012. "Thailand: Improvements in HE Needed to Sustain Growth in Low and Middle Income East Asia." *East Asia and Pacific Regional Report.* Available online at: http://go.worldbank.org/XQDR47KTH0. Accessed: March 16, 2014.

Exploring Researcher Motivation: Implications for PhD Education

Robyn Barnacle, Denise Cuthbert, and Richard Laurie

Introduction

As Cuthbert and Molla (2015, p. 33) argue, "[c]ontemporary higher education (HE) systems function within a political context of high optimism about the transformative potential of knowledge for individuals and for national economies." "Knowledge economy optimism" is prevalent across Europe, North America, South East Asia, and China, as well as Australasia. HE and, more specifically, research and its potential for innovation are ubiquitously positioned as the drivers of future economic and social prosperity. As shown in a recent report of Organization for Economic Cooperation and Development (OECD), doctoral graduates are considered central to this endeavor given that they are trained specifically in research with the explicit aim of most national governments of building innovative and competitive economies (Auriol et al. 2012). Such policy assumptions are predicated on PhD programs capable of producing graduates both willing and able to drive innovation and social and economic advancement. In Australia, this is reflected in the now firmly

R. Barnacle (✉) • D. Cuthbert • R. Laurie
RMIT University, Melbourne, VIC, Australia

199

established conception of PhD education as "research training," clearly echoing a labor market preoccupation. But to what extent do PhD candidates and graduates share—or participate—in such policy visions? This chapter explores this issue through a focus on researcher motivations.

The issue of researcher motivation is an important one for various reasons. Research training requires a significant investment of both public and private resources—financial, human, and technical. Retaining graduates as productive members of a research labor force is critical to this investment. However, evidence suggests highly trained researchers are exiting research in some areas due to cultural, gender, and other issues (Royal Society of Chemistry 2008a,b; Dever et al. 2008; Hakala 2009). The "abandoning science" confessional is an emerging genre on academic blog sites and in the press (Academics Anonymous 2014; Stein 2014; Teytelman2014). Two recent studies conducted by the Royal Society of Chemistry on the career intentions of chemistry PhD candidates in the UK provide evidence of cultural factors in science souring the aspirations of early career researchers (Royal Society of Chemistry 2008a,b). These studies found that while in the first year of their PhDs, the majority of candidates envisaged a research career, but by the final year about half had changed their minds and decided to abandon research in chemistry. The authors argue that science itself is often to blame for this, due to its structures, cultures, environment, and norms of practice. Contrary to what we might assume to be a key objective of PhD programs, candidates' actual experience of science can act as a major deterrent to pursuing a scientific research career upon completion. In addition to the questions this raises about the cultures of research in some disciplines, the scale of disenchantment and withdrawal raises questions about the nature and sustainability of researchers' expectations and motivations.

Ensuring successful doctoral completion rates is one issue that has received sustained interest from scholars over many years. Initiated by Bowen and Rudenstine's (1992) landmark study, concern and interest in the factors that enable strong and timely PhD degree completions have continued under increased political scrutiny by governments, including the Australian government, seeking greater returns from their research training investments (Rodwell and Neumann 2008). Fewer studies, however, have examined the role of the doctorate in preparing graduates for a research career post-completion (Sinclair et al. 2013) and factors that might influence attrition from research in post-doctoral populations. Understanding researcher motivations and whether such motivations are

sustainable may provide one clue to the factors, which lead to successful research careers.

The findings presented in this chapter—while preliminary—seek to contribute to a better understanding of these under-researched issues. The cohort of successful mid-career researchers included in the study has successfully traversed the perilous journey through the doctorate into the post-doctoral phase and, maintaining research productivity, on to successful mid-career researcher status. As such, while far from a typical population of doctoral graduates or mid-career academics, their reflections on their experiences provide valuable insights into the suite of motivations that have sustained them. While we do not know the extent to which respondents' motivations may have changed since the doctorate, the findings suggest that researchers are motivated by a variety of factors—particularly personal curiosity and lifestyle benefits but also enjoyment of the processes involved in their area of inquiry to more altruistic motivations to do with "making a difference" and improving the lives of others. By providing a snapshot of researcher motivations at the critical mid-career phase, the findings provide insight into the motivations of successful researchers with implications for those involved in the delivery of PhD education.

Personal Factors in Researcher Development and Motivation

Given the prominence in our findings of personal motivations to do research, we are interested in the extent to which personal motivations are recognized in the existing literature on researcher development and motivations. As has been argued elsewhere by Barnacle and Cuthbert (Sinclair et al. 2013), the great majority of productivity literature tends to focus on external drivers in researcher success rather than intrinsic or internal motivators. One area that has sustained considerable attention is that of motivations to do a PhD. Of these motivations, the role of the personal—personal development/satisfaction and interest in a particular topic are widely documented (Leonard et al. 2005; Dever et al. 2008; Brailsford 2010; Mokhtar 2012; Guerin et al. 2014). By distinction, relatively few studies examine the factors influencing successful researcher careers post-doctoral completion. In particular, there is little research on what factors ensure the necessary appetite and skills to pursue and succeed in research post-graduation.

