



RICS



COBRA 2009

**The Construction and Building Research Conference of the
Royal Institution of Chartered Surveyors**

Held at the University of Cape Town, 10-11 September 2009

ISBN 978-1-84219-519-2

© RICS

12 Great George Street
London SW1P 3AD
United Kingdom

www.rics.org/cobra

September 2009

COBRA 2009

The construction and building research conference of the Royal Institution of Chartered Surveyors held at the University of Cape Town, 10-11 September 2009

The RICS COBRA Conference is held annually. The aim of COBRA is to provide a platform for the dissemination of original research and new developments within the specific disciplines, sub-disciplines or field of study of:

Management of the construction process

- Cost and value management
- Building technology
- Legal aspects of construction and procurement
- Public private partnerships
- Health and safety
- Procurement
- Risk management
- Project management

The built asset

- Property investment theory and practice
- Indirect property investment
- Property market forecasting
- Property pricing and appraisal
- Law of property, housing and land use planning
- Urban development
- Planning and property markets
- Financial analysis of the property market and property assets
- The dynamics of residential property markets
- Global comparative analysis of property markets
- Building occupation
- Sustainability and real estate
- Sustainability and environmental law
- Building performance

The property industry

- Information technology
- Innovation in education and training
- Human and organisational aspects of the industry
- Alternative dispute resolution and conflict management
- Professional education and training

Organising Committee

The Organising Committee for the RICS COBRA 2009 Conference consisted of:

Paul Bowen (Chair)	University of Cape Town
Ian Jay	University of Cape Town
Keith Cattell	University of Cape Town
Kathy Michell	University of Cape Town
Stephen Brown	RICS

The doctoral students' session was arranged and conducted by:

Monty Sutrisna University of Salford, UK
Les Ruddock University of Salford, UK

The CIB W113 Law and dispute resolution session was arranged and conducted by Paul Chynoweth of the University of Salford, UK

Peer review process

All papers submitted to COBRA were subjected to a double-blind (peer review) refereeing process. Referees were drawn from an expert panel, representing respected academics from the construction and building research community. The conference organisers wish to extend their appreciation to the following members of the panel for their work, which is invaluable to the success of COBRA.

Rifat Akbiyikli	Sakarya University, Turkey
John Boon	UNITEC, New Zealand
Richard Burt	Auburn University, USA
Kate Carter	Heriot-Watt University, UK
Keith Cattell	University of Cape Town, South Africa
Sai On Cheung	City University of Hong Kong
Grace Ding	University of Technology Sydney, Australia
Peter Edwards	RMIT, Australia
Charles Egbu	University of Salford, UK
Hemanta Doloi	University of Melbourne, Australia
Peter Fenn	University of Manchester, UK
Peter Fisher	University of Northumbria, UK
Chris Fortune	University of Salford, UK
Rod Gameson	University of Wolverhampton, UK
Theo Haupt	Cape Peninsula University of Technology, South Africa
Godfaurd John	University of Central Lancashire, UK
Keith Jones	University of Greenwich, UK
Mohammed Kishk	Robert Gordon's University, UK
Andrew Knight	Nottingham Trent University, UK
Esra Kurul	Oxford Brookes University, UK
John Littlewood	University of Wales Institute, Cardiff, UK
Champika Liyanage	University of Central Lancashire, UK
Greg Lloyd	University of Ulster, UK
S M Lo	City University of Hong Kong
Martin Loosemore	University of New South Wales, Australia
Tinus Maritz	University of Pretoria, South Africa
Steven McCabe	Birmingham City University, UK
Andrew McCoy	Virginia Tech, USA
Kathy Michell	University of Cape Town, South Africa
Henry Odeyinka	University of Ulster, UK
Robert Pearl	University of KwaZulu-Natal, South Africa
Keith Potts	University of Wolverhampton, UK
Matthijs Prins	Delft University of Technology, The Netherlands
Richard Reed	Deakin University, Australia
Herbert Robinson	London South Bank University, UK
David Root	University of Cape Town, South Africa

