VISTAS is the University of West London journal. It provides an opportunity for contributors from all areas of UWL to publish academic, scholarly and contemporary writing to a wider audience. It is playing a part in the wider transfer of knowledge to the community and business in the region. At the same time it invites its audience to reflect their interests and concerns and so engage in debate (through writing and other media) about the leading and significant issues within their perspective.

It offers an opportunity for formal scholarly publication by way of applications to practice, reflection and critical perspective, and attracts expert and authoritative contributions as a way of stimulating exchange of ideas in a critical and policy-related spectrum.

Its range of themes supports the current strategic mission of UWL. These can be broadly based, for example, focusing on media, communications, arts and creative endeavour as well as on a core of business, management, health, technology and enterprise. A strong regional dimension serves to encourage contributors from outside the institution. The three themes of ‘education, economy and community’ will enable the net to be cast widely.

Its purpose is to attract, interest and stimulate writers and readers alike and assist the University to communicate with the public at large, and with specific stakeholders, about mutually engaging themes and issues. It is designed to engage the public, communicate and promote the purposes of UWL, and make a tangible contribution to the identity, image and reputation of the university community and its corporate and public life.

VISTAS: Education, Economy and Community is published in both paper and digital format twice a year (www.uwl.ac.uk/vistas). The paper version is distributed widely and is a tangible symbol of University activity and presence.

Members of UWL and other university stakeholders are invited to submit papers for the consideration of the editorial board. Papers are subject to refereeing by peer reviewers, so that VISTAS can be a publication channel comparable to major journals in fields of study and research. In addition, and subject to the editors, VISTAS publishes other suitable matter which represents university and stakeholder interests. Contributions will normally be between 4,000 and 8,000 words length. Full details are provided in ‘Author Guidelines for Submitting Papers’.

Dr Stephen A. Roberts and Dr Tony Olden
Managing Editors
EDITORIAL BOARD

Management Group ex-officio

Dr Stephen A. Roberts
School of Computing and Technology

Dr Tony Olden
School of Computing and Technology

Professor Joelle Fanghanel
INSTIL

Professor Anthony Woodman
INSPIRE

Representative Members and Independent Members

Professor Francis Pott
London College of Music

Professor Kath Mitchell
Pro Vice-Chancellor

Professor Peter John
Vice-Chancellor

Suresh Gamlath
West London Business School

James Wilkinson
National Teaching Fellow

Bruce Laurie
Board Chair: Great Western Hospital NHS Foundation Trust and School of Computing and Technology

COPYRIGHT AND CONDITIONS OF ACCEPTANCE

Papers submitted will be original material which has not been accepted for publication or published elsewhere. Authors themselves must ensure that they obtain copyright clearance for any material which they cite or quote above the conventionally limited amount or context. On completion of the editorial process, authors will sign an approved standard form which passes published copyright to UWL in accordance with its institutional norms and procedures. Authors conventional moral rights are respected, but in the case of further published dissemination authors are requested to inform the editors of their intentions. Open access principles generally apply with conventional acknowledgment and citation made. Authors will not receive any fee for use in the event of publication and authors will meet any incidental costs of producing their submission from their own resources.

©2012 University of West London. All rights reserved.
ARTICLES

The role of beliefs about infertility on psychological adjustment: a systematic review
Caroline Lafarge and Pauline Fox

The experience of information literacy in nursing practice
Marc Forster

Preparing for work and inquiry via a CLEAR approach: Combined Learning for Employability and Research
James Wilkinson and Carlotta Olason

A new tool for city decision makers: the new Expériences Touristiques company branding tool approach
Mathieu Poitevin, Andrew Pennington, Camille Chamard and Veronique Seel

Mobility, migration and networking within the Cuban scientific community: developing scientific capital in the digital age
Miriam Palacios-Callender and Stephen A. Roberts

Team knowledge management within an outsourced business systems software maintenance environment: a case study using grounded theory methods
Karen Brome

INSTRUCTIONS FOR CONTRIBUTORS

CONTRIBUTORS TO THE ISSUE
Now that VISTAS is in the second year of publication we look forward to the continuing development of the journal and it’s ‘brand’. The year has seen two developments which are helping to develop the concept and widen the perspective of this area of UWL endeavour which combines primary publication with research and enterprise. The university digital repository has been launched using the VISTAS brand (insert url). In June 2012 we successfully promoted a one day VISTAS Colloquium, as a means of offering a forum within which presentations with ‘paper potential’ could reach a wider audience. The colloquium was well supported and we hope it will again feature in the University calendar taking its place with other established events such as the MPhil/PhD conference and the INSTIL teaching and learning conference. Two papers in this issue were presented at the VISTAS Colloquium (Poitevin et al. and Palacios-Callender and Roberts) and several more will feature in successive issues.

Caroline Lafarge and Pauline Fox are both from the School of Psychology, Social Work and Human Sciences and work on a range of issues in health psychology. Beliefs about an illness can influence psychological adjustment. Their paper provides a systematic review exploring the association between perceptions of infertility, measured by the Illness Perception Questionnaire (IPQ), and psychological adjustment among patients with difficulty conceiving. Marc Forster is an Academic Support Librarian at the Paragon campus in Brentford where health and nursing courses are based. Evidence-based medicine and evidence-based nursing have shaped the paradigms of health care delivery and nursing. In so doing it has created opportunities for library and information professionals to provide a significant resource at the centre of health delivery by means of critical reviews linking research to practice and application. The evidence-based model values practitioner competences in information management. However there is currently little evidence to show how being information literate is actually experienced by nurses, and therefore whether information literacy educational interventions are promoting appropriate knowledge and skills. In his paper Marc Forster profiles some of the key issues he is currently exploring as part of his PhD studies.

Debates over the preparation of graduates for employment have always been a feature of professional and business education. James Wilkinson and Carlotta Olason explore the educational basis for realizing such preparation in practice. As a National Teaching Fellow, James has been able to probe the issues of theory and practice which abound in this area of employability and skills. His work continues an established tradition within UWL where teaching under a model of reflective practice has and continues to be encouraged. INSTIL at UWL provides the focus for this activity at the centre, but Wilkinson and Olason have shown how it can be embedded in the everyday practices of teaching.

The London School of Hospitality and Tourism researchers provided two papers in the last issue of VISTAS. In this issue Mathieu Poitevin provides a student-led contribution to VISTAS with the support of his tutor and two French academic collaborators. In the last issue of VISTAS the paper from Maria Vladimirova looked at country branding using Malta as a case study. Poitevin explores the theme further with an empirical method. His paper uses a novel tool for exploring the views of tourists and residents alike using the ‘sketch coffee event’. The data from the events is then processed to provide management information which can help understand the features which contribute to place branding.

The final two papers in the issue come from Researchers in the School of Computing and Technology. Miriam Palacios-Callender is starting out on a programme of investigation looking at mobility, migration and networking within the Cuban scientific community. The work involves studies of scientific diasporas, science communication, the brain drain, and looks to solutions which will take advantage of the digital communication environment. Karen Brome is a master’s graduate from the School of Computing and Technology who has proven to be highly employable as a result of her education at UWL. Business outsourcing has become one of the foundations of business practice not just nationally but worldwide. Karen has chosen to focus on the outsourced business systems software maintenance environment. Her paper also addresses knowledge management in the business application.

In conclusion the range of papers presented here continue to give insight into the Vice Chancellor Peter John’s question: ‘So what does being an academic at UWL actually mean?’ The contributors continue to track the three leading themes of research, enterprise and employment and by so doing provide evidence that academic curiosity and desire for discovery still provide the motor for the life of a university.