A recent study undertaken by Brew et al. (2011) highlights the importance of the doctorate in forming active researchers, although it also makes the point that many graduates do not feel the doctorate provides adequate preparation for a research career. This finding is at variance with the findings of our study (Sinclair et al. 2013) and points to a salient difference between our high-performing sample and more general post-doctoral populations. Numerous other studies focus on research productivity during and/or following doctoral completion (Grove and Wu 2007; Kim and Karau 2010; Chung and Petrick 2011). A related body of work focuses on academic and researcher identity formation and development (Archer 2008; Elizabeth and Grant 2013). This work demonstrates increasing recognition that to understand researchers' development requires looking at the early career phase, including the doctoral phase, with associated formative and identity challenges. Another factor that has been touched on by a range of studies is the role of emotional engagement and pleasure in the formation of active researchers, although less attention has been directed to this topic than to extrinsic research drivers. Explorations of the affective dimensions of research include those by Gardner (2009), and Turner and McAlpine (2011), who refer to the excitement, pleasure, and sense of emotional engagement and creativity that some associate with research. Other studies also hint at the pleasures of and emotional engagement with research, the role of passion, joy, and the thrill of producing new ideas (Akerlind 2008; McAlpine and Amundsen 2009). It is perhaps no surprise, then, that emotional factors contribute to researcher motivation. We now turn to findings from our study of successful mid-career researchers to show how these factors manifest in the motivations of successful mid-career researchers.

About the Study

In 2008, the Australian Research Council (ARC) awarded the first of five rounds of future fellowships to "promote research in areas of critical national importance" by giving outstanding researchers incentives to conduct their research in Australia. Despite an earlier uncertainty, the Australian government announced in its May 2014 budget that the scheme would continue albeit with a reduced number of supported projects. As the ARC stated on its website, September 24, 2014, the aim of future fellowship scheme is to attract and retain "the best and brightest mid-career researchers" (ARC 2013). Over the period 2009–2013, close to 1000 future fel-

lowships were awarded to outstanding mid-career researchers. The future fellowship scheme reflects the nation-building aspirations of the prevailing knowledge economy discourses; it aims to recruit to, or retain in, Australia highly productive mid-career researchers who will tackle research of national importance. Ostensibly at least, it is biased toward researchers "who can demonstrate a capacity to build collaboration across industry and/or research institutions and/or with other disciplines."

A pilot study of future fellows was designed to elicit data on the relationship between the doctoral experiences of this population of productive mid-career researchers and their research productivity and on their dispositions and motivations to do research. Contact details of Future Fellow recipients were obtained by accessing publicly available information from the ARC and university websites. The study was approved by the RMIT University Human Research Ethics Committee in 2012. The threshold for research success and productivity was determined by the ARC and its assessors in selecting this group of awardees who comprise, in the ARC's terms, the "best and brightest" Australia and international mid-career researchers.

METHOD

The pilot study comprised an online survey containing 20 multiple-choice and 5 open-ended questions. Additionally, 5 of the multiple-choice questions allowed for alternative open-ended responses. This chapter focuses on responses to this survey question: "Please briefly elaborate on your key motivations for doing research and seeking to disseminate it through publications and other means." It should be noted that this question asks respondents to comment on their motivations for both doing research *and* its dissemination as we are interested in how the two may be connected. We have chosen to focus on responses to this single question so as to report rich, qualitative descriptions concerning researcher's motivations. Our view is that while these results are only preliminary, they can nonetheless offer insights with the potential to open new lines of inquiry.

Responses to this question were coded according to three key demographic variables: gender, ARC discipline grouping, and the awarding institution of the respondents' PhD (see Table 12.1) and then analyzed using an interpretative framework to identify emerging themes, which were then refined through a process of iteration into broad thematic categories. To assist integrity, this process was duplicated independently by

Table 12.1   Demographic codes

Sex	ARC discipline grouping	Doctorate university
M = Male	**B** = BEM (biological sciences, biotechnology, environmental, medical and health sciences)	**8** = (Group of Eight Australian universities)
F = Female	**H** = HSE (humanities and creative arts, social, behavioral and economic sciences) **P** = PME (physical, mathematical and information sciences and engineering)	**A** = (Other Australian universities) **O** = (Overseas universities)

two researchers neither of whom had access to gender, subject group, or doctorate university information.

About the Sample

Of the 403 future fellows who returned the survey, 330 (82 %) responded to this question. As mentioned above, respondents were coded for later cross-analysis (see Table 12.1). Forty-three percent of respondents were under 40 years of age, and 49 % were between 41 and 50. This profile reflects the intention of the scheme to identify and support younger, mid-career academics. Most (61 %) finished their PhDs when they were under 30, and 56 % completed their doctorates since 2001.

Reflecting Australian government research priorities since the 1990s, most of the sample was drawn from the natural and physical sciences: 311 (77 %) of the sample worked in the natural, biological. or physical sciences, while 92 (23 %) worked in the social sciences and humanities. The fields most represented included biological sciences (18 % of natural science fields), physical sciences (14 %), and medical sciences (11 %). The majority of our sample graduated from elite research-intensive universities in Australia or at overseas universities (78 % in total). Almost half of all respondents (181 or 45 %) were awarded PhDs from "Group of Eight" Australian research-intensive universities and a further third of the cohort (137 or 33 %) graduated from non-Australian universities. The remaining respondents (85 or 21 %) were awarded PhDs from a pool of 21 other Australian universities. These include more applied—or self-designated "real world" focused—universities such as those belonging to the Australian Technological Network. In terms of gender, 247 (61 %) of the sample were men, and 156 (39 %) were women. Women were slightly over-represented in our sample relative to the population of future fellows,

given that in each of the five years of the scheme, roughly 69 % of the awards went to men and 31 % to women. Our sample is broadly representative of the entire Future Fellow population on the other variables.