Kathy Roper	Georgia Institute of Technology, USA
Steve Rowlinson	University of Hong Kong
Winston Shakantu	Nelson Mandela Metropolitan University, South Africa
Melanie Smith	Leeds Metropolitan University, UK
Suresh Subashini	University of Wolverhampton, UK
Ming Sun	University of the West of England, UK
Joe Tah	Oxford Brookes University, UK
Derek Thomson	Heriot-Watt University, UK
Basie Verster	University of the Free State, South Africa
John Wall	Waterford Institute of Technology, Ireland
Sara Wilkinson	Deakin University, Australia
Francis Wong	Hong Kong Polytechnic University
Ing Liang Wong	Glasgow Caledonian University, UK
Andrew Wright	De Montfort University, UK
George Zillante	University of South Australia
Sam Zulu	Leeds Metropolitan University, UK

In addition to this, the following specialist panel of peer-review experts assessed papers for the COBRA session arranged by CIB W113, Law and dispute resolution:

John Adriaanse	London South Bank University, UK
Julie Adshead	University of Salford, UK
Rachelle Alterman	Technion, Israel
Jane Ball	University of Sheffield, UK
Michael Brand	University of New South Wales, Australia
Penny Brooker	University of Wolverhampton, UK
Alice Christudason	National University of Singapore
Paul Chynoweth	University of Salford, UK
Philip Chan	National University of Singapore
Sai On Cheung	City University of Hong Kong
Ron Craig	Loughborough University, UK
Asanga Gunawansa	National University of Singapore
Rob Home	Anglia Ruskin University, UK
Peter Kennedy	Glasgow Caledonian University, UK
Anthony Lavers	Keating Chambers, UK
Tim McLernon	University of Ulster, UK
Wayne Lord	Loughborough University, UK
Frits Meijer	Delft University of Technology, The Netherlands
Jim Mason	University of the West of England, UK
Brodie McAdam	University of Salford, UK
Tinus Maritz	University of Pretoria, South Africa
Mark Massyn	University of Cape Town, South Africa
Issaka Ndekugri	University of Wolverhampton, UK
Robert Pearl	University of KwaZulu-Natal, South Africa
Linda Thomas-Mobley	Georgia Tech, USA
Yvonne Scannell	Trinity College Dublin, Ireland
Cathy Sherry	University of New South Wales, Australia
Henk Visscher	Delft University of Technology, The Netherlands

Early career training of quantity surveying professionals

Cynthia ChinTian Lee¹ and Keith Hogg¹

¹School of Built Environment,
Northumbria University, Newcastle Upon Tyne, NE1 8ST,
United Kingdom

Email: Cynthia.Lee@northumbria.ac.uk; Keith.Hogg@northumbria.ac.uk

Abstract:

This research project addresses the issue of learning and development for new graduates in their early career. It is recognized that early career experience can play a significant part in lifelong professional capability and the support and knowledge gained during the early years of post graduate employment can influence future career direction and success. As a consequence, there is a need for stakeholders, including employers and professional bodies, to contribute to the transition from university to workplace so that the construction industry can benefit from the improved application of a more relevant set of graduate skills. Whilst there are prescribed models of graduate development relative to the surveying professions, for example, those relating to the Assessment of Professional Competence, there has been little evaluation in terms of their relative contribution to career success. Based on a research project which is focusing upon the early career development of quantity surveying professionals, this investigation employed the use of a questionnaire survey to explore the extent to which new graduates perceive themselves to be competent in various major quantity surveying tasks and correspondingly, the range of graduate training provided by the employer. The main conclusions drawn from the study are that: new graduates exhibit a high level of self-doubt in professional competence; task competence is influenced by frequency of application, and; employer type has an impact on levels of employer support.

Keywords:

Assessment of professional competence (APC), early career training, new graduates, quantity surveying (QS)

1 Introduction

A particularly challenging task for someone who is 'starting out' in their professional life is to assemble and integrate several kinds of knowledge gained from general experience, education and work. Literature on early professional learning is largely restricted to medicine, nursing and teaching (Eraut, 2005), although Eraut (2005) also looked at early professional learning for graduate civil engineers. Also, whilst there are well prescribed models of graduate development relative to the surveying professions, for example, those relating to the APC or from a wide variety of training programmes established by major employers, there has been little evaluation in terms of their relative

contribution to career success. Highlighting the potential difficulties of early career learning, research (Charnley 1999, Godinez et al 1999, Greenwood 2000) has shown that the transition from student to newly qualified nurse is stressful and demanding.

