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Review on Quality of Doctoral Study Program

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Abstract

The doctoral study program has drawn the attention of researchers from national authorities, academic association and international organizations for the substantial influence on the innovation of human society. As the extension of tertiary education during the earlier decade, the doctoral study program started to face the distinct motivation. It is the core to keep the guarantee of the quality of their study program targeted at the ideal of a doctoral study program of the respective disciplines in higher education institutions. Therefore, in this article, those researches on the theme of "Quality of doctoral study program" is reviewed. Seven fileds have been identified: researches on the problem of recruitment, completion rate and attrition rate; investigations on the amounts, composition and studies path of Ph.D. students; studies on the relationship between supervisors and Ph.D. students, interaction among peers; seeks of the organization and social inclusion of program; discussions of the content of studies and academic examination of thesis; surveys of the employment of graduates; recommendation of the quality evaluation models of doctoral study program.

Key words:

Doctoral education, doctoral study program, quality, Ph.D., review

INTRODUCTION

In an entirely contemporary era of knowledge economy, the innovation is beckoned at an unprecedented level especially on the talented human resources and advanced academics in a society. There is no suspicion that doctoral education prepared the maximum outputs in driving the progress of science and technology in the numerous domains. Doctoral programs are responsible to provide the superior quality of disciplinary researches, especially under the effect of globalization and magnitude of expansion in tertiary education. Therefore, the quality issue ascends to rouse the academic interest and national concern. The existing researches are analyzed in this article to generate the essential points and areas most frequently focused by the academics.

HISTORY OF DOCTORAL STUDY PROGRAM

The Ph.D. degree was initially launched into higher education in Germany at the beginning of the 19th. century, and then gradually involved in the American academic world since the first generation of the three graduates achieved a Ph.D. degree at Yale in 1861. At the highest level of education system, doctoral education has exported a high proportion of human resources as researchers, scholars, teachers and leaders in various disciplines of the society since the spreading of doctoral education worldwide in the 20th. century. The research on doctoral education was not detached from postgraduate education (or graduate education in North America) until the 1990s. The doctoral study program was gradually perceived as one of the essential topics of doctoral thesis in education in the preceding decades.

Emergency of the professional program and the spread of globalization drive the mobility of academics from the ivory tower to real estate. In 1990s, professional programs were introduced to doctoral education widely in the world including Ed.D., D. Eng, DBA, and so on. Plenty of researchers were attracted to classify the difference between the academic study program and professional program in doctoral education. In the specific subject of education, the different characters of Ed.D. and Ph.D. study program were compared from the purpose, admission process and thesis assessment by survey in 38 Australian doctoral education institutions (Maxwell, Shanahan, 1996). As well as the survey of cross-disciplines, The importance of trans-professional working and the "authentic"

professional voice was revealed especially by the quantitative and qualitative data obtained from STEM subjects (engineers, pharmacists, nurses and computing professionals) (Smith, Curtis, Fulton, Kuit, Sanders, 2012). As work-based doctorates, their learning experience showed the effect of profession and career from knowledge (Costley, Lester, 2012). Nevertheless, most of the researches on the quality of the doctoral study program typically refer to the academic research program in this article.

The globalization brought doctoral education the additional responsibility of cultural inclusion in human society. The influence on the organization and development of doctoral education program attracted attention from researchers (Kienle, Loyd, 2005). The research on doctoral education started to be considered in a global perspective and comparative method by transdisciplinary researchers (Kumar, Lee, 2011). The unfamiliar environment and the challenges in doctoral education practices were examined by international pedagogies (Lee, Danby, 2011). However, these latest trends gradually brought the uncertainty and doubt of the quality of doctoral study program in reality.

The Category of Existing Researches

In this article, the previous literatures are reviewed by raking through the keywords including "doctoral education", "doctoral program", "Ph.D.", "quality of doctoral program" in the database of "Proquest Educational Journals", the worldwide publication of specialized research organization or association such as "AAU", "OECD", "ENQA" and so on from 1990 to 2013, and the classical monograph and documents which were referenced in them.