Overview of Findings

Respondent motivations were categorized as belonging to one or more of the following three major themes:

1. Personal
2. Outcome
3. Process

Table 12.2 shows the proportion of responses identified as representing, either wholly or in part, each theme. The majority of individual responses were identified as reflecting more than one theme. In these cases each theme was counted. A "personal" motivation was identified in 66 % of responses. An "outcome" motivation featured in 57 % of responses. Finally, 55 % of responses addressed "process" related motivations. We will now explore each theme in turn.

Personal (Intrinsic Motivation)

Comments categorized as personal are those that emphasize the pleasure and personal fulfillment of doing research, disseminating results, and being a researcher. Curiosity, enjoyment, enthusiasm, love of the subject, "the need to know," and freedom of lifestyle were common words or expressions in these responses. For example, self-fulfillment can be achieved by satisfying curiosity or stimulating intellect:

- "I do research because I find it intellectually stimulating and personally fulfilling." (MPO).

Table 12.2. Motivating themes

Motivators	Female n = 135 (41 %)	Male n = 195 (59 %)	Total n = 330 (100 %)
1 Personal	89 (65 %)	126 (64 %)	217 (66 %)
2 Outcome	85 (63 %)	103 (53 %)	188 (57 %)
3 Process	73 (54 %)	108 (55 %)	181 (55 %)

This perspective is echoed in these responses:

- "Picking a question and answering it is immensely satisfying. Perhaps in the same way it is satisfying to complete a crossword puzzle" (FB8).
- "Mostly I just enjoy the intellectual challenge, and I find the subject matter very interesting" (MP8).
- "I do research to seek beauty in mathematics. I publish for personal satisfaction, and because it is essential for my career, which means that I can continue doing what I love" (MP8).

The personal fulfillment of doing research can also be linked to the lifestyle benefits of being a researcher:

- "I enjoy the independence and freedom to pursue issues that interest me" (FB8).
- "I do research because I enjoy the intellectual challenge and the associated lifestyle" (MBO).
- "I like the lifestyle and associating with people with similar interests" (MBO).
- "To achieve success in an academic career: job security, good lifestyle, and job satisfaction" (MB8).

The personal drive to research is sometimes expressed as a need almost beyond the control of the respondent—almost predestined, as here:

- "I'm not sure I do this by choice—research is an obsession, it's just how we're wired" (MPO).
- "I am driven to do research not because it is my job to do so (which it is) but because it is part of who I am to do so" (MHO).

Outcomes of research (beyond the personal), if they are mentioned in this category, are described not as ends in themselves (which we will see in the outcomes category explored next) but in relation to personal fulfillment, as here:

- "Long after all around me are dead and forgotten, you'll be able to look up my papers and see what I did" (MB8).
- "Peer recognition of my work (to be 'famous' for something)" (MB8).

- "I oscillate between being motivated by curiosity and being motivated primarily by career advancement/peer recognition" (FBO).

Outcomes may also appear in this category as unfortunate or necessary hurdles and by-products of the research process:

- "Writing things down in publications is a necessary requirement that enables you to continue doing research, but it is not my favorite past-time" (MBO).
- "The main driving factor is still a personal curiosity. Publishing regularly is necessary for promotion and career advancement" (MPO).
- Or as a bonus, "basically, the tougher a challenge in research, the more motivated I get in researching the problem, irrespective of its potential impact on society and irrespective of the ability to publish the results. However, both publication and impact are big bonuses, and I view them like one thinks of dessert at the end of a very tasty dinner" (MP8).

Notably, all of the above responses are characterized by the recurrence of first-person singular pronouns: I, me and my. This is often absent in the next category.

Outcome (Extrinsic Motivations)
In contrast to the sorts of comments in the personal category, comments categorized as outcome-related emphasized the role of research in contributing to knowledge advancement, identifying problems, finding solutions, "making a difference," and directly improving peoples' lives. To paraphrase John F. Kennedy, it could be said that outcome-driven respondents ask not what research can do for them but rather what they can do for research (or what they can do for others through their research). In this sense, the motivational direction of outcome is extrinsic. This orientation beyond the self was often signaled by the absence of reference to self and self-fulfillment in the choice of language. This is in stark contrast to the 'I' focus of the personal responses. For example:

- "Key motivation is to understand new things that could help others' lives" (MBA).
- "Improving outcomes for stroke patients" (FBO).
- "To make a difference, and to identify the solution" (MBO).

- "Making a difference to the lives of individuals. Many separated parents often make contact with me and use my research" (MHA).
- "Conducting research that makes a difference to the next generation is critical" (FBA).
- "My research has been strongly motivated by social justice objectives, particularly reducing health inequalities" (FHA).

Outcome-related motivations not only focus on the direct benefits of research on the public, but also encompass motivations aimed at advancing the stock of human knowledge:

- "I do research to produce answers to key questions affecting people's health. By publishing my findings, I seek to move the science forward and promote robust scientific discussion about what the findings mean" (MB8).
- "I have always conducted research with a clinical focus. I publish primarily to advance theoretical understanding of different clinical symptoms so as to ultimately inform the design of new psychological treatments" (FBA).