In the construction arena, research conducted by Love et al, (2001) indicated that there is a need to improve the skills levels of construction graduates. As learning in the university environment is, in the main, limited to classroom activity, the burden of work-based training for new graduates, recognised as essential to developing full professional competence, would naturally fall upon practitioners. The importance of employer involvement in enhancing professional capability and career satisfaction is clearly central.

Since the support and knowledge gained during the early years of post graduate employment is a contributing factor that can impact upon a new graduate's decision to continue to stay in their chosen profession or not (Eraut, 2003), and, linking this to the probability that dissatisfaction with career advancement opportunities has the largest effect on deciding to quit a profession (Gardner, 1992), a better understanding of the factors influencing early career development is of great relevance to the QS profession.

This project aims to contribute to the improvement of early career development within the QS profession through the following specific objectives:

To explore the various types of support needed by graduates in their early career learning;

To evaluate the current practices used in the management and implementation of early career learning in the QS profession;

To analyse the impact that a range of factors may have upon the progress of learning, including; method of graduate entry; employer type; employer workload, corporate ethos and mission, client base; size of employer, location of employer, workplace environment.

In attending to the above objectives, the project will also improve our understanding of issues relating to graduate retention and identify factors which may influence graduate participation within the RICS.

The overall strategy of the research is to adopt the concepts of 'learning' and 'knowledge transfer', amongst others, to investigate the issues associated with the early career learning of QS graduates.

This paper presents the research findings on the work that has been undertaken to date by developing the said methodology through the use of a questionnaire survey of recent graduates in quantity surveying. It also informs the direction of future research activity.

2 Early Career Development

Previous research has provided some understanding of the meaning and significance of the 'career' as a fundamental part of personal development. The concept of the 'career'

as suggested by Arthur et al., (1999) is to explore individual identity and social institutions, work and other experiences. Extending this, as careers unfold, there will be a change in the way we present ourselves to others, are treated by others and interact with others (Barley, 1989). The process by which individuals pick up or cultivate a certain set of capabilities, connections, confidence, and cognition due to their work experiences at a particular employer is called career imprinting (Higgins, 2005), the focus of this research.

That a challenge exists in matching academic provision with professional needs is well versed and employers have expressed concerns, for example, on the apparent gap between engineering education and professional practice (Dillon, 1998; Florman, 1997; Pascail, 2006). In accepting this position, a better understanding of the needs of new graduates in the workplace will help employers in their provision of training and also educators in an improvement of programme design. This perspective is supported by research conducted by Coupland (2004), who identified that the company career structure has been described by some participants as lacking in explicit stages, suggesting that the company should take on a larger role in the individual's career.

As opposed to the traditional image of a linear and organizationally bound journey where graduates expect employers to play a larger role in an individual's career development (Coupland, 2004), the career has also been conceptualised as boundary less (Arthur and Rousseau, 1996; Arthur et al., 2005). In this alternative view, individuals are expected to self-manage their own careers rather than rely on organisational direction (Hall and Chandler, 2005; Hall and Mirvis, 1995). According to the Social Cognitive Career Theory (Lent, 2005), the model proposes that people are more likely to take actions to achieve their goals if they have access to environmental (organisational) support and resources relevant to the pursuit of these goals. However, the model of proactive behaviour (Crant, 2000) indicates that an individual's disposition or personality will influence the extent to which they take the initiative to engage in career management behaviours and achieve career satisfaction. Thus, the onus of developing one's career is on the individual; to take up a range of activities outside work that are geared towards personal development or on-going employability. However, the provision of opportunity for career imprinting should still lie with the employer.