Among those researches, there were various trans-disciplines surveys by quantitative statistics and cross-countries comparison. The researches are classified by their focus on the six segments of doctoral study program, including recruitment (HEFCE, 2005; Quarterman, 2008), completion rate (Booth, Satchell, 1996; Nerad, Miller, 1996; HEFCE, 2005) and attrition rate (Nelson, Lovitts, 2001; Rudd, 1968; Lipschutz, 1993; Ehrenberg, Jakubson, Groen, Price, 2007; Smith, Maroney, Nelson, Abel, Abel, 2006; CGS, 2007), amounts (Blume, Amsterdamska, 1987; Holden, 1995; AAU, 1998; NSF, 2012), composition (Thurgood, Golladay, Hill, 2006; Ferber, Kordick, 1978; Maher, Ford, Thompson, 2004; Espinoza, 2008) and studies path of Ph.D. students (NSF, 2012), relationship between supervisor

and Ph.D. student (Ives, Rowley, 2005; Bell-Ellison, Dedrick, 2008; Barnes, Austin, 2009; Hall, Burns, 2009; IDAC, 2012), interaction among peers (Holbrook, Bourke, Lovat, Dally, 2004; Noonan, Ballinger, Black, 2007; Ali, Kohun, 2008), organization (Berelson, 1960; Clark, 1993; Woodward, Denicolo, Hayward, Long, 2004) and racial inclusion (Pascarella, Wolniak, Pierson, Flowers, 2004; Ramirez, 2007; DeBoyes, 2010) of doctoral study program, content of studies (Gunzenhauser, Gerstl-Pepin, 2006; Eggins, 2008; Frances, 2010) and academic examination of thesis (Mullins, Kiley, 2002; Holbrook, Bourke, Lovat, Dally, 2004), and employment of graduates from doctoral study program (Clark, 1982; Leatherman, 1998; Metcalfe, Gray, 2005; Auriol, 2007; Picciano, Rudd, Morrison, Nerad, 2007; CRAC, 2010), which were identified as the performance indicators in assessment of doctoral study program. Additionally, there are the specific researches on quality Evaluation Models of doctoral study program (Lipschutz, 1993; Eisenhart, DeHaan, 2005; ENQA, 2005; Maki, Borkowski, 2006; Nyquist, Woodford, 2000; Golde, Dore, 2001; Johanson, 2005; Brooks, Heiland, 2007; Gardner, 2009; Abdullah, 2006; Javadi, Samangooe, Tanhaei, 2011; Chen, 2012).

Recruitment, completion and attrition rate of doctoral study program

In the recruitment of doctoral study program in higher education institutions, researchers considered essentially on the structure of Ph.D. students with different educational background. The report resulted the rate of Ph.D. students, who were directly from a first degree or MSc to a Doctoral study program from the same higher education institution, was 35% in full-time program while 12% in part-time program; 27% of Ph.D. students were from different higher education institution in full-time program while 9% in part-time program; 38% full-time students and 78% part-time students didn't qualify at undergraduate or MSc level in the year before based on all students who began a PhD (or Mphil leading to PhD) in academic year 1996-97 at a UK HEI (HEFCE, 2005). And the barriers in the process of enrollment into a Doctoral study program was surveyed by the interview of 100 administrators in PWUs in the Midwestern US, concluding "the most dominant themes to emerge as barriers to recruitment were the need for planned recruitment, the lack of financial resources and an insufficient pool of eligible student" (Quarterman, 2008).

The completion rate was concentrated by researchers and institutions

as well as the determinants and implications as a performance indicator in the assessment of the doctoral study program (Booth, Satchell, 1996). There were 78% of the students who completed a graduate program with 60% receiving a Ph.D. and 18% leaving with a master's degree in their study of the 1981-83 cohorts of Ph.D. students at the University of California, Berkeley. Among all of the Ph.D. students, international students had the highest completion rates in all fields and cohorts (Nerad, Miller, 1996). The rate of PhD completion was raised by the differences in financial backing, student domicile, and age on entry, previous qualifications and subject, as well as mode (HEFCE, 2005).