Outcome-related comments also include recognition that outcomes are not always immediate or, indeed, clear. For example:

- "I really hope that it will one day be useful—and I do try to work on meaningful problems—but because I work on fairly fundamental research, it is hard to know exactly how it will be applied in the future, and how significant it will turn out to be" (MP8).
- "The usefulness of the present research is not always clear. I see the research process as part of a larger common movement, driven by the research community. Each publication, even if the application is not always clear, contributes to the overall movement" (MPO).
- "We do public funded research, and the fruits should reach the public. (Fruits need not be a product or applied research, but just plain knowledge.)"

Process (Intrinsic/Extrinsic Motivations)

Motivations categorized as process-related emphasize the *what and how* of the research rather than the *who* (personal) and *why* (outcome). The focus here is on teamwork, collaboration, testing and exploring ideas, mentoring, teaching, and presenting results. Process-motivated responses

were often couched in affective terms: the joy of discovery or the satisfaction of completing a project:

- "the intellectual stimulation of thinking, writing papers, pushing forward with ideas, then grant writing, the competitive nature of this, fed by successes in getting grants, publishing papers…etc." (FB8).

Motivation drawn from the processes and stages of research is evident in these responses:

- "I appreciate the ability to complete a project or series of experiments to a stage where it is a publishable body of work" (MB8).
- "I enjoy coming up with new ways to make measurements and advance understanding of how plants interact with the environment" (FB8).

Participants expressing process-driven motivations also valued collaboration, mentoring, and teamwork as here:

- "… I get satisfaction from achieving this, as an individual and as a team…" (MB8).
- "… enjoy doing research from fieldwork through to lab work through to completion of publications. [Also] enjoy knowing that other researchers read your publications/attend and listen to conference presentations, etc." (FB8).
- "I really enjoy being an academic, undertaking research, writing, and research-led teaching. I feel privileged to have the autonomy and opportunity to explore the world of ideas and practice in my field. I particularly enjoy both national and international research collaborations as part of this exploration" (FHO).
- "… Research in my field is dominated by colleagues that are very positive and collaborative. Students are equally there because they want to make a difference. It is great to link "good ideas that need to be addressed" with methodological ideas that allow us to tackle them" (MBA).

Combined Themes

Of the total of 330 responses, 230 (70 %) were classified as encompassing elements of more than one theme. The largest proportion of this multiple themes group were those designated as combining *personal*

and process motivations. This represented 42 % of responses. This is significantly more (by 11 %) than those exhibiting *personal and outcome* motivations (31 %).

DISCUSSION

These results suggest that the motivations of successful mid-career researchers may be understood as either personal, process, or outcome related, or a combination thereof. Motivations, therefore, can be said to encompass the "who" (personal), the "what/how" (process), or the "why" (outcomes). These correspond to a continuum, from motivations that are largely self-oriented on the one hand (personal) to those that are largely altruistic on the other (outcomes). The transitive nature of outcome-oriented motivations means that the driver to do research and any pleasure derived from the process are attributable to a purpose that lies beyond the self. Interestingly, many of the outcome-oriented comments were self-effacing in the sense that self-fulfillment did not seem to factor at all. By contrast, some of the personal motivations are entirely self-directed. The combined comments—in which personal, process, and outcome-related motivations coalesce—demonstrate that personal fulfillment in the narrow sense can coexist with a more expansive, transitive view such that satisfaction can arise through both self-fulfillment and fulfillment of the needs of others.

In our view the most striking finding is the large proportion of respondents—43 %—who expressed their key motivations to do and disseminate research without including consideration of the outcomes of research. When reflecting on this finding, it is important to keep in mind that respondents were asked to comment on their motivations for doing research and publishing it—not on what they consider to be the role and purpose of science. This latter question, if asked, may have generated different responses. It might be argued, then, that the form of the question itself encouraged a personalized response. While this is plausible—and it would certainly be worthwhile probing this more deeply through interviews, for example—in some respects it only serves to make the contrast in responses more interesting. To put it another way, given the emphasis placed by the question on the researchers' *own* motivations, the fact that some researchers' motivations encompass outcomes beyond themselves and others do not is worthy of further investigation. It should also be noted that while 43 % of respondents did not refer to the outcomes of

their work as a key motivating factor for their research, this does not mean that such considerations do not matter at all—they are just not a *key* motivator. It would be worthwhile fleshing this out further through follow-up interviews. We also have no data on if or how this lack of outcome-related motivation actually impacts on research outcomes. Nor do we have data on whether those researchers who expressed outcome-related motivations actually achieve such impacts through their research. Both issues are worthy of further inquiry.

With these cautionary notes sounded, a dramatic contrast in motivations remains, raising the question of why such a significant proportion of awardees of a national, flagship research-impact oriented funding scheme express their key motivation to undertake research with no reference to the value or significance of the outcomes of that research. It should be remembered that responses categorized as "outcome related" not only focus on the direct contribution of research to a public good, but also include motivations aimed at advancing knowledge. While personal motivations are clearly not an obstacle to mid-career research success (our sample are all future fellows), given the substantial public investment in research and research education, should we expect to see a greater emphasis from this cohort on the *results* of research? The objectives of the scheme itself are clearly oriented toward knowledge transfer. In the words of the initial consultation paper, the objectives of the scheme are to support research in areas of: "…national priority across all disciplines that *will result in economic, environmental, social, health, or cultural benefits for Australia*" (Carr 2013, p. 4, emphasis added). There is little evidence from the findings of our study that these somewhat instrumental aims resonate in the motivations of many researchers. This may not be terribly surprising given the scarcity of research funding. While this is only conjecture, it may be that researchers will apply for any source of funds—even if not entirely consistent with their research aims. This raises the question, of course, of whether motivations have a role to play in research outcomes. It may be the case that it does not matter and that as long as there *is* motivation, the characteristics of that motivation are irrelevant.