Dr Stephen A. Roberts and Dr Tony Olden
Managing Editors
The role of beliefs about infertility on psychological adjustment: a systematic review

Caroline Lafarge  |  caroline.lafarge@uwl.ac.uk
School of Psychology, Social Work and Human Sciences, University of West London

Pauline Fox  |  pauline.fox@uwl.ac.uk
School of Psychology, Social Work and Human Sciences, University of West London

Beliefs about an illness can influence psychological adjustment. This relationship has been studied using the Common Sense Model (CSM). This systematic review explores the association between perceptions of infertility, measured by the Illness Perception Questionnaire (IPQ), and psychological adjustment among patients with difficulty conceiving.

Six electronic databases were searched between 1996 and 2012 yielding 32 potential sources which met the selection criteria. Further evaluation identified 3 papers for the systematic review.

Results indicate significant relationships between perceptions of infertility and psychological adjustment. Perceptions of more severe consequences, longer timeline and lower controllability contributed to greater distress and lower well-being. Individuals’ perceptions influenced partner’s psychological adjustment. Gender differences were also observed.

The review suggests that the CSM is an appropriate framework to study infertility. Thus, interventions based on modifying perceptions of infertility may improve psychological well-being. Given the limited number of studies available and methodological limitations, further research is needed to ascertain the IPQ’s contribution to research on infertility.

Keywords  |  infertility; psychological adjustment; psychological well-being; Illness Perception Questionnaire; Common Sense Model of Self-regulation
Introduction

Infertility is defined as failing to get pregnant after two years of regular unprotected sex (National Institute for Health and Clinical Excellence, 2004). Among women aged 20 to 45 it is the second most common reason for visiting a GP after pregnancy (Human Fertilization and Embryology Authority, 2008). One in seven women experience problems conceiving. Although 85% of women conceive within a year and 92% within two years, the conception rates drop to 77% within 3 years for women aged 38 and over (National Institute for Health and Clinical Excellence, 2004). Given that the age of childbearing is rising and more couples delay starting a family, infertility has become a significant health issue (Office for National Statistics, 2010). The number of IVF treatments has increased by 8% in 2008, compared to 2007 (Human Fertilization and Embryology Authority, 2008). However, access to fertility treatment in the UK remains unequal and little is known about the long-term psychological impact of infertility and the lack of access to treatment (Great Britain. Department of Health, 2010).

Until the 1980s, infertility was primarily attributed to psychological factors (psychogenic hypothesis). Infertility was framed within a psychodynamic paradigm and failure to conceive was mostly considered a result of women’s ambivalent feelings about maternity (Stanton and Dunkel-Schetter, 1991). This psychogenic hypothesis has since been discarded mainly due to technological progress that enables more precise diagnosis of biomedical causes of infertility in women, as well as in men. Of the psychological factors thought to be involved in infertility, stress is possibly the most salient as research has shown that it is an important factor in fertility (Williams et al., 2007). Relaxation techniques have been found to enhance conception rates (Domar et al., 1992). Similarly, daily stress levels of women undergoing IVF were shown to be higher for those who failed to conceive compared to those who were successful (Boivin and Takefman, 1995). Among male patients, stress has been linked to decreased sperm quality (Clarke et al., 1999). Yet, if stress is an important element in infertility, it is now widely considered a consequence rather than a cause of infertility.

Infertility has been linked to psychological distress (Greil, 1997; Wischmann, et al., 2001; Greil et al., 2010). A literature review, however, reveals a fragmented picture (Greil, 1997; Greil et al., 2010). While qualitative studies suggest that infertility has negative psychological consequences for those involved (Earle and Letherby, 2007), quantitative studies are more contrasted. Research has indicated that levels of distress experienced by patients with infertility are similar to those suffering from chronic disorders (Domar et al., 1992). Similarly, when compared to control groups, women who suffer from infertility tend to display higher levels of distress, although on the whole they do not present clinical levels of psychological morbidity (Fekkes et al., 2003). Nevertheless, some studies have found no evidence of psychological mal-adjustment to infertility (Dunkel-Schetter and Loebe, 1991; Edelmann and Connolly, 1998; Greil et al., 2010). Other studies have emphasized the role of women’s own negative perceptions of infertility. A study by Downey et al. (1989) suggested that although infertile women did not clinically differ from control groups in terms of distress, they felt that infertility had negative psychological consequences for them. This highlights the importance of perceptions of a particular illness or condition.

The role of illness perceptions in psychological adjustment has been widely researched. How people feel about their illness or condition has been shown to influence the way they manage and cope with it, which ultimately influences their health outcome. The Common Sense Model of Self-Regulation (CSM) developed by Leventhal et al. (1980) has been used as a framework to understand these beliefs and their impact on health. The model posits that illness disturbs individuals’ balance, which individuals try to restore. The drive to restore equilibrium is referred to as self-regulation. Leventhal et al. (1980) proposed that beliefs are organised around five dimensions: the identity of the condition (driven by symptoms experienced); the timeline (long-term or short-term); the consequences (degree of severity); the causes attributed to the condition (external or internal); and finally, the perceived control over the condition. Based on these elements, individuals form cognitive representations of their conditions and devise coping strategies. These, in turn, determine how well they adjust to their illness or condition.

The concept of illness perception is relevant to infertility. It is likely that the way couples think about infertility will impact their conception rate and their psychological adjustment to it.
In this research area, the Illness Perception Questionnaire (IPQ) (Weinman et al., 1996) has been shown to be a psychometrically robust tool to assess illness perceptions. Few studies focus specifically on illness perceptions as measured by the (IPQ) and infertility. To our knowledge, this study is the first systematic review to be carried out on this subject. This paper therefore aims to understand the relationship between perceptions and psychological adjustment to infertility.

Methods

**Search strategy and inclusion criteria:** Six bibliographic databases were individually searched from 1996 to 2012 (week 16): EMBASE, PsycARTICLES, CINAHIL, MEDLINE, PubMed and Academic Search Elite. The search was initiated from 1996 because the IPQ was published that year and one of the inclusion criteria for this review was that illness perceptions were measured using the IPQ. Different search terms were used to cover the concept of illness perceptions and the condition of infertility, using the Boolean operator ‘AND’. Illness perception was defined as illness perception, illness representation, illness cognition, illness perception questionnaire, IPQ. Infertility was defined as infertility, sterility, IVF, childless. The search was conducted on titles, abstracts and texts. It covered peer-reviewed literature in English. Reference sections of the selected articles were examined for additional records. To be included in the review, papers had to be based on participants experiencing difficulty conceiving, use the IPQ (long or short version) to measure perceptions of infertility and use reliable measures of psychological adjustment as outcome variables.

**Data extraction:** Data extraction was undertaken based on the following criteria: authorship, year and place of publication, overview of the study’s aims, participants’ profile and selection, measures used for infertility perception and psychological adjustment, and finally results based on descriptive and inferential statistics. Study quality was assessed through a rigorous qualitative assessment of each paper. Due to a lower sample size (50), the study by Lord and Robertson (2005) was given less credence than other studies (Benyamini et al., 2004; 2009). The data were analysed qualitatively. No further statistical analyses were undertaken due to the heterogeneous nature of the papers’ methodologies.

**Results**

**Study selection and characteristics:** Thirty two articles were initially selected based on title, abstract and text search. Of those, 15 were duplicates. Titles, abstracts and texts of the remaining 17 articles were examined. Fourteen articles were rejected because they did not fit the selection criteria, leaving three articles for this review. Figure 1 illustrates the selection process.