The 'career' is linked to learning "in a virtuous cycle" (Arthur et al., 1999). Learning is represented as an on-going individual process, driven by the life-long learning imperative and focused on the development of learning and career meta-skills (Hall, 2002; Waterman et al., 1994) and is treated as an unquestioned value in itself (Gherardi, 1999). Learning is unequivocally identified as a proxy for career success (Weick, 1996). Organisational support for career development is also called "organisational career management" or "organisational sponsorship" and refers to the programs, processes and assistance provided by organisations to support and enhance their employees' career success (Ng et al., 2005; Orpen, 1994). Training refers to formal provision of learning experiences at work (Mallon and Walton, 2005). In this research, participants were asked to indicate the extent to which various types of training were provided by their employers.

Competency is defined in this study as an identifiable aspect of prospective work behaviour attributable to the quantity surveyor that is expected to contribute positively and/or negatively to organizational effectiveness in the construction industry. In a study by Meretoja et al., (2004), the authors found a positive relationship between competency and frequency of use. The assessment of new QS graduates provides a good opportunity to

explore this relationship further by incorporating other factors which may bear upon competence gain.

3 Research Methodology

Prior to deciding on the method of collecting data, it is necessary to consider the choice of participants. In this study, the sample population is quantity surveying professionals. Sample design in qualitative research is usually purposive (Walker, 1985). Rather than taking a random cross section of the population to be studied, “small numbers of people with specific characteristics, behaviour or experience are selected to facilitate broad comparisons between certain groups that the researcher thinks likely to be important” (Walker, 1985). Non Probability Sampling, whereby the research subjects are chosen for specific attributes rather than from a random selection, is adopted in this study as the research primarily looks at the early career of quantity surveying graduates. In order to gain insights to the research area, make inferences and draw conclusions from the research, a mix of quantitative and qualitative research approaches were adopted. Survey research methodology is adopted in this research to investigate a particular phenomenon, i.e. the training of quantity surveying graduates in their early careers. The research questionnaire was designed using variables identified during exploratory studies. Tick boxes were used to find out the profile of the respondent. Likert scales were provided in the questionnaire as instruments for measuring varying degrees of respondents’ opinion about their extent of competence and involvement in quantity surveying skills and the types of quantity surveying training given by their employers. As Likert scales with odd number response points are arguably empirically more valid than forced-choice scales (Ray, 1990); a 5-point Likert scale was used, being more cost and time effective than a seven-point scale (Munchi, 1990).

4 Findings and Discussion

A survey was conducted which targeted early career quantity surveyors. From a total population of 4430 recent graduates between 2006 and 2008, 425 surveys were completed online. The level of work experience of the sample is indicated in the analysis of the distribution below.

Table 1: Number of questionnaires received from various groups of respondents

No of years of experience	No. of response
Less than 1 year	102
1 Year	42
2 Years	93
3 Years	54
More than 3 years	134

Of the 425 respondents, 58% are working as consultant quantity surveyors, 31% in contracting, whilst the remaining 11% are working in a range of organisations including local authorities and client bodies.

The following analysis and discussion considers the findings relating to: QS activities and corresponding perceptions of competence, and; the types of training support and their extent of use.

3.1 QS Activity and Perceptions of Competence

A list of quantity surveying skills were listed in the questionnaire survey which incorporated a wide range of QS activities, identified from recognised professional practice and procedure. Respondents were asked to indicate their own perception of competence and also the frequency of engagement with regard to each of the following tasks:

preparation of schedules of works or Bills of Quantities involving measurement and estimation

cost management to ensure budget compliance

recommendation of a suitable procurement route

management and preparation of variation accounts

preparation of feasibility studies

interim valuation of construction work

application of value management

preparation of life cycle costing data and advice

preparation of tender reports

advising clients and negotiation with contracting parties in contract administration

preparation of final accounts

From the survey results, the five QS activities which respondents carry out most frequently and perceived themselves to be most competent at are:

interim valuation of construction work

preparation of final accounts

cost management to ensure budget compliance

preparation of tender reports

management and preparation of variation accounts

The association between the respondents' self perception of competence and frequency of carrying out the range of QS activities was investigated using Spearman correlation coefficient. The strength of correlation of $r = 0.811$ indicates that there was a large positive correlation (>0.5), suggesting a strong relationship between competence and frequency of use.