"The national attrition rate across disciplines has averaged around 50 percent, and some departments have lost an even higher percentage" (Nelson, Lovitts, 2001). "Relatively high wastage rates in the humanities may be the result of students' loneliness & intellectual isolation, but high wastage rates are not necessarily harmful" (Rudd, 1968). The organizational factors contributing to high attrition rates were concluded as the student selection process, program structure, ineffective advisers, ineffective mentors, program flexibility, and the community of the program (Lipschutz, 1993). The influence of program characteristics such as Graduate Initiative (GEI) brought to the doctoral students' attrition and graduation probabilities (Ehrenberg, et al., 2007). The subjective factors of doctoral students included relationships with significant others, family responsibilities, support systems, employment responsibilities, financial strains, time constraints and overload (Smith, et al., 2006). The Ph.D. Completion Project addressed the issues surrounding Ph.D. completion and attrition and contributed to increase doctoral degree completion in six areas including selection, mentoring, financial support, and program environment, research mode of the field and processes and procedures (CGS, 2007).

Amounts, composition and studies path of Ph.D. students

The doctoral education report was published annually to view the changing amount of institutions and students involved in. Postgraduate enrollment data were provided as well as the structure and composition of Ph.D. students, their financing condition, duration and non completion in training, and employment statement in six countries from 1973 to 1983 for OECD (Blume, Amsterdamska, 1987). There was an argument on population control of Ph.D. groups in the U.S. institutions (Holden, 1995). The quantitative dimensions of Ph.D. education were investigated on national

perspective (AAU, 1998). Fundamental questions in doctoral education system were sought in the research to confer the effect of expansion of the 1960s and the consequent contraction in enrollments and degrees of doctoral study program (Bowen, Rudenstine, 1992).

The structure of students in the doctoral study program is another spot of serious attention in research. Demographic characters of Ph.D. students were statically introduced by sex, citizenship status, race, ethnicity, age, disability status, marital status and dependents, parents' education as well as fields of study (Thurgood, Golladay, Hill, 2006). Nearly all of the investigation of Ph.D. students started on their gender, however, the discrimination existed in earning a Ph.D. degree process was concentrated in research (Ferber, Kordick, 1978). Factors affecting doctoral degree progress were explored by questionnaires in survey of doctoral programs for recipients in the Stanford School of Education between 1978 and 1989 (Maher, Ford, Thompson, 2004). Recent thesis on Ph.D. studies also attributed to gender differentials in pursuing a doctoral degree (Espinoza, 2008).

Since 1957-1958, the Survey of Earned Doctorates (SED) began to collect data continuously on the number and characteristics of individuals receiving research doctoral degrees from all accredited U.S. institutions to assess characteristics and trends in doctorate education and degrees. They discovered the recipients in doctoral education program and their studies path to earn a doctoral degree in the preceding decades (NSF, 2012).

Relationship between supervisor and Ph.D. student, interaction among peers

Influences of advisors are especially the tutors of Ph.D. students have been discussed a lot in the professional development and success of their doctoral advisees. Students were more likely to make good progress that developed good interpersonal working relationships with supervisors (Ives, Rowley, 2005). Based on Rose's Ideal Mentor Scale (IMS), it was observed that female doctoral students rating the item of "Believe in me" much more important than male students (Bell-Ellison, Dedrick, 2008). It was concluded the roles and responsibilities as advisors in doctoral education by in-depth interviews of 25 exemplary doctoral advisors who have graduated a large number of doctoral students (Barnes, Austin, 2009). The theory of identity was used to discuss the mentoring relationships between faculty members and doctoral students who are being prepared as edu-

cational researchers (Hall, Burns, 2009). The roles and responsibilities of various parties in supervision of Ph.D. students were deeply analyzed from numerous parties including supervisors, supervisory committee and the doctoral students (IDAC, 2012).