---

**Figure 1**

- EMBASE: 3 records
- PsycARTICLES: 4 records
- CINAHIL: 5 records
- MEDLINE: 13 records
- PubMed: 5 records
- Academic Search Elite: 2 records

Duplicates: 15 records
Rejected: 14 records
Selected: 3 records
Selection of studies for inclusion in the review: The studies have a number of characteristics, which are displayed in Table 1. All used a cross-sectional design. Two were from the same authors (Benyamini et al., 2004; 2009) but covered different populations. One focused specifically on dyadic experience and on the influence of partner’s perceptions on emotional outcomes (Benyamini et al., 2009) while the other concentrated on women’s perceptions. Thus, these two studies were deemed sufficiently different to make a valuable contribution to this review. Sample sizes varied from 50 (Lord and Robertson, 2005), 242 (Benyamini et al., 2009) to 310 participants (Benyamini et al., 2004). All three studies used clinical samples of patients attending fertility clinics. One study focused on women (Benyamini et al., 2004), whilst the other two also included men (Lord and Robertson, 2005; Benyamini et al., 2009). Participants’ profile varied in terms of time since diagnosis, average length of treatment, cause of infertility, but all were of similar age (29-34).

Two studies used the IPQ (Benyamini et al., 2004; 2009) focusing on the timeline, consequence and controllability dimensions and the third used the IPQR, a revised version of IPQ (Lord and Robertson, 2005) to assess infertility perceptions. Two studies measured coping strategies: one using the Brief COPE (Lord and Robertson, 2005) and the other using the Coping with Infertility Scale devised by the authors (Benyamini et al., 2004). Psychological outcomes were measured using the Stanton Short Infertility Well-being and Distress Scale (Benyamini et al., 2004; 2009) and the Hospital Anxiety and Depression Scale (Lord and Robertson, 2005). The study by Benyamini et al. (2009) examined the difference between patients attending a fertility clinic for the first time vs. those already engaged in the treatment process. However, because the outcome data were not collected from men during their subsequent visit to the clinic, some interactions between gender and first vs. non-first visits categories could not be examined.

The studies used different inferential statistics to assess the predictive nature of infertility perceptions on psychological adjustment: Multiple Regression (Lord and Robertson, 2005), Structural Equation Modelling (SEM, Benyamini et al., 2004) and the Actor-Partner Interdependence Model (APIM, Benyamini et al., 2009). The latter was used to model the interdependence of scores between partners and the interaction of actors’ and partners’ infertility perceptions on psychological adjustment.

Data analyses and outcomes: The three studies reported significant relationships between perceptions of infertility and psychological adjustment. The descriptive analyses provided a clearer picture about this relationship than the multivariate analyses. Benyamini et al. (2004) showed that perception of longer timeline, more severe consequences and less controllability were linked to greater distress and lower well-being, with consequences having the strongest impact on the adjustment variables. This was echoed by Benyamini et al. (2009) with severe consequences and lower controllability relating to poorer emotional adjustment. Lord and Robertson (2005) found significant positive correlations between identity, time line, cyclical emotional representations and both anxiety and depression, and a negative correlation between illness coherence and both anxiety and depression.

Coping was linked to both infertility perceptions and psychological adjustment. Benyamini et al. (2004) suggested that timeline and consequences perceptions had significant relationships with coping strategies. In turn, inward-anger coping was associated with greater distress and lower well-being, while self-nurturing coping was associated with higher well-being, and problem solving with greater distress. Lord and Robertson (2005) also identified a link between coping and psychological adjustment and revealed a significant positive relationship between maladaptive coping strategies, such as self-distraction, denial, behavioural disengagement, venting, self-blame, and both depression and anxiety. However, they showed that, on the whole couples made greater use of adaptive coping strategies than maladaptive ones.

The multivariate analyses aimed to demonstrate the predictive value of infertility perceptions on psychological adjustment, but the results were less consistent across studies. Consequences and controllability were shown to predict distress and well-being (Benyamini et al., 2004). In the dyadic study (Benyamini et al., 2009), distress and well-being were related not only to individuals’ own perceptions of infertility but also to their partners’, a finding valid for both men and women. Partner’s perception of more severe consequences...
contributed to greater distress (on top of own distress). Similarly, partner’s perception of greater controllability and longer timelines contributed to greater well-being. In the Lord and Robertson (2005) study, timeline cyclical and stress as a cause of infertility contributed to explaining 19% of the variance in anxiety, but venting coping was the main predictor with 38%. Illness coherence, personality as a cause of infertility and identity explained 43% of the variance in depression with a further 10% explained by behavioural disengagement coping.

Gender differences in cognitive representations of infertility were also identified, with women holding more negative views of infertility (more severe consequences, lower controllability) than men (Benyamini et al., 2009), a finding reported elsewhere (Greil, 1997; Greil et al., 2010). In addition women were found to place more importance on the congruence between their own and their partners’ perceptions. Women with perceived low controllability displayed higher level of distress if their partners’ perceived controllability was high, compared to women whose partners also had low levels of perceived control. There was no evidence of gender differences in the Lord and Robertson (2005) study, possibly a result of low sample sizes.

Finally the role of coping as a potential mediator of psychological adjustment was examined. Lord and Robertson (2005) study did not find any evidence for it, whilst Benyamini et al. (2004) only found partial support for it, showing that coping only partly mediated the influence of the ‘consequence’ perception on distress.
### Authors

<table>
<thead>
<tr>
<th>Authors</th>
<th>Study looked at</th>
<th>Participants</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benyamini, Golan and Kokia</td>
<td>Relationship between illness perceptions and adjustment</td>
<td>Population: women at fertility clinic (n=310)</td>
<td>Illness perceptions: IPQ</td>
</tr>
<tr>
<td>2004</td>
<td>Recruited at clinic</td>
<td>Timeline</td>
<td>Consequences</td>
</tr>
<tr>
<td>Israel</td>
<td>Mean age: 30.6 (SD: 5)</td>
<td>Controllability</td>
<td></td>
</tr>
<tr>
<td>Cross-sectional</td>
<td>Time since diagnosis: 5 months to 3 years</td>
<td>Coping: Benyamini et al.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treatment: pill (32%), injection (43%), IVF (16%), other (5%) none (4%)</td>
<td>Inward-anger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>71% completed up to 3 cycles</td>
<td>Self-nurturing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controllability</td>
<td>Problem management</td>
<td></td>
</tr>
<tr>
<td>Lord and Robertson</td>
<td>Relationship between illness perceptions, coping and distress</td>
<td>Population: 18 couples &amp; 14 individuals at conception units (n = 50)</td>
<td>Illness perceptions: IPQR</td>
</tr>
<tr>
<td>2005</td>
<td>Recruited at clinic</td>
<td>Identity</td>
<td>Timeline</td>
</tr>
<tr>
<td>UK</td>
<td>Participation rate not given</td>
<td>Consequences</td>
<td>Conrollability</td>
</tr>
<tr>
<td>Cross-sectional</td>
<td>Mean age: 34, (25-50)</td>
<td>Illness coherence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD not provided</td>
<td>Emotional representation</td>
<td>Causal dimensions</td>
</tr>
<tr>
<td></td>
<td>Majority white (78%)</td>
<td>Coping: Brief COPE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trying to conceive: 5 years</td>
<td>28 items for 14 subscales</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Source of infertility: unclear (38%), female (26%), male (18%), both (18%)</td>
<td>Adaptive coping:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treatment length: 2.5 years</td>
<td>active coping, planning positive reframing, acceptance, humour, religion, emotional support, instrumental support.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No of cycles:</td>
<td>Maladaptive coping:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1st IFV (20%), 1 cycle (42), 2 cycles22%), 3+ (17%)</td>
<td>self-distraction, denial, venting, substance use, behavioural disengagement, self-blame</td>
<td></td>
</tr>
<tr>
<td>Benyamini, Golan and Kokia</td>
<td>Relationship between illness perceptions and emotional adjustment</td>
<td>Sample 1 (S1):</td>
<td>Illness perceptions: IPQ</td>
</tr>
<tr>
<td>2009</td>
<td>Dyadic approach: how partners’ perceptions influence emotional adjustment</td>
<td>recruited to fertility clinic (n=72 couples)</td>
<td>Timeline</td>
</tr>
<tr>
<td>Israel</td>
<td>Recruited at clinic</td>
<td>Consequences</td>
<td>Controllability</td>
</tr>
<tr>
<td>Cross-sectional</td>
<td>Participation rate: 76 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean age: women 29 (SD:5) Men: 32 (SD: 5)</td>
<td>43 % no previous treatment, 38% previous treatment, 19% recent treatment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Source of infertility: unclear (42 %), female (25%), male (21%), both (12 %)</td>
<td>Sample 2 (S2): regular visit to fertility clinic (n=69 couples)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sample 1 (S1):</td>
<td>Recruited at clinic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1st visit to fertility clinic (n=72 couples)</td>
<td>Participation rate: 80 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recruited at clinic</td>
<td>Mean age: women 31 (SD:5) Men: 34 (SD: 7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participation rate: 76%</td>
<td>Treatment type:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean age: women 31 (SD:5) Men: 34 (SD: 7)</td>
<td>70% pills, 19 % IFV, 12 % other</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treatment type:</td>
<td>Source of infertility: unclear (32 %), female (27%), male (18%), other (23 %)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70% pills, 19 % IFV, 12 % other</td>
<td>Time since diagnosis: 26 mths</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time since diagnosis: 26 mths</td>
<td>Number of cycle: 2.8</td>
<td></td>
</tr>
</tbody>
</table>
## Emotional adjustment: Stanton Short Distress and Well-being Scale