Table 2 provides a summary of the analysis. The "competence" column reflects the percentage of respondents who perceive themselves to be fully competent; the "frequency" column shows the percentage of respondents carrying out such activities on a regular basis. Gibbons et al. (1994) affirmed that the creation of knowledge is through practice. Also, as illustrated by Graham and Mckenzie (1995), the best learning occurs in real life and for the majority of new graduates, learning will be achieved by 'doing'. That 'practice makes perfect' is widely recognised and in applying this tenet in this situation, we are able to assume that frequency of use will result in improved competence. Conversely, activities such as life cycle costing, value management and giving procurement advice to clients, in that they are not frequently carried out by recently graduating quantity surveyors, will suffer from reduced levels of competence. It is also recognised that the development of new graduates is influenced by factors such as the job content, timing of projects, the attitude of the individual and relationship with line manager (Graham and Mckenzie, 1995). Thus, this reduced exposure to aspects of practice could contribute to underdevelopment of certain knowledge and skills which may be reflected in future hesitance in application.

The data also indicates relatively low levels of confidence amongst the recent graduate population. For early career quantity surveyors to feel other than fully competent in dealing with core QS tasks, as they advance toward professional qualification, is worthy of reflection and further examination.

Table 2: Self Perception Of Competency Of Respondents And Frequency Of Application

Quantity Surveying Skills	Expression of full competence %	Frequency of use %
preparation of life cycle costing data and advice	1	2
application of value management	15	8
recommendation of a suitable procurement route	17	8
preparation of feasibility studies	17	11

advising client and negotiating with contracting parties in contract administration	19	15
preparation of schedules of works or 'Bills of Quantities' involving measurement and estimating	21	12
management and preparation of variation accounts	30	31
preparation of tender report	32	21
cost management to ensure budget compliance	34	36
preparation of final account	42	28
interim valuation of construction work	53	49

3.2 Provision of training support

Respondents were requested to indicate the extent of training support provided by their employer. This information was obtained from the use of a Likert scale relating to a pre-determined list based upon recognised practice. The outcomes of this analysis, shown in Table 3, have been ascertained by the use of weighted averages and indicate the relative importance of each type of support.

The importance of coaching is outlined by Kalinauckas and King (1994) for enhancing the performance of new graduates. From the survey results, mentoring, as defined by Provident 2005, 'whereby a more experienced person helps a less experienced person develop in some capacity', is shown as a preferred approach for employers in the training of new graduates.

Table 3: Training Support Provided by Employer

Training Support Provided by Employer	Levels of Employer Support
Senior colleague advice on specific projects	74
Structured Continuing Professional Development	67
Regular help from an assigned mentor	66
Time allowance for attending CPD events	65

In-house seminars	64
Bulletins to inform of the latest developments	61

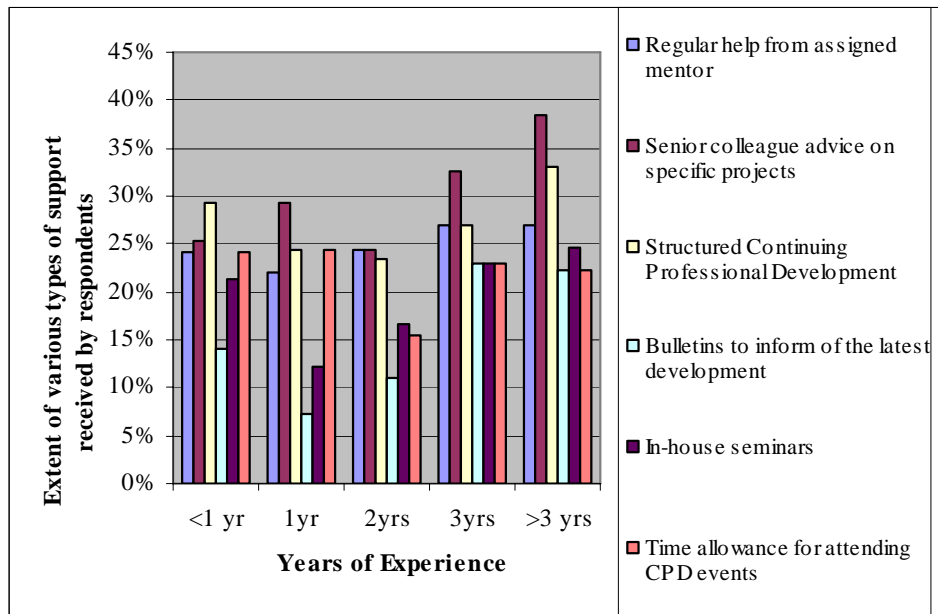
Using the same methodology, consideration was also made of the potential impact of employer type on training. A comparison between the extent of training provided by consultants and that provided by contractors / subcontractors is shown in Table 4. This indicates some disparity which is of interest since graduates, adhering to a prescribed competence development programme, would be expected to have similar levels of support, irrespective of employer type.