While finding an answer to this question is beyond the scope of this chapter, assessments of Australia's research and innovation systems suggest that motivations do matter. These assessments point to systemic factors inhibiting the translation of research into public benefits. A recent report by the Australian Academy of Science (AAS), for example, identifies some of the prohibitive effects of the way researchers are rewarded, both

in terms of career advancement and research profile (AAS 2014). In the Australian HE system, as with many elsewhere, peer-reviewed publication history and competitive grant success form the basis of career advancement opportunities. This leaves little incentive for researchers to pursue research translation activities, which are both time consuming and under-recognized in research reward systems.

Our findings are consistent with this assessment. Whether in response to the lack of incentives for research translation, or as an additional factor which compounds this lack, our findings suggest that many researchers are focused on (and in many cases excited by) the internal processes of research as these lead to sustainable research careers and career progression: in short, the opportunity to do more research. While our findings suggest that satisfaction with the processes and practices of research as ends in themselves is sufficient for many researchers to maintain motivation, evidence of "abandoning science" type confessions in the literature certainly suggests that frustration with lack of incentives for research translation has led some to leave research careers to tackle "real-world" problems in other career paths (Teytelman 2014).

CONCLUSION

This chapter has sought to raise the issue of researcher motivations as one worthy of greater attention. The findings presented here, although preliminary, highlight a wide variation in researcher motivation as well as potential tensions between what motivates researchers and the expectations of research funding agencies. This has relevance for PhD programs concerned with the motivations they are hoping to instill in graduates that might be conducive to successful research careers post-graduation.

The increasing instrumentalism of research policy has implications for research education and researcher development more broadly. It also stands in stark contrast to the vastly more personal motivations that drive many researchers. It is not that self-fulfillment should be absent from researcher motivation. Competition between researchers for prestige and success can be highly productive as James Watson's own account of the discovery of the double helix testifies (2001). Individual researchers wanting to be "the first"—to identify the structure of DNA, for example—can lead to great advances in science. Similarly, a narrow, instrumental conception of research does not necessarily serve the interest of science or

the broader community either. Nor does it seem that highly instrumental conceptions of research resonate with many researchers, and this may have implications for researcher retention. If a rich suite of motivations is desirable in researchers, incorporating both personal and more altruistic elements, then the issue of researcher motivation is an important one for PhD programs to consider. Some questions that might be addressed include: what role PhD education plays in developing researcher motivations and understandings of the role and purpose of research; whether and why researcher motivations change; what role, if any, the research environment and organizational context might play in the formation of researcher motivations; and finally what relationship there might be, if any, between research motivations and the outcomes of research?

References

Academics Anonymous. 2014. "Why I'm Leaving Academia." *The Guardian*, May 10, 2014. http://www.theguardian.com/higher-education-network/blog/2014/may/01/academic-anonymous-leaving-academia

Akerlind, G. 2008. An Academic Perspective on Research and Being a Researcher: An Integration of the Literature. *Studies in Higher Education* 33: 17–31.

Archer, L. 2008. Younger Academics' Constructions of 'Authenticity', 'Success,' and Professional Identity. *Studies in Higher Education* 33: 38–403.

Auriol, L., M. Schaaper, and B. Felix. 2012. *Mapping Careers and Mobility of Doctorate Holders: Draft Guidelines, Model Questionnaire and Indicators–Third Edition*. OECD Science, Technology and Industry Working Papers, No. 2012/07. Paris: OECD Publishing.

Australian Academy of Science (AAS). 2014. "Submission to the Senate Economic References Committee Inquiry into Australia's Innovation System." Accessed April 13, 2015. http://www.science.org.au/sites/default/files/usercontent/australiasinnovationsysteminquiry.pdf.

Bowen, W., and N.L. Rudenstine. 1992. *In Pursuit of the PhD*. Princeton: Princeton University Press.

Brailsford, I. 2010. "Motives and Aspirations for Doctoral Study: Career, Personal, and Inter-Personal Factors in the Decision to Embark on a History PhD." *International Journal of Doctoral Studies* 5: 15-27.

Brew, A., D. Boud, and S.U. Namgung. 2011. Influences on the Formation of Academics: The Role of the Doctorate and Structured Development Opportunities. *Studies in Continuing Education* 33: 51–66.

Carr, K. 2013. Future Fellowship Consultation Paper. Accessed September 24, 2014. http://www.arc.gov.au/pdf/future_consultation.pdf.

Chung, J.Y., and J. Petrick. 2011. Doctoral Students' Research Productivity: An Analysis of Publications in Tourism and Hospitality Journals. *Journal of Hospitality, Leisure, Sport & TourismEducation* 10: 63–71.

Cuthbert, D. and T. Molla. 2015. "PhD Crisis Discourse: A Critical Approach to the Framing of the Problem and Some Australian 'Solutions.' *Higher Education* 69: 33–53.