**Intercorrelations**

1. Longer timeline, more severe consequences related to higher distress (0.29***; 0.59***)
2. Longer timeline, more severe consequences & lower controllability related to lower well-being (-0.26***; -0.36***; -0.31***)
3. Perceptions of timeline & consequences related to coping but not controllability
4. Inward anger related to greater distress (0.63***) and lower well-being (-0.24***)
5. Self-nurturing related to greater well-being (0.19***)
6. Problem management related to greater distress (0.21***)

**Main Results**

**Structural Equation Modelling**

1. Consequences predicted distress (0.26*) and well-being (-0.43*)
2. Controllability predicted distress (-0.24*) and well-being (0.35*)
3. Consequences indirect impact on adjustment mediated by coping strategies, particularly linked to inward-anger (0.71*) and inward-anger linked to distress (0.73*)

**Partial support for mediation**

## Emotional adjustment: Hospital Anxiety and Depression Scale 1

4 items (7 in each)

Higher scores - higher level of distress

**Intercorrelations**

1. Positive correlations bw IPQR and anxiety/depression
   - Identity (0.33*; 0.28**)
   - Timeline cyclical (0.59**; 0.38**)
   - Emotional representations (0.7**; 0.43**)
2. Negative correlation bw IPQR and anxiety/depression Illness coherence (-0.44**; -0.35**)
3. Adaptive coping more used than maladaptive (t=5.77, p=0.0002)
4. Positive correlations bw.
   - maladaptive coping and anxiety & depression
   - Self-distraction (0.39*; 0.36**)
   - Denial (0.33*; 0.37**)
   - Behavioural disengagement (0.39**; 0.46**)
   - Venting (0.63*; 0.47**)

**Hierarchical Regression**

Anxiety: 57% variance explained
1. Venting coping (38%)
2. Stress as a cause (13%)
3. Timeline cyclical (6%)

Depression: 53% variance explained
1. Illness coherence (26%)
2. Behavioural disengagement coping (10%)
3. Personality as a cause (12%)
4. Symptoms (identity) (5%)

No support for mediation

## Emotional adjustment: Stanton Short Distress and Well-being Scale

Data collected among women from S1 & S2 but only among men from S1

**Differences between partners**

1. Women have higher perceptions of consequences than men (2.91 vs. 2.65 d=0.34) across sample 1 & 2

**Interaction between gender and sample**

1. Timeline shorter in S1 than S2: 2.34 F and 2.53 M for S1 2.60 F & 2.71 M for S2
2. Women in S2 lower perceptions of controllability than men in S2 (3.37 vs.3.67)
3. Women in S2 lower perceptions of controllability than women in S1 (3.37 vs. 3.72, p=0.01)

**APIM**

1. Severe consequences related to higher distress in S1 men: 0.41***; women 0.53** and to higher distress in S2 Women (0.45*)
2. Lower controllability related to higher distress in S1 men : - 0.31***
3. 3-way interaction between gender, actor and partners’ perception of controllability Women low on controllability more distressed if partner high on controllability
Discussion

In this review, there is evidence of a relationship between perceptions of infertility and psychological adjustment among patients who attend fertility clinics, although the relationships uncovered are of modest magnitude. The consequences, timeline and controllability dimensions of the IPQ/IPQR were related to psychological adjustment. This demonstrates the relevance of the CSM as a framework to understand infertility. It also implies that interventions based on modifying negative perceptions of the condition may alleviate some of the distress experienced, a finding echoed by Hagger and Orbell (2003). However, a number of comments have to be made with regards to generalising these findings.

First, there was a variation in the measures used to assess both perceptions of infertility and psychological adjustment. Benyamini et al. (2004; 2009) only used the IPQ dimensions of consequences, timeline and controllability while Lord and Robertson (2005) used all dimensions of the IPQ. To measure psychological adaptation, the studies by Benyamini et al. (2004; 2009) used an infertility specific scale while Lord and Robertson (2005) used the generic hADS. These differences make comparisons difficult. They also raise an important issue. Although all studies identified a link between infertility perceptions and psychological adjustment, only one indicated whether the levels of distress reported were clinically significant (Lord and Robertson, 2005). Using a tested and reliable measure of distress (HADS) enabled Lord and Robertson (2005) to compare the findings for this group against other populations. The results indicate that although the mean scores for anxiety and depression were clinically insignificant, 42\% of the sample fell within the clinical range for anxiety and 12\% for depression. This finding is in line with some of the literature (Fekkes et al., 2003). The difference between scales used to measure psychological outcome raises the issue of which (general or infertility specific) is most appropriate. While general measures enable comparisons with other populations, they may be too general to pick up dimensions relevant to the infertile group (Greil et al., 2010).

A second issue relates to the use of control groups. None of the studies used a control group, an issue often reported as a methodological flaw (Greil et al., 2010). Again, this limits the scope of the review. Edelmann and Connelly (1998) have suggested that use of clinical samples may lead to distress being over-reported because physicians see patients most in need of help. Thus, how representative these clinical samples are of the population of infertility sufferers remains to be determined. This is particularly important since in the USA, for example, it is estimated that only half of infertile couples seek help (McQuillian et al., 2003). Hence, this review’s findings are more likely to relate to the perceptions of people undergoing treatment for infertility rather than the perceptions of the infertile population as a whole. Although some recent studies have attempted to include more representative samples (King, 2003), they are still few and far between. Further research would be needed to generalise these findings to the infertile population.

The studies’ designs also brought up important points. First, the three studies relied exclusively on self-reports. Couples being treated for infertility may feel under pressure to appear psychologically robust for their treatment to be regarded as medical and not psychological (Greil, 1997). Hence, psychological distress may be under-reported. In addition, owing to social norms and gender roles, men may also have under-reported distress in an attempt to appear emotionally strong. Second, the studies used a cross-sectional design and thus, no causality between perceptions of infertility and psychological adjustment could be established. Third, although the predictive power of perceptions of infertility, coupled with coping styles, on psychological adjustment was satisfactory, predicting 57\% of the variance in anxiety and 53\% for depression (Lord and Robertson, 2005), almost half of the variance remained unexplained. This implies that other variables may play an important part in perceptions and adjustment to infertility, but these were not included in the original design.