Table 4: Comparison between the Types of Training Support Provided by Consultant and Contractor

Training Support Provided by Employer	Levels of training by consultant	Levels of training by contractor
Senior colleague advice on specific projects	77	73
Structured Continuing Professional Development	73	65
Time allowance for attending CPD events	71	62
Regular help from an assigned mentor	69	62
In-house seminars	69	62
Bulletins to inform of the latest developments	65	57
Totals	424	381

A comparison was also made between the years of experience of new graduates with the amount of training they received from their employers as shown in Figure 5. The survey results indicate that training provided by employers is rather consistent throughout the first 3 years of a new graduates' career. However, there seems to be more emphasis on the third year, which could be due to the fact that most new graduates are close to their APC for Chartered Surveyor status.

Figure 5: Comparison between the years of experience of graduates and the extent of various types of support received from their employer



5 Conclusion and Further Research

The findings of the present study show that (i) there is a relatively low level of confidence in skills during the early career years which is influenced by frequency of application in the workplace (ii) employers utilise a range of support methods with a preference for mentoring (iii) there is disparity between the extent of support given by consultant and contractor employers (iv) the development of new graduates is subject to opportunity and timing of projects.

This initial survey has identified a number of issues which are worthy of further exploration, which is being undertaken through extended analysis of the data obtained for this research and additional survey activity.

6 References

- Arthur, M. and Rousseau, D. (Eds) (1996), *The Boundaryless Career: A New Employment Principle for a New Organizational Era*, Oxford University Press, New York, NY.
- Arthur, M.B., Inkson, K. and Pringle, J.K. (1999), *The New Careers: Individual Action and Economic Change*, Sage Publications, London.
- Arthur, M.B., Khapova, S.N. and Wilderom, C.P.M. (2005), "Career success in a boundaryless career world", *Journal of Organizational Behavior*, Vol. 26 No. 2, pp. 177-202.
- Barley, S.R., (1989), *Careers, identities and institutions: The legacy of the Chicago School of Sociology*. In: Arthur, M.B., Hall, D.T. and Lawrence, B.S., Editors, 1989. *Handbook of Career Theory*, Cambridge University Press, Cambridge, pp. 41-65.
- Brown, S.D.E.L. and Lent, R.W. (Eds), *Career Development and Counseling: Putting Theory and Research to Work*, John Wiley & Sons, Inc., Hoboken, NJ, pp. 101-127).
- Charnley E (1999) Occupational stress in the newly qualified staff nurse, *Nursing Standard*, Volume 13 (29), pp. 33-36
- Coupland, C., (2004), Career definition and denial: A discourse analysis of graduate trainees_ accounts of career, *Journal of Vocational Behavior* 64 (2004) 515-532
- Crant, J.M. (2000), "Proactive behavior in organizations", *Journal of Management*, Vol. 26 No. 3, pp. 435-62.
- Dillon, C. (1998). Engineering education: time for some new stories. *Engineering Science and Education Journal*(August), 188-192.
- Eraut, M., (2003), *Learning During the First Three Years of Postgraduate Employment – The LiNEA Project*, ECER 2003 Conference, Padua, August 2003
- Eraut, M., (2005), *Full Research Report, Learning During the First Three Years of Postgraduate Employment – The LiNEA Project*, <http://www.esrcsocietytoday.ac.uk/>, viewed 4/12/2008.
- Florman, S. (1997). Non-technical studies for engineers: The challenge of relevance. *European Journal of Engineering Education*, 22(3), 249-258.
- Gardner DL (1992) Conflict and retention of new graduates, *Western Journal of Nursing Research*, Volume 14(1), pp. 76-85
- Gherardi, S. (1999), "Learning as problem-driven or learning in the face of mystery?", *Organization Studies*, Vol. 20 No. 1, pp. 101-124.
- Gibbons, M., Limoges C., Nowothy H., Schwartzman, S., Scott, P. and Trow, M. (1994), *The New Production of Knowledge*, London: Sage Publications
- Godinez G., Gruver J., Ryan P., and Schweiger J., (1999), Role transition from graduate to staff nurse: a qualitative analysis, *Journal for Nurses in Staff Development*, Volume 15(5), pp. 97- 110
- Graham, C., and Mckenzie, A., (1995), *Delivering the promise: developing new graduates*, Education and Training, Volume.37 (2), MCB UP Ltd
- Greenwood J (2000) Critique of the graduate nurse: an international perspective *Nurse Education Today*, Volume 20 (1), pp 17-29
- Hall, D.T. (2002), *Careers in and out of Organizations*, Sage Publications, Thousand Oaks, CA.