Dever, M., P. Boreham, M. Haynes, M. Kübler, W. Laffan, K. Behrens, and M. Western. 2008. *Gender Differences in Early Post-PhD Employment in Australian Universities: The influence of PhD Experience on Women's Academic Careers.* Brisbane: The University of Queensland Social Research Centre.

Elizabeth, V., and B.M. Grant. 2013. 'The Spirit of Research Has Changed': Reverberations from Researcher Identities in Managerial Times. *Higher Education Research and Development* 32: 122–135.

Gardner, S.K. 2009. Conceptualizing Success in Doctoral Education: Perspectives of Faculty in Seven Disciplines. *The Review of Higher Education* 32: 383–406.

Grove, W.A., and S. Wu. 2007. The Search for Economic Talent: Doctoral Completion and Research Productivity. *The American Economic Review* 97: 506–511.

Guerin, C., A. Jayatilaka, and D. Ranasinghe. 2014. Why Start a Higher Degree by Research? An Exploratory Factor Analysis of Motivations to Undertake Doctoral Studies. *Higher Education Research & Development* 34(1): 89–104. doi:10.1080/07294360.2014.934663.

Hakala, J. 2009. The Future of the Academic Calling? Junior Researchers in the Entrepreneurial University. *Higher Education* 57: 173–190.

Kim, K., and S.J. Karau. 2010. Working Environment and the Research Productivity of Doctoral Students in Management. *Journal of Education for Business* 85: 101–106.

Leonard, D., R. Becker, and K. Coate. 2005. To Prove Myself at the highest Level: The Benefits of Doctoral Study. *Higher Education Research & Development* 24: 135–149.

McAlpine, L., and C. Amundsen. 2009. Identity and Agency: Pleasures and Collegiality Among the Challenges of the Doctoral Journey. *Studies in Continuing Education* 31: 109–125.

Mokhtar, M. 2012. Intentions and Expectations of Female PhD Students in Engineering at One University in Malaysia. *Procedia—Social and Behavioral Sciences* 56: 204–212.

Rodwell, J., and R. Neumann. 2008. Predictors of Timely Doctoral Student Completions by Type of Attendance: The Utility of a Pragmatic Approach. *Journal of Higher Education Policy and Management* 30(1): 65–76.

Royal Society of Chemistry. 2008a. *Change of Heart: Career Intentions and the Chemistry PhD.* London: Royal Society of Chemistry.

———. 2008b. *The Chemistry PhD: The Impact on Women's Retention.* London: Royal Society of Chemistry.

Sinclair, J., R. Barnacle, and D. Cuthbert. 2013. How the Doctorate Contributes to the Formation of Active reseArchers: What the Research Tells Us. *Studies in Higher Education* 39: 1972–1986.

Stein, S. 2014. "America's Top Young Scientists Warn of Systemic Brain Drain: Colleagues 'Sort Of Disappear'." *Huffington Post*, May 10, 2014. Accessed September 25, 2014. http://www.huffingtonpost.com/2014/04/16/science-brain-drain_n_5161295.html

Teytelman, L. 2014. "Goodbye Academia." *Yes, Another Science Blog*, February 14, 2014. http://anothersb.blogspot.com.au/2014/02/goodbye-academia.html.

The Australian Research Council. 2013. "Evaluation of the Future Fellowships Funding Scheme 2013." Accessed September 24, 2014. http://www.arc.gov.au/pdf/FT%20Evaluation%20Report/FT_Evaluation_Report.pdf.

Turner, G., and L. McAlpine. 2011. Doctoral Experience as Researcher Preparation: Activities, Passion, Status. *International Journal for Researcher Development* 2: 46–60.

Watson, J.D. 2001. *The Double Helix: A Personal Account of the Discovery of the Structure of DNA*. New York: Touchstone.

Conclusion: The Multiplying "Texts" of Graduate Education

Prompilai Buasuwan and Deane E. Neubauer

The chapters contained in this volume suggest a complex and continually emerging "text" for graduate education in the Asia Pacific region. As the whole of global education becomes increasingly focused around, and to some extent determined by, the manner in which (increasingly global) economic forces come to be expressed in societies, these forces are in turn transmitted through the varying arenas of graduate education. In one way, this yields to the whole of the enterprise of graduate education an economic reductionism that highlights both the seemingly constantly rising economic costs of such education (to institutions, governments, and students) and creates a presumptive calculus of benefits that are to be derived from the overall process. The results are often conflating. To select just one example, in the science, technology, engineering, and mathematics (STEM) fields, graduate education is increasingly viewed as a desired and perhaps necessary extension of undergraduate education required to "intellectually

P. Buasuwan (✉)
Kasetsart University, Bangkok, Thailand

D.E. Neubauer
Asia Pacific Higher Education Research Partnership, Honolulu, HI, USA

power" work underwritten by the society as a whole, largely because of its eventual contributions to innovation in both public and private sectors and for societal economic development. This emphasis can lead to "the diploma disease" that Buasuwan and Jones discuss in Chap.11, as well as (and ironically) the complaint that Bundit Fungtammasan points to in Chap.10, wherein higher education (HE) in general is viewed as deficient in the provisioning of graduates with skill sets of direct and immediate use to those within the economy seeking to employ such graduates. Looking at other parts of the graduate education equation, one can identify additional forces being articulated through HE graduate programs, such as that which Yusop focuses on in Malaysia where a critical need appears to emphasize the nurturing of future civic-mindedness within a generation of emerging professionals.