The time at which participants were interviewed is another important consideration. Clinical studies of infertility are faced with a challenge in that infertility treatment is a long process regulated by fertility cycles. Where people are in the process may influence psychological outcomes (McQuillan et al., 2003). Hynes et al. (1992) measured the mental well-being of women with infertility and controls at baseline (time 1) and after one cycle of IVF (time 2). No difference in depression scores was observed at baseline but
Elevated levels of depression were reported at time 2 among women whose IVF attempt had failed. Therefore, some of this review’s findings may reflect psychological distress related to distinct stages in the fertility treatment process rather than individual differences. The studies in this review included people at different stages in the process, which makes comparisons difficult.

Finally, it is possible that cultural variations influence perceptions of infertility. Although the studies by Benyamini et al. (2004; 2009) did not provide respondents’ ethnic profile, the study by Lord and Robertson comprised mainly white participants. This demographic bias has been reported in the literature. This raises two issues. First, one may wonder how representative these studies are of their own multi-ethnic societies, as differences in perceptions of infertility have been observed within the same country. A study by Sewpaul (1999) conducted in South Africa has shown that people conceptualise infertility in different ways depending on where they live. Second, cross-cultural studies have shown that infertility perceptions as well as causal attributions differ across countries. While the biomedical model of infertility tends to be dominant in high-income countries, it is less prevalent in low- or middle-income countries where traditional beliefs are still widespread (Greil et al., 2010). In this review, no conclusion on the impact of causal attributions of infertility on psychological adjustment could be drawn, given that only Lord and Robertson (2005) included this dimension in their study.

The need to assess infertility as a social construct has been a recent point of discussion (Greil et al., 2010). Key aspects of this social construct include policy making and social norms. Population policies and the extent to which a country promotes population growth or birth control influence perceptions of infertility. They also affect individuals’ expectations about achieving a socially desirable role (Greil et al., 2010). In a country that promotes population growth, it is therefore possible that infertility will be perceived negatively, thus distress might be more prevalent. Conversely, policies about access to infertility treatment are likely to influence people’s perceptions and psychological adjustment (Great Britain. Department of Health, 2010).

Conclusions

This review is the first systematic review of the relationship between perceptions of infertility, as measured by the IPQ, and psychological adjustment. Thus, it makes a valuable contribution to the body of evidence on infertility. However, the paucity of the literature suggests that it is currently a neglected area of research. As the literature based on the use of IPQ in relation to infertility grows, it would be useful to revisit and extend the scope of this review. Research on the psychological impact of infertility would benefit from the use of more homogeneous measures, including all dimensions of the CSM, as well as homogeneous measures of psychological adjustment. It would also be advisable to control for the timeframe involved in treatment and for cross-cultural elements. The initial findings from the review indicate that the CSM may be appropriate to study infertility and indicate that interventions based on modifying individuals’ perceptions may reduce distress. Cousineau and Domar (2007) pointed out that psychological interventions among the infertile population have a positive impact on psychological well-being, in particular those focusing on stress management and coping skills. However, a review by Boivin (2003) about the effectiveness of interventions on individuals seeking infertility treatment has shown that further research is needed to ascertain how useful these interventions truly are. Finally, the impact of stress and distress on pregnancy rates remains unclear (Schmidt, 2010) and further research is needed in this area to complete the picture of infertility and psychological distress.
References


Lord, S. and Robertson, N. (2005) The role of patients appraisal and coping in predicting

McQuillian, J., Griel, A., White, L.K. and Jacob, M.C. (2003) Frustrated fertility: infertility and

National Institute for Health and Clinical Excellence.(2004). Fertility: assessment and
treatment for people with fertility problems. [Online]. Available at:
April 2012]

statistics.gov.uk/cci/ nugget.asp?id=951.
[Accessed: 7 April 2011].

Endocrinology and Infertility, 1, p.93-100.


from stress and coping research. New York: Plenum, p. 3-16.

questionnaire: a new method for assessing the cognitive representation of illness. Psychology

Williams, K.E., Marsch, W.K. and Rasgon, N.L. (2007) Mood disorders and fertility in
women: a critical review of the literature and implications for future research. Human

characteristics of infertile couples: a study by the 'Heidelberg Fertility Consultation Service'.
The experience of information literacy in nursing practice

Marc Forster  |  marc.forster@uwl.ac.uk
Academic Support Librarian, UWL Library

Information Literacy (IL) plays a key role in nursing, especially in the context of evidence-based practice (EBP), the initiative within health and social care in which clinical practice is informed by research evidence. However there is currently little evidence to show how being information literate is actually experienced by nurses and therefore whether information literacy educational interventions are promoting appropriate knowledge and skills.

A research project has been designed to investigate how nurses experience information literacy using phenomenography, an interview-based methodology which allows experiences to be categorised and put into a descriptive structure for use in the development of educational interventions. Insights from the findings will be used to map out the parameters of information literacy and to put forward a theoretical model of a module to successfully develop it. This paper discusses the context of the research and the findings from a pilot study.

Keywords  |  information literacy; nursing; evidence-based practice
Introduction

Information Literacy (IL), a concept increasingly employed as an ideal in academic and professional contexts in our information saturated age, is exhibited by someone who can ‘demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and will have the information skills to do so effectively.’ (SCONUL, 2011 p.3). The ability to find and use information is vital in the health and social care professions, and is believed to play a key role in nursing, especially in the context of Evidence-Based Practice (EBP), the key initiative in which clinical practice is based on research evidence. (Barnard et al., 2005; Shorten et al., 2001; Bailey et al., 2007; Ross, 2010). Without the ability to identify, locate and interpret research evidence, clinical practice risks becoming out of date, inappropriate or even dangerous.

In 2010 the Nursing and Midwifery Council published their Standards for pre-registration nursing education (NMC, 2010); Competency 9 of Domain 1 states: ‘all nurses must appreciate the value of evidence in practice, be able to understand and appraise research…..’ (p.14). Domain 3 states: ‘…all practice should be informed by the best available evidence and comply with local and national guidelines.’ (p.17). Modern nurses are made very aware that nursing practice should be evidence-based, but their education rarely includes effective information literacy education.

There are many reports in the literature of work being done by librarians attempting to develop information literacy in nurses, usually based on a behaviourist or constructivist paradigm. (Jsetta, 2008; Brettle, 2003; 2007) There is, however, very little quality research evidence of the effectiveness of such initiatives, or their effect, if any, on the ability of nurses to practice in an evidence-based way. These reports often describe how information literacy appears to manifest itself (also often describing attempts to measure the skills and knowledge felt to be associated with it), but say little about how nurses actually experience the phenomenon. The investigation of that experience seldom consists of more than the recording of nurses’ reflections on their levels of self-confidence and sense of being competent.

Without an understanding of nurses’ experience of information literacy, there is no way to verify whether the skills developed in IL education are appropriate, or the nurse’s expressed increase in self-confidence is justified - or whether the ‘objective’ skills and knowledge tools used in these studies are measuring anything of significance or value. Such an understanding would allow information literacy education for nurses to be grounded in the framework of relevant, understood and measureable aims which it is currently lacking.