Students with similar cultural background remain limited in their social contacts with their own social group, thus limits getting a feedback from a wider range of their peers in the program (Holbrook, et al., 2004). In a qualitative investigation, the peer and faculty mentoring differed along dimensions of pedagogy and andragogy (Noonan, Ballinger, Black, 2007). The influence of culture on the feeling of social isolation in doctoral programs is one of the most identifying factors in student attrition (Ali, Kohun, 2008).

Organization and racial inclusion of doctoral study program

The organization of doctoral education is oriented by the national authority with the federal objectives. History and state were briefly analyzed especially on the organization of purposes, institutions, students and programs within the doctoral education in the United States (Berelson, 1960). The first comparative research on doctoral education, "The research foundations of graduate education: Germany, Britain, France, United States, Japan" edited by Burton R. Clark, focused on the organization of doctoral education in the chief industrial countries of the world (Clark, 1993). Bologna Process in Europe attributes to the unification of academic degree system and institution. Review of graduate schools in each country emerged in European countries, like the UK (Woodward, et al., 2004).

The academic and non academic influences on graduate degree plans were identified for the racial differences among African American, Hispanic, and White students in a longitudinal survey (Pascarella, et al., 2004). It was revealed the barriers, inequalities and hierarchies encountered by Chicanos/Latinos (as) through their doctorate programs (Ramirez, 2007). "Race remains a salient factor for the study participants, even though a climate of inclusiveness in the classroom and strong support from the faculty were described by most" (DeBoyes, 2010).

Content of studies and academic examination of thesis

"As crucial elements of the process of graduate education, instructors of research courses have a vital role to play in developing cadres of researchers who are willing to engage in uncomfortable dialogues across disciplines, methods, methodologies, theoretical perspective, and epistemologies about the power and potential (both beneficial and dangerous) of educational research" (Gunzenhauser, Gerstl-Pepin, 2006). The curriculum change showed that doctoral studies always included relevant courses. "Research methods courses are often listed" (Eggins, 2008). The nature and purpose of the oral examination is discussed above the issue of whether or not the main purpose of the Ph.D. is to produce a thesis (an original contribution to knowledge) or a researcher, with certain skills and abilities (Frances, 2010).

The assessment of research theses were with regard to these factors: the criteria used by examiners and the levels of student performance expected by them; critical judgment points in the examination process; the examiners' perceptions of their own role in the process; the influence on examiners of previously published work, the views of the other examiners and their knowledge of the student's supervisor and department, and the level of perceived responsibility between student and supervisor (Mullins, Kiley, 2002). The examiners' report of Ph.D. thesis was studied by their devoting in assessing the quality and comments the value (Holbrook, et al., 2004).

Employment of graduates from doctoral study program

The publication rates and income as well as the employment activity were used as indicators in analyzing the attainments of Ph.D. graduates (Clark, Centra, 1982). Faced with the expansion of U.S. science Ph.D., the Association of American Universities reported how the Ph.D. graduates were employed and criticized that the research university failed in tracking the career success of their graduates (Leatherman, 1998). The relationship of the study field and their employment position was compared to reflect the efficacy of the skills and training experience worked on Ph.D. students (Metcalfe, Gray, 2005). OECD collected the data of doctoral graduates in seven countries to get their characteristics in the labor market and global mobility (Auriol, 2007). The Center for Innovation and Research in Graduate Education (CIRGE) conducted a project "Social Science Ph.D.s-

Five+ Years out (SS5)" which exactly investigated the employment history, career and family factor, graduated school achievements, and the quality and usefulness of their doctoral education of Ph.D. graduates (Picciano, et al., 2007). It was divided into six "occupational clusters" of doctoral graduates employed in the UK, as "higher education research roles", "non-higher education research roles", "higher education teaching and lecturing roles", "teaching roles outside higher education", "other common doctoral occupations" and "other occupations" (CRAC, 2010).