These examples suggest to us the continual interplay between four major variables or forces such that they seemingly create a ceaseless display of exemplifications. One factor, as indicated throughout this volume, but perhaps most emphasized by Neubauer in Chap. 4, is the extent to which global economic forces continue to develop and be experienced simultaneously both similarly and uniquely by given societies. In his chapter, Neubauer stresses the extent to which labor itself, up and down the continuum from simple manual labor to the most complex machine and technology dependent labor, is continuously being redefined, recalibrated, and revalued by global market forces that in important ways affect both domestic and "foreign" labor equations.[1] This dynamic is seemingly an inescapable consequence of the complex forces driving economic globalization and as such has developed a ubiquity within HE discourse, as country after country and society after society seek to address the dynamic and its consequences in ways that both "make sense" within a particular higher education equation (i.e. the complex history, structures, and trajectories of higher education within a given society) *and* simultaneously seek to deal with an increasingly complex pattern of innovation and novelty literally taking place within academic "spaces" external to national parameters. Increasingly, these may be arising out of novel sites of cross-border

---

[1] To take just one example, as this is being written yet a new major "trade agreement" is in its latter stages of negotiation. The Trans-Pacific Partnership Agreement, which has been ongoing for more than five years, is currently the subject of substantial opposition in the USA for a host of reasons, but the undercutting of US wage standards is one of the most important. See Public Citizen (2015) for the critical view and the Office of the United States Trade Representative for the official government statement.

innovation (often communicative) such as massive open online courses, and their emergent counterparts such as massive open online research[2] and other online innovations, or continuously even emergent universities such as Laureate which is continuing to grow with a presence already on five continents (Laureate International Universities 2015).

Within the context of this volume, these innovations will, perforce, continue to redefine graduate education in a variety of ways. One is the extent to which these innovations frame and articulate "issues" and "problems" within ranges of discourse, often such that they stand outside the conventional intellectual inventories of traditional disciplines. In this regard then, these communicative structures promote a kind of interdisciplinary or cross-disciplinary conversations within higher education institutions (HEIs). Another is the slow and perhaps imperceptible ways in which the criteria for the selection of graduate students are developed and implemented within HEIs that lead in an important way to how the culture of graduate education changes within institutions.

Another factor, partially framed by the aforementioned discussion of the "diploma disease," is the gradual deflation of the value of bachelor's degrees in their comparison to graduate degrees, or to express it in the obverse: the phenomenon of "credential inflation." Within the complex dynamics of the emergent knowledge economy, we observe—simultaneously— a challenge to higher education from the position that it is increasingly irrelevant to the "real" needs of the workplace, particularly in high-tech fields (exemplified by the individual who quits higher education to create a new high-tech enterprise, e.g., famously, Bill Gates), and the expectation of employers that within the equally emergent globally influenced employment market, one can ask for—demand—graduate education experience from prospective employees. (On the issue of the "irrelevance" of conventional higher education, see Kamenetz 2010; on that of greater expectations for graduate education, see Pappano 2011.) As indicated throughout this volume in various places, the underlying "structure" of this phenomenon is the persistent alignment dilemma created by the dynamics of the global economy wherein global demand for employment is transmitted through individual national economies in highly inefficient ways, leading to situations throughout the globe where higher education systems are

---

[2] In this regard, see the innovations of the Jacobs School of Engineering, at UC San Diego: "Is Massive Open Online Research the Next Frontier for Education?" (Jacobs School of Engineering 2013). The research in question here occurs in the graduate program in computer science and engineering at the Jacobs School of Engineering.

producing graduates who find it difficult (or impossible) to find employment commensurate with their level of education and/or training. (For the case of China and India, by way of example, see Sharma 2014.) However, one chooses to frame this issue, it is clear that the value of the currency of a graduate education is volatile and often dependent on factors that lie external to the actual higher education institutional (HEI) structures providing such education, which in the very manner in which they are established and operate, function within their societies with a time delay between the conceptualization and provision of such education and its ultimate received value by those societies.

A third factor to examine in this context of the changing character of graduate education, one that seemingly emerges inescapably along with the strength of the economic determinants operating on such courses, is what might be viewed as the "thinning out" of the normative structures of such degrees. By this we mean several things. First, there is the increasing bias within virtually all of higher education to rewarding the STEM fields within overall curricular structures at the expense of the traditional disciplinary aggregations of social science and humanities.[3] These in turn gain the favor within contemporary HEIs largely because of the perception that increasing investment in them is likely to gain subsequent returns to the HEI through various innovations that emerge from them and because the graduates of such programs are viewed as more readily employable. Certainly this is true of PhD programs. Second, within the entire spectrum of graduate degrees, those that have grown most rapidly over the past several decades across many nations are those that are manifestly professional degrees, especially at the master's degree level, and probably most uniformly across countries by the numbers of students pursuing the MBA or some version of this, perhaps followed closely by master's degrees in education. Both of these factors, the preference for STEM graduate degrees and those aimed explicitly at professional application lead to a tendency to emphasize the instrumental gains that accrue to the degree holder, in the form of income, position, and so on.

---

[3] One must proceed here with a bit of caution inasmuch as economics as a field has, within its traditional location as a social science, come to emphasize itself through its scientific self-construction, largely through its mathematization over the past four or five decades ... a transformation acknowledged, of course, by the fact that it is the only one of the social sciences to be awarded a Nobel Prize. See an interesting argument in Katzner (2003). The history of political science over the past five decades has exhibited an interesting dynamic with the growth of rational choice emphases in many departments, an approach, which again owes much to its mathematization. See an interesting relatively early review by Petracca (1991).