Information literacy

The term ‘information literacy’ appears to have been coined by Paul Zurkowski in 1974 in a proposal to the US National Commission on Libraries and Information Science. The idea of information literacy evolved from more common and more restricted notions of library skills or information skills. (Rader, 1991; Snavely and Cooper, 1997). A key watershed in the acceptance of the concept was the definition of information literacy by the American Library Association in 1989: ‘To be information literate a person must be able to recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information’.

The following years saw a conflict between those who put forward a constructivist model and saw information literacy as a set of personal attributes (following Doyle (1992) cited by Owusu-Ansah, 2003) and those who held to a behaviourist model, seeing it as a process following Kuhlthau (1993). In the former camp Lenox and Walker (1993) moved the definition on to the information literate person. Such a person has the analytical and critical skills to search for and access a variety of types of information in order to meet a formulated information need. This recognized the real professional and academic contexts which effect how IL is actually experienced and viewed.

The literature identifies both theories and frameworks of information literacy. Of the latter, the SCONUL Seven Pillars of Information Literacy (SCONUL, 1999; revised 2011), which has widespread authority and use in the United Kingdom and abroad and the American equivalent, ALA/ACRL’s Information Literacy Competency Standards (ACRL, 2000) stress a skills and knowledge combination, and a ‘path’ which the information literate person
follows in the process of successfully applying the skills and knowledge to whatever goal the person has. Both frameworks are therefore behaviourist. However the 2011 revision of the SCONUL seven pillars demonstrates a move towards a more constructivist model: ‘Within each “pillar” an individual can develop from “novice” to “expert” as they progress through their learning life’ (p.3). Kuhlthau’s six stage model of literature analysis was used at the University of New Mexico by Emmons and Martin (2002). In this model, ‘rather than learn to use the online catalog and an index simply for the sake of becoming familiar with those tools, students do so in the service of a real quest for information to increase their understanding’ (p.547). This is an example of a model which makes use of constructivist ideas, in which there is an understanding that information literacy is the ability to apply skills and understanding to a context or situation, and is not simply the ability to perform a task or exhibit abstract knowledge.

Bruce (2002 p.2) identified three models of information literacy, and two sets of standards as the key frameworks used in education.

- Eisenberg and Berkowitz’ Big6 information skills (Eisenberg and Berkowitz, 1990)
- Doyle’s attributes of an information literate person (Doyle, 1992)
- Bruce’s seven faces of information literacy (Bruce, 1997)
- The information literacy standards for student learning (ALA and AECT, 1998)
- The ALA information literacy competency standards for higher education (ALA, 2000).

The first two are very similar to each other and involve knowing which information related tasks to perform and knowing how to perform them. Eisenberg and Berkowitz (1990) Big 6 steps are defined as task definition, creating information seeking strategies, locating and accessing information, using information, synthesizing information and evaluating information. In Doyle’s model the information literate person recognises the value of information for effective decision-making and can formulate questions, identify sources, search successfully and access and evaluate the information found. ‘Learning to be information literate involves acquiring and demonstrating these attributes.’ (Bruce, 2002, p.3).

As a result of research done using Phenomenography, Bruce (1997) moved beyond both behaviourist and constructivist models in the development of a new ‘relational’ model. The relational model emphasises that at any moment the information user’s experience of being information literate is subjective but contextualized, and can make use of any or all of as many as seven ways (or ‘experiences’) of being information literate.

1. As a user of IT
2. As knowing what information sources to use
3. Knowing processes to search those sources
4. Information control: having information stored and easily to hand
5. Knowledge construction: building a personal knowledge base
6. Knowledge extension: combining knowledge and personal perspectives to create new insights
7. Wisdom: using information wisely for the benefit of others: exercising judgement, making decisions, doing research; placing the information in a wider context.

The information literate person experiences the phenomenon of information literacy differently in different contexts within the information gathering process. Some individuals are capable of experiencing it in all 7 ways; the less information literate in fewer ways. This understanding of the subjective and contextual nature of IL goes a step beyond a model of the Kuhlthau type in its sensitivity to the many different ways in which information literacy is experienced.

In more recent years, there has been a move towards defining IL as part of a broader pattern of competencies. Koltay (2011) groups IL with ‘digital literacy’ and ‘media literacy’ and the close interconnectedness of information awareness and the ability to function in the contemporary digital multi-environments. Mackey and Jacobson (2011) point out the role of contemporary information environments and collaborative technologies in changing the way people find, use and share information and propose ‘metaliteracy’ as new term to incorporate the many literacies and technology-competencies now required. Brophy (2007) has linked information literacy to other literacies such as those associated with IT and even basic academic literacies such as reading. From an academic perspective IL is simply one of the literacies which allows a student to function effectively. In higher education, information literacy is now often included in the group of competencies together variously
defined as ‘graduateness’ (Peters, 2011) – i.e. exhibited by a person who has fully developed the skills of a graduate which are often defined as those needed for self-directed and self-motivated learning. However, Hoyer (2011) points out that IL skills as currently taught in the academic environment are inadequate to allow students to deal with the wider information environment they will encounter outside the academy.

IL is increasingly seen not as a separate subject or discipline but as something with little meaning outside its specific contexts –whether as part of a broad pattern of generic but highly integrated competencies or within the professional functionality of a specific discipline (Jacobs et al., 2003).

Information literacy in nursing

As described above, health professionals are expected to base their practice on the research evidence and information literacy is believed to be a key component in this process (Bailey et al., 2007; Ross, 2010; Pravikoff et al., 2005; Bernath and Jenkin, 2006). Bailey (2007, p.78) emphasised that it is essential for students training to enter the health professions to become information literate as ‘The drive towards evidence-based practice and care makes it essential that students become information literate and acquire the skills to become lifelong learners.’ For Barnard (2005) the development of IL is the foundation for critical thinking in nursing, and necessary for the successful implementation of evidence-based approaches to clinical practice. In fact, the application of new clinical evidence is vital in developing and retaining competence throughout a nurse’s career. ‘Development of information literacy not only facilitates engagement with effective decision making, problem solving, and research, it also enables nurses to take responsibility for continued learning in areas of personal or professional interest.’ (p.506). IL should therefore be an essential focus of nursing education.

However nurses and nursing students often lack the skills to locate and evaluate information on which to base clinical decisions (Dee and Stanley, 2005; Jacobs et al., 2003; Pravikoff, 2005, 2006; Verhey, 1999). Majid et al., (2011) found that nurses in Singapore thought EBP a valuable concept, but because of a lack of time, inability to understand statistical terms, and inadequate understanding of research terminology, were unable to find and use evidence. Layton (1995) pointed out that nurses have historically made less use of libraries than comparable health professionals and that this was usually ascribed to them having little knowledge of, and few skills in information use. Medical schools often had modules for credit in finding research literature and other IL-based topics but this was rare in nursing education.

Does a lack of IL skills inhibit EBP? Ross (2010) and Rosenfeld (2002) discuss this. Ross examined Perianaesthesia nurses’ perceptions of literature searching skills. She found that the three main barriers to finding and using research evidence were: lack of understanding of electronic databases – how they worked and how they were constructed; lack of skills to critique and synthesize the research literature, and difficulty in knowing how and where to access research papers. She concludes: ‘A barrier to EBP has been identified as a need for improved information literacy and includes recognition of information required and the development of skills for locating, evaluating, and effectively using relevant evidence.’ (p.64) Beke-Harrigan (2008) conducted an investigation of the evidence-based practice readiness of 1,442 nurses and found that though they accepted that research evidence was increasingly important to their practice, many admitted to not using their in-house library (70%) and not knowing how to use specialist databases (preferring Google: 43%). As Beke-Harrigan states, many nurses provide care based on what they learned in nursing school and on their accumulated experiences and neglect other sources of evidence.