- Hall, D.T. and Chandler, D.E. (2005), "Psychological success: when the career is a calling", *Journal of Organizational Behavior*, Vol. 26 No. 2, pp. 155-76.
- Hall, D.T. and Mirvis, P.H. (1995), "The new career contract: developing the whole person at midlife and beyond", *Journal of Vocational Behavior*, Vol. 47, pp. 269-89.
- Higgins, M., (2005), *Career Imprints: Creating Leaders Across an Industry*, Jossey-Bass.
- Kalinauckas, P., and King, H., (1994), *Coaching: Realising the Potential*, IPO
- Lent, R.W. (2005), "A social cognitive view of career development and counseling", in Mallon, M., and Walton, S., (2005), *Career and learning: the ins and the outs of it*, *Journal of Personal Review*, Vol.34 (4), pp. 468-487
- Meretoja, R., Isoaho, H., & Leino-Kilpi, H. (2004). Nurse competence scale: Development and psychometric testing. *Journal of Advanced Nursing*, 47(2), 124—133
- Munchi, J., (1990), A method for constructing likert scales. Retrieved April 25, 2002, from <http://munchi.sonoma.edu/working/likert.html>
- Ng, T.W.H., Eby, L.T., Sorensen, K.L. and Feldman, D.C. (2005), "Predictors of objective and subjective career success: a meta-analysis", *Personnel Psychology*, Vol. 58, pp. 367-408.
- Orpen, C. (1994), "The effects of organisational and individual career management on career success", *International Journal of Manpower*, Vol. 15 No. 1, pp. 27-37.
- Pascail, L. (2006). The emergence of the skills approach in industry and its consequences for the training of engineers. *European Journal of Engineering Education*, 31(1), 55-61.
- Provident IM (2005), Mentoring: a role to facilitate academic change, *Internet Journal of Allied Health Sciences and Practice*, Volume 3(2), <http://ijahsp.nova.edu>, viewed 1/6/2009.
- Ray, J.J., (1990), Acquiescence and problems with forced-choice scales. *Journal of Social Psychology*, 130 (3), p. 397.
- Walker, R., (1985), *Applied Qualitative Research*, Gower Press
- Waterman, H., Waterman, J. and Collard, A. (1994), "Toward a career-resilient workforce", *Harvard Business Review*, July/August, pp. 87-95.
- Weick, K.E. (1996), "Enactment and the boundaryless career: organizing as we work", in Arthur, M. and Rousseau, D. (Eds), *The Boundaryless Career: A New Employment Principle for a New Organizational Era*, Oxford University Press, New York, NY, pp. 40-57.