This leads in the third stead to the kind of argument that Yusop is making in Chap. 9 that one important "loser" in this current higher education graduate degree equation is the community, both small and large. To phrase it slightly differently, the diffuse benefits once viewed as rightly accruing to the broader, generalized community, framed within notions of the *public good*, lose out to more narrow, instrumental goals. (For a broader discussion of issues of the public good, see Neubauer 2008.) As Yusof and others point out, this shift in emphasis is in contradiction to an older, and celebrated academic emphasis, one that, following Dewey and others, sought to instill in the graduate scholar the sense of a civic-minded professionalism. And as Steger and Roy (among many others) point out, this particular emphasis on the economic reductionism of the role framed by graduate education is very much coincident with the kind of neoliberalism that has become the operational code of contemporary globalization (Steger and Roy 2010).

The fourth major factor that emerges from this discussion of graduate education is the extent and degree to which the massification of higher education is proceeding throughout the Asia Pacific region, leading all countries to provide higher education across their societies with a reach and to an extent that is unparalleled. Massification has been sufficiently broad and varied as it has infused the region to promote a wide variety of different kinds of structures and behaviors, but as a valid generalization one can assert that two of its common qualities have been overall the shifting of the increasing costs of higher education increasingly onto students as participants within the process, *and* often providing access to higher education at the expense of a diminution of quality.[4]

CONCLUSION

The contributions to this volume display some of the complex dynamics that are affecting graduate HE throughout much of the world, and surely among the most developed countries, which as groups and clusters find themselves ever more propelled into the varied consequences of

[4] This complex subject has been the topic of a recent seminar conducted by the Asia Pacific Higher Education Research Partnership at the Hong Kong Institute of Education in October 2014. Papers presented at this event are being assembled for publication by Springer Publishers, edited by John N. Hawkins and Alfred Wu. Conference papers can be accessed at: http://apherp.org/hong-kong-oct-2014/. A separate set of papers has been published as a special edition of the *Journal of Education and Work*, June 2015, edited by Ka Ho Mok and Deane E. Neubauer.

contemporary globalization. If there is a primary "takeaway" from this survey of graduate education, it is the oft-stated, but no less important because of it, nature of the dynamics themselves that are expressed within these structures and programs of graduate education. Perhaps the most persistent theme resonating throughout the globalization literature is the instance that the nature of change itself, as David Harvey has put it, is changing (Harvey 1989). Beyond the simple cleverness of the remark, it is the implication that whatever we may have thought we knew about processes of change and may indeed be ripe for rethinking. The reality for many aspects of graduate education, as the foregoing chapters emphasize, is that in many ways that are novel, it is faced not only with a range of challenges to demonstrate its continued relevance and value, but also to do so within a framework of continued self-examination imposed on it by the very dynamics of globalization detailed by these chapters. The burden of these challenges is even greater when one gives full measure to the basic conservatism and reluctance toward change that for generations has been both an enduring and valued feature of universities and other institutions of HE. Their strength and value across many societies are themselves in the process of changing. However, as these chapters again demonstrate, the degree to which a culture of self-examination has grown up within graduate education is encouraging given the degree to which HE as a global enterprise itself will continue to be framed and impacted by these processes of increased globalization and all that they imply.

References

Jacobs School of Engineering. 2013. "Is Massive Open Online Research the Next Frontier of Education?" Accessed June 2, 2015. http://www.jacobsschool. ucsd.edu/news/news_releases/release.sfe?id=1421.

Harvey, D. 1989. *The Condition of Post Modernity: An Inquiry into the Origins of Cultural Change*. Oxford: Blackwell Publishers.

Kamenetz, A. 2010. *DIY U: Edupunks, Edupreneurs, and the Coming Transformation of Higher Education*. White River Junction, VT: Chelsea Green Publishing.

Katzner, D.W. 2003. "Why Mathematics in Economics?" *Journal of Post Keynesian Economics* 25(4):561–74. Accessed June 15, 2015. http://www.tandfonline. com/doi/abs/10.1080/01603477.2003.11051373.

Laureate International Universities. 2015. "Laureate International Universities." Accessed June 8, 2015. http://www.laureate.net/.

Neubauer, D.E. 2008. "The Historical Transformation of the Public Good." *The Journal of Asian Public Policy* 1(2):127–38.

Pappano, L. 2011. "The Master's as the New Bachelor's." *New York Times*, July 22. Accessed June 15, 2015. http://www.nytimes.com/2011/07/24/education/edlife/edl-24masters-t.html?_r=0.

Petracca, M.P. 1991. "The Rational Choice Approach to Politics: A Challenge to Democratic Theory." *The Review of Politics* 53(2):289–319.

Public Citizen. 2015. "Trans-Pacific Partnership (TPP): Job Loss, Lower Wages and Higher Drug Prices." http://www.citizen.org/TPP.

Sharma, Y. 2014. "What Do You Do with Millions of Extra Graduates?" *BBC News*, July 1. Accessed June 15, 2015. http://www.bbc.com/news/business-28062071.

Steger, M. and R.K. Roy. 2010. Neoliberalism–A Very Brief Introduction. Oxford: Oxford University Press.

Index