Quality evaluation models of doctoral study program

A framework with seven aspects was proposed to improve doctoral education (Lipschutz, 1993). In America, federal legislation "No Child Left Behind Act of 2001" and the Education Sciences Reform Act of 2002 encouraged to prepare doctoral students to be a scientifically based research in education (Eisenhart, DeHaan, 2005). The standards and guidelines for quality assurance and the Salzburg Principles for doctoral education in the European Higher Education Area were adopted in the Bergen Conference of European Ministers responsible for Higher Education in 2005 (ENQA, 2005). An array of examples of the new program and student level assessment practices was presented to provide evidence of what and how Ph.D. students learn within the context of an educational program (Maki, Borkowski, 2006). The intricate partnership and the role of each sector were analyzed in a doctoral program (Nyquist, Woodford, 2000). Compared with the perception, training was confirmed not what doctoral students want or either employers need (Golde, Dore, 2001). The idea of autonomy and the subject of knowledge was examined in doctoral education (Johanson, 2005). Accountability of Ph.D. students was conducted by undertaking work as college and university instructors in training doctoral students (Brooks, Heiland, 2007). Independence of Ph.D. students was concentrated in preparing to be an independent scholar (Gardner, 2009). Aimed to test and compare the relative efficacy of three measuring instruments of service quality, HEdPERF (higher education performance), SERVPERF (service performance), HEdPERF-SERVPERF, within a higher education setting (Abdullah, 2006). A descriptive and survey-based cross-sectional study was carried out to evaluate and assess the quality level of doctoral education services by using SERVQUAL Model in 2011 (Javadi, Samangooe, Tanhaei, 2011). Another study was based on the SERVQUAL model and Deming's Plan-Do-Check-Action (P-D-C-A) cycle of TQM to

establish a higher education quality management system (Chen, 2012).

Conclusion

This article has illustrated that there is a compelling concern on the issue of quality of the doctoral study program. However, it has been not such a long time since the research on doctoral education detached from graduate education or degree education. The research at the doctoral level in the tertiary education system is still in the progress of infrastructure stage which is not as precise as other levels. There is less theoretical interpretation than the investigation of the practicalities. Meanwhile, there are many arguments about quality but hardly any possess neither a concrete definition of quality of the doctoral study program nor a framework of quality model.

References

AAU(Association of American Universities). (1998). *Committe on graduate education: report and recommendations.* Retrieved from http://www.aau.edu/publications/reports.aspx?id=6900

Abdullah, F. (2006). Measuring service quality in higher education: HEdPERF versus SERVPERF. *Marketing Intelligence & Planning, 24*(1), p. 31-47. Retrieved from http://search.proquest.com/docview/213148458?accountid=16730

Ali, A. & Fred Kohun. (2006). "Dealing with isolation feelings at IS doctoral programs". *International Journal of Doctoral Studies,* 1, p. 21-33.

Auriol, L. (2007). *Labour market characteristics and international mobility of doctorate holders: results for seven countries.* OECD STI Working Paper 2007-02. OECD: Paris. Retrieved from http://www.oecd.or/sti/working-papers

Barnes, B. J. & Austin, A. E. (2009). The role of doctoral advisors: A look at advising from the advisor's perspective.*Innovative Higher Education, 33*(5), p. 297-315. Retrieved from http://search.proquest.com/docview

/61896267?accountid=16730

Bell-ellison, B. & Dedrick, R. F. (2008). What do doctoral students value in their ideal mentor? *Research in Higher Education, 49*(6), p. 555-567. Retrieved from http://dx.doi.org/10.1007/s11162-008-9085-8

Berelson, B. (1960). *Graduate education in the United States.* New York: McGraw-Hill Book Co., p. 346.

Blume, S. & Amsterdamska, O. (1987). *Post-graduate education in the 1980s.* Washington, DC: OECD Publications and Information Centre, ISBN 20036-4095. Retrieved from http://search.proquest.com/docview/63155246?accountid=16730

Brooks, R. L., & Heiland, D. (2007). Accountability, assessment and doctoral education: Recommendations for moving forward. *European Journal of Education, 42*(3), p. 351-362. Retrieved from http://search.proquest.com/docview/62027195?accountid=16730

Booth, A. L. & Satchell, S. E. (1996). British PhD completion rates: Some evidence from the 1980s. *Higher Education Review, 28*(2), p. 48. Retrieved from http://search.proquest.com/docview/1297986110?accountid=16730

Bowen, W. G. & Rudenstine, N. L. (1992). *In pursuit of the Ph.D. 1992.* p. 468. ISBN 9780691042947.