Information literacy education in nursing

Reports of individual examples of IL education are numerous, particularly in the context of nursing. They almost without exception pay little attention to methodological issues and as a result, conclusions are ungeneralisable and vague. Three typical examples will be discussed which demonstrate typical issues and concerns, and the approaches used to address them, supplemented by a systematic review conducted by Alison Brettle of Salford University in 2003. Bailey et al., (2007) analysed the effectiveness of ‘remedial
workshops’ in using the book catalogue and ‘journal portal’ given to nursing students at Northumbria University. Students were identified as ‘having low information literacy’, and therefore suitable for the workshops, by means of a diagnostic essay which also assessed skills levels in academic writing. The study showed that skills levels and confidence were both increased by the workshops.

‘Quantitative evidence, in the form of a comparison of assignment grades from the first diagnostic essay and subsequent summative essay revealed that all of the original 23 participants who attended at least one workshop improved their academic grades,’ (p.83). The question remains whether this consists of ‘evidence’. The phrase ‘information literacy’ is mentioned in connection with the knowledge and skills under investigation with the unexamined assumption that the behaviourist IL paradigm is the correct one. Similar ambiguities and assumptions are typical of many other similar papers.

Verhey (1999) used an exploratory descriptive approach to evaluate the information literacy program in an undergraduate nursing curriculum. Individual and group assignments within the nursing modules were designed to develop student abilities in critiquing and evaluating the information using the current literature in nursing practice in conjunction with embedded information literacy educational experiences. This is an example of a more constructivist approach, in which students learn from ‘experiences’ of similar kinds to those in which they would operate as information literate professionals in the ‘real world’. The student is taught how to address the information needs provoked by clinical scenarios similar to those they would experience in practice.

To evaluate effectiveness of the integration of information literacy into the curriculum, a pre- and post- experience design was used. A self-reporting questionnaire was created to measure ‘skills and confidence’. It addressed six areas:

1. Information sources used to complete assignments.
2. The use of reference databases.
3. The use of libraries.
4. Ease and confidence in accessing information sources.
5. Problems in accessing information resources.
6. Plans for accessing current information after graduation.

The questionnaire found significant increases in student use of the CINAHL database, in use of a health and biosciences research library located nearby, and their level of comfort in using the journal literature. Despite an attempt at a more constructivist learning approach the assessment tool’s measurement of ‘skills’ follows a behaviourist paradigm.

Turnbull et al. (2011) recognised the limitations of classroom based IL study for student nurses – the lack of student engagement and limited amount of ‘hands-on’ activity due to lack of time, as well as practical difficulty of arranging such classes in a busy curriculum. Their solution was the development of an on-line ‘tutorial’ in six modules to provide ‘structured guidance’ in information skills: (1) locating relevant resources; (2) search strategies; (3) evaluation; (4) referencing conventions and avoiding plagiarism; (5) best practice examples; and (6) a ‘test your own skills’ module to promote revision and practice (p.125). Assessment was ‘focussed on application’ so that the practical value of the skills being developed was clear to the student. 83 % of students surveyed (from a small sample) agreed that they felt more confident in using the resources. External assessment was looked for in students’ grades which were ‘better than last year’ (p.127). Not a particularly scientific measurement. There was no real discussion of EBP and therefore no assessment of the value of the self-assessed increase in confidence of the students.

In 2003 Brettle attempted a systematic review of reports of information skills training in medical and nursing education in the UK, USA and elsewhere: its effectiveness, what the best methods in conducting it are, and whether it can be proven to effect patient care. The findings were inconclusive with ‘limited’ evidence produced and with many studies found to be flawed. The courses varied widely: single user, group and large group; 1 to 3 hour sessions; single and multiple sessions. Outcomes were measured mainly by user questionnaires and asked for self-assessment of changes in skill level; objective testing was used only in some of the programmes. Brettle points out the inadequacy of a purely subjective questionnaire as a reliable measure, citing Grant et al’s (1996) study which shows that users frequently under-report their skills levels compared to objective measurement. Four studies described skills assessment which was part of the assessment of academic assignments with the broader course of study. In general, study flaws were found to include
An investigation into how information literacy in nursing is experienced

In order to address some of the issues above, a research project has been developed at UWL with the following aims:

1. To investigate how being information literate is experienced by nurses.
2. To use the insights obtained to develop a description of the parameters of information literacy in nursing, including those of its role and value in evidence-based practice.
3. To develop the theoretical modelling of the information literacy development process in nurse education with a view to practical application and improvement of outcomes.

The project sets out to answer the following questions:

i. How is information literacy experienced by nurses?
ii. What are the parameters of information literacy in nursing, including the parameters of its role and value in evidence-based practice?
iii. What is the structure of a theoretical model of the information literacy development process in nurse education?

Overview of method: The project consists of the phenomenographic analysis of the information literacy experience and behaviour of nurses, as expressed in interviews. It will also include an analysis of the effect on some of the subjects of the university’s information literacy module ‘SEARCH for Health’.

The project has two parts:

1. A phenomenographic investigation into the information literacy experience and behaviour of nurses.
2. An investigation of any changes in the experience of information literacy of some of the subjects from part 1 after having taken the SEARCH for Health module.

Findings will be supplemented by asking this group to take the module assessments before and after the module to analyse which particular skills and knowledge domains are associated with the new presence/continued absence of the additional ways of experience information literacy.

There will follow an analysis of the educational significance of these findings.

These activities will lead to:

1. A description of the experience of information literacy in nursing, including a description of its parameters.
2. A description of the relevance of these findings for IL education in nursing, leading to the development of a theoretical model of an information literacy course or module.

The phenomenographic investigation: The phenomenographic method uses open-ended interviews in which subjects describe their experiences of a phenomenon in one or more contexts. The researcher categorises the experiences and relates the categories into logical relationships in the form of a diagrammatic representation or representations of how the phenomenon is experienced.

In this study, participants are asked to describe their information seeking activities, as they set about analysing a clinical problem or issue and determining their information needs. Also, more generally, how they relate their experience of being information literate with their roles as clinical professionals and evidence-based practitioners.

The researcher then attempts to define from the interview transcripts the discrete ways of experiencing the phenomenon in the form of ‘categories of description’ and then create one or more ‘outcome spaces’ which show logical relationships between the categories. Categories of description are interpretations in which what is conceived is put in relation with how it is conceived. Outcome spaces are diagrammatic representations of the logical relationships between categories of description, representing a map of the varying ways the phenomenon is experienced by subjects.
The pilot study

Åkerlind (2005a) strongly recommends pilot studies in phenomenographic research, to iron out problems in questionnaire content, interview technique and data analysis issues. A pilot study was undertaken in autumn of 2011.

Subjects: 3 subjects were invited to be interviewed. (Åkerlind 2005a). All three were academics in the field of nursing with many years of clinical experience and experience in teaching the principles of Evidence-Based Practice (EBP) to students. The subjects were chosen as suitable for a pilot study as they had experience in talking about the issues involved and were experienced interviewees.

Method: Subjects were interviewed in a one-to-one format and asked to describe their information seeking activities, as they set about analysing a clinical problem or issue and determining their information needs; also, more generally, their understanding of Evidence-Based Practice in Nursing and the role of information literacy within it. These experiences were then analysed to tentatively develop ‘categories of description’ and ‘structures of awareness’ in which various understandings of IL in the categories were either prominent or neglected, as well as criteria which could form the structure of an ‘outcome space’. Ashworth and Lucas’s (2000) guidelines were used as a general basis of approach.