CGS(Council of graduate schools). (2007). *Ph.D. completion project.* Retrieved from http://www.phdcompletion.org/

Chen, S. (2012). The establishment of a quality management system for the higher education industry. *Quality and Quantity, 46*(4), p. 1279-1296. doi: http://dx.doi.org/10.1007/s11135-011-9441-1

Clark, B. R., ed. (1993). *The research foundations of graduate education: Germany, Britain, France, United States, Japan.* Berkeley, Los Angeles, and London: University of California Press.

Clark, M. J. (1982). *Conditions influencing the career accomplishments of ph.D.s.* (No. ETS-82-18; GREB-76-2R). Educational Testing Service, Princeton, NJ 08541. Retrieved from http://search.proquest.com/docview/63496953?accountid=16730

Costley, C. & Lester, S. (2012). Work-based doctorates: Professional extension at the highest levels. *Studies in Higher Education, 37*(3), p. 257-269. Retrieved from http://search.proquest.com/docview/1312421545?accountid=16730

CRAC (The Career Development Organisation) (2010). *What do researchers do? Doctoral graduate destinations and impact three years on 2010.* CRAC: Cambridge. ISBN 9781906774134. Retrieved from http://www.crac.org.uk/

DeBoyes, Z. M. (2010). *A sense of trust through the eyes of African American doctoral students: an examination of how a predominantly White institution of higher education can create an environment of inclusiveness.* Dissertation Abstracts International, A: The Humanities and Social Sciences, p. 3364-3364. Retrieved from http://search.proquest.com/docview/743063943?accountid=16730.

Eggins, H. (2008). *Trends and issues in post graduate education: a global review.* Keynote paper for the DCU/UNESCO Forum Workshop Dublin, Ireland, 5-7 Mar. 2008. Restrieved from http://portal.unesco.org/education/en/ev.php-URL_ID=26596&URL_DO=DO_TOPIC&URL_SECTION=201.html

Ehrenberg, R. G., Jakubson, G. H., Groen, J. A., So, E. & Price, J. (2007). Inside the black box of doctoral education: What program characteristics influence doctoral students' attrition and graduation probabilities? *Educational evaluation and policy analysis, 29*(2), p. 134-150. Retrieved from http://search.proquest.com/docview/197224633?accountid=16730

Eisenhart, M., & DeHaan, R. L. (2005). Doctoral preparation of scientifically based education researchers. *Educational Researcher, 34*(4), p. 3-13. Retrieved from http://search.proquest.com/docview/216897942?accountid=16730

ENQA(European Association for Quality Assurance in Higher Education). (2005). *Standards and guidelines for quality assurance in the European higher education area.* Helsinki, Finland. Retrieved from http://www.enqa.eu/pubs_esg.lasso

Espinoza, R. M. (2008). *Pivotal moments: overcoming class and racial-ethnic disadvantage in women's doctoral education.* Dissertation Abstracts International, A: The Humanities and Social Sciences, p. 3609-3609. Retrieved from http://search.proquest.com/docview/61754843?accountid=16730.

Ferber, M. A. & Kordick, B. (1978). Sex differentials in the earnings of ph.D.s. *Industrial and Labor Relations Review, 31*(2), p. 227. Retrieved from http://search.proquest.com/docview/1296506839?account

id=16730

Gardner, S. K. (2009). Conceptualizing success in doctoral education: Perspectives of faculty in seven disciplines. *Review of Higher Education, 32*(3), p. 383-406. Retrieved from http://search.proquest.com/docview/220855890?accountid=16730

Golde, C. M. & Dore, T. M. (2001). *At cross purposes: what the experiences of today's doctoral students reveal about doctoral education*. A survey initiated by the pew charitable trusts. Retrieved from http://www.phd-survey.org/report.htm

Gunzenhauser, M. G. & Gerstl-Pepin, C. (2006). Engaging graduate education: A pedagogy for epistemological and theoretical diversity. *Review of Higher Education, 29*(3), p. 319-0_6. Retrieved from http://search.proquest.com/docview/220823973?accountid=16730

Hall, L. A., & Burns, L. D. (2009). Identity development and mentoring in doctoral education. *Harvard Educational Review, 79*(1), p. 49-70, p. 166-167. Retrieved from http://search.proquest.com/docview/212307018?accountid=16730

HEFCE (Higher Education Founding Council for England). (2005). *Ph.D. research degrees: entry and completion.* Retrieved from http://www.hefce.ac.uk/whatwedo/rsrch/howfundr/researchdegreeprogrammes/numbersofphdstartersandqualifier/

Holbrook, A., Bourke, S., Lovat, T. & Dally, K. (2004). Investigating Ph.D. thesis examination reports. *International Journal of Educational Research, 41*(2), p. 98-120. Retrieved from http://search.proquest.com/docview/62121890?accountid=16730

Holden, C. (1995). Is it time to begin Ph.D. population control? *Science, 270*(5233), p. 123-128. Retrieved from http://search.proquest.com/docview/213565258?accountid=16730

IDAC(Inter-University Doctoral Administrative Committee). (2012). *Handbook on graduate supervision: nurturing and managing the supervisor and doctoral student relationship.* Retrieved from http://faculty.msvu.ca/educationphd/

Ives, G. & Rowley, G. (2005). Supervisor selection or allocation and continuity of supervision: Ph.D. students' progress and outcomes. *Studies in Higher Education, 30*(5), p. 535-555. Retrieved from http://search.proquest.com/docview/62155601?accountid=16730

Javadi, M. H. M., Samangooe, B., & Tanhaei, M. H. (2011). Quality assessment for academic services in university of isfahan according to the students opinions using SERVQUAL model. *Interdisciplinary Journal of Contemporary Research in Business, 3*(4), p. 299-305. Retrieved from http://search.proquest.com/docview/899778615?accountid=16730

Johanson, M. A. (2005). Association of importance of the doctoral degree with students' perceptions and anticipated activities reflecting professionalism. *Physical Therapy, 85*(8), p. 766-81. Retrieved from http://search.proquest.com/docview/223110927?accountid=16730

Kienle, A. W. & Loyd, N. L. (2005). Globalization and the emergence of supranational organizations: Implications for graduate programs in higher education administration. *College Student Journal, 39*(3), p. 580-587. Retrieved from http://search.proquest.com/docview/236560642?accountid=16730

Kumar, V. & Lee, A. (2011). *Doctoral education in international context: connecting local, regional and global perspectives*. Serdang: Universiti Putra Malaysia Press. ISBN 9789673442546.

Leatherman, C. (1998). Research universities urged to do better job of tracking careers of ph.D.'s. *The Chronicle of Higher Education, 45*(13), p. 1-A12. Retrieved from http://search.proquest.com/docview/214723983?accountid=16730

Lee, A. & Danby, S. (2011). *Reshaping doctoral education: International approaches and pedagogies*. Routledge, Taylor & Francis Group. Retrieved from http://search.proquest.com/docview/964189093?accountid=16730

Lipschutz, S. S. (1993). Enhancing success in doctoral education: From policy to practice. *New Directions for Institutional Research,* 80, p. 69-80. Retrieved from http://search.proquest.com/docview/62796543?accountid=16730

Maher, M. A. & Ford, M. E., & Thompson, C. M. (2004). Degree progress of women doctoral students: Factors that constrain, facilitate, and differentiate. *Review of Higher Education, 27*(3), p. 385-408. Retrieved from http://search.proquest.com/docview/220860386?accountid=16730

Maki, P. L. & Borkowski, N. A. (2006). *The assessment of doctoral education: Emerging criteria and new models for improving outcomes.* Stylus Publishing, LLC. P.O. Box 605, Herndon, VA 20172-0605. Retrieved from http://search.proquest.com/docview/62022440?accountid=16730

Maxwell, T. W. & Shanahan, P. J. (1996). The doctor of education in Australia: some comparative data. *Journal of institutional research in Australasia,* 5(1), p. 7-18.

Metcalfe J. & Gray, A. (2005). *Employability and doctoral research postgraduates.* The higher education Academy. Retrieved from www.heacademy.ac.uk

Mullins, G. & Kiley, M. (2002). "It's a Ph.D., not a Nobel Prize": how experienced examiners assess research theses. *Studies in Higher Education.* 27(4), p. 369-386.

Nelson, C. & Lovitts, B. E. (2001). 10 ways to keep graduate students from quitting. *The Chronicle of Higher Education, 47*(42), p. 020-B20. Retrieved from http://search.proquest.com/docview/214701116?accountid=16730

Nerad, M. & Miller, D. S. (1996). *Increasing student retention in graduate and professional programs. New Directionas for Institutional Research, 92*, p. 61-76. Retrieved from http://search.proquest.com/docview/62601719?accountid=16730

NSF(National Science Foundation). (2012). *Doctorate recipients from U.S. universities: 2011.* Retrieved from http://www.nsf.gov/statistics/srvy-doctorates/

Noonan, M. J. & Ballinger, R. & Black, R. (2007). Peer and faculty mentoring in docotral education: definitions, experiences and expectations. *International Journal of Teaching and Learning in Higher Education*, 19(3), p. 251-262.

Nyquist, J. D. & Woodford, B. J. (2000). *What concerns do we have?* Re-envisioning the Ph.D. funded by the pew charitable trusts. Retrived from http://depts.washington.edu/envision/

Pascarella, E. T., Wolniak, G. C., Pierson, C. T. & Flowers, L. A. (2004). The role of race in the development of plans for a graduate degree. *Review of Higher Education, 27*(3), p. 299-320. Retrieved from http://search.proquest.com/docview/220845741?accountid=16730

Picciano, J., Rudd, E., Morrison, E. & Nerad, M. (2007). *Social science Ph.D.s-Five+ Years Out: survey methods.* CIRGE Report 2007-01. CIRGE: Seattle, WA. Retrieved from www.cirge.washington.edu

Quarterman, J. (2008). An assessment of barriers and strategies for recruitment and retention of a diverse graduate student population. *College*

Student Journal, 42(4), p. 947-967. Retrieved from http://search.pro-quest.com/docview/236556338?accountid=16730

Ramirez, E. G. (2007). *Navigating through highly unequal terrain: Chica-nos/as and Latinos/as in graduate education*. Dissertation Abstracts International, A: The Humanities and Social Sciences, Retrieved from http://search.proquest.com/docview/61747806?accountid=16730.

Rudd, E. (1968). Students 'in solitary'. *New Society, 11*(290), p. 562-563. Retrieved from http://search.proquest.com/docview/60594298?accountid=16730

Smith, P., Curtis, H., Fulton, J., Kuit, J. & Sanders, G. (2012). *The role of practice-base doctorates for developing professional practice*. Retrived from www.heacademy.ac.uk

Smith, R. L., Maroney, K., Nelson, K. W., Abel, A. L. & Abel, H. S. (2006). Doctoral programs: Changing high rates of attrition. *Journal of Humanistic Counseling, Education and Development, 45*(1), p. 17. Retrieved from http://search.proquest.com/docview/62006267?accountid=16730

Thurgood, L. & Golladay, M. J. & Hill, S. T. (2006). *U.S. doctorates in the 20th century.* ArlingtonVA: National Science Foundation. p. 131. Retrieved from http://www.nsf.gov/statistics/nsf06319/

Woodward, D., Denicolo, P., Hayward, S. & Long, E. (2004). *A review of graduate schools in the UK*. UK Council for Graduate Education. p.49. ISBN 0-9543915-1-9.