Results: provisional categories of description: It became clear that the Åkerlind method of data analysis (Dall’Alba, 1994; Bowden, 1994; Prosser, 1994; Åkerlind, 2005a; 2005b) could allow the successful development of a number of provisional categories of description. This method emphasises the whole transcript as a unit of analysis and warns against the tendency to view small sections of dialog in isolation. The method employed by Marton and others (Marton, 1986; Marton and Booth, 1997) in which the transcript was immediately broken down into small sections of dialogue proved incapable of dealing with the complex and extended ways the categories revealed themselves.

Each category describes how information literacy is experienced in nursing. A picture emerges of a practitioner who is not merely attempting to achieve the goals of EBP but one who uses their information literacy to become confident in their role: able to act autonomously yet also to work comfortably and effectively within a multidisciplinary team.

The draft categories are as follows. Representative quotes have been given in each case; however the full significance of the quote requires the full transcript as its context:

1. IL is experienced in the successful collection of sufficient and persuasive evidence to justify change in practice. “[a properly functioning, evidence-based practitioner] is …someone who can actually develop practice, so they can find new ways and better ways of treating people by devising interventions for better care…..” Subject C

2. IL is experienced in an ethical context, in the successful accumulation of evidence to establish what is the most ethically appropriate care “….through necessity I have to follow evidence-based practice. It’s an ethical issue. We can’t, ethically, treat a patient without knowing why we’re treating them” Subject C

3. IL as experienced in the successful gathering of evidence to support the facilitation of culture change in the clinical environment “…..they draw on current evidence and we teach the student to question practice – why are you doing it this way? It’s been very beneficial for the existing staff because they know that the student is up to date so they listen to the student and learn from them – so the culture has been gradually changed” Subject A

4. IL as experienced in the successful obtaining of information of clinical value to enable nurses to contribute to a multidisciplinary team “looking for information – to justify in front of our professional colleagues…. All kinds of information – to justify why it will be clinically effective, to help us raise different arguments and clarify…… from different sources” Subject B

5. IL is experienced in the building up
professional competence through the location and application of key scientific or psycho-socio-cultural background knowledge “we always had to find when giving care to patients ‘what is the scientific principle’? And that kept us on the top of our nursing practice” Subject B ‘I might investigate if there’s a cultural angle to it …is there something that we don’t know about” Subject A

6. IL is experienced in the successful accumulation of sufficient and appropriate evidence to justify strategies to, and re-assure, patients and family “…my presentation was nothing but bringing information and justifying why this action was important, to comfort the child and the child’s parents” Subject B

7. IL is experienced in the successful establishment and support of an autonomous status for the nursing professional by providing evidence for independent and defendable clinical opinions. “Autonomy is important, certainly, …as an autonomous practitioner….. I can carry out a procedure in the way that I do because I have evidence to support me” – Subject C

The main study will perhaps lead to the merging or splitting of these categories or the development of new ones.

Towards an outcome space: Within each category, ‘structures of IL understanding’ were prominent to a greater or lesser extent. Five of these could be provisionally determined:

a) An understanding in which IL is seen as a source of autonomy, comprehensiveness and timeliness
b) An understanding in which IL is seen as successful autonomous information gathering within an enquiry-based learning paradigm.
c) An understanding in which IL is the successful building on existing knowledge and understanding in a constructivist paradigm.
d) An understanding in which IL is a learning process – progressing from a guided introduction to relevant issues, terms and theories towards effective critical appraisal.
e) An understanding in which IL is the filling-in of knowledge gaps determined through an ethical self-reflection.

A category of description can be represented graphically in terms of the structures. eg, Category 3 - in which the most prominent understanding is a) followed by the next most prominent c) and the next, b).

By grouping and differentiating categories

![Diagram](image-url)
of description based on these structures, an outcome space can be developed, giving an overall picture of the experience of IL in evidence-based nursing.

Two further criteria of prominence by which categories of description could be related in additional outcome spaces could be provisionally determined, each with five variations:

What is the meaning of IL – what does it mean in practice?

i. Completing a knowledge framework
ii. Introducing a stimulus for change
iii. Developing a plan of action
iv. Developing a means to participate
v. Developing a means to autonomy

The meaning of information – what is information?

i. Agent of change
ii. Knowledge of essential facts
iii. Proof of competence
iv. Evidence for re-assurance
v. License for autonomy

The future

How will the finalized results be used? As described above, a group of interviewees will be re-interviewed after undertaking the SEARCH module to find which categories are now within their experience and which ones still remain outside it. They will also be asked to take the module assessments before and after doing so to analyse which particular skills and knowledge domains are associated with the new presence/continued absence of the categories of description. More specifically, using the ‘relational frame’ for IL education developed from Bruce’s own phenomenographic investigations (Bruce et al. 2006), each category and its associated skills/knowledge will form the focus of educational experiences in a new form of the module.

Initial findings have been responded to with interest and broad agreement by senior nursing professionals. The main study, in which 30-40 further nurses will be interviewed, is underway.

An improved SEARCH module based on research evidence will be more likely to produce nurses who are genuinely information literate and therefore potential leaders in the on-going project of promoting and developing evidence-based practice. In addition, as the preliminary findings promise, the revised module could contribute to the production of confident, autonomous practitioners who are agents for positive change.
References


Pravikoff, D.S., Tanner A.B. and Pierce S.T. (2005) Readiness of U.S. nurses for evidence-based practice: many don’t understand or value research and have had little or no training to help them find evidence on which to base their practice. *American Journal of Nursing*, 105(9), p.40-52.


Preparing for work and inquiry via a CLEAR approach: Combined Learning for Employability And Research

James Wilkinson  |  jameswilk@btinternet.com
King’s Learning Institute, Kings College London

Carlotta Olason  |  Sickle Cell Society

The ‘Combined Learning for Employability and Research’ (CLEAR) framework is an approach designed to support inquiry based learning and development of employability attributes. It emerged as a set of responses to difficulties encountered on a Level 5 ‘Work Related Learning and Research’ module, where students often struggled to manage themselves, work to time, expedite group projects, handle multiple perspectives and apply research methods theory.

The study which sought to articulate, evaluate and conceptualise the CLEAR approach, used data and analysis from student reflections, module statistics and observations, interviews with research methods tutors and students (pre/post experiencing CLEAR); and literature perspectives.

Outcomes from fieldwork assisted in identifying specific areas of difficulty and in providing qualitative evidence of benefits related to the holistic nature of the CLEAR approach. Findings are linked to a theoretical framework integrating learning which is: active and student-centred; experiential and reflective; inquiry based; socially and individually constructed; and which encompasses cultural discourses and transforms tutor and student identities.

Keywords  |  inquiry; employability; constructivism; active, student-centred, situated, transformative and social learning
Introduction

For many years there have been persistent and compelling calls for higher education to develop knowledge, skills and attitudes needed for inquiry and research (e.g. Elton, 2001 citing Humboldt’s work of 1810; Boyer Commission, 1998; Barnett, 2005; Ramsden, 2008; Healey and Jenkins, 2009) and also for employability (e.g. Yorke, 2010 citing the Committee on Higher Education of 1963; Dearing, 1997; Yorke and Knight, 2007. Knight and Yorke (2004, p.2) argue that ‘good learning’ for these two purposes need not be seen as ‘oppositional’ but rather as ‘aligned ...constructs’. However, there are also concerns expressed in both areas. These include disquiet over restricting research based learning to a select elite or to final year students (e.g. Healey and Jenkins (2009), transmission-based approaches (e.g. Elton, 2001; Laurillard, 2002); learner passivity and dependence on ‘certainties’ provided by authorities (e.g. Mezirow, 1997; Brown, 1997; Boyer Commission, 1998; Ramsden, 2008; Baxter Magolda, 2010). Employability literature suggests difficulties in regulation and management of self, time and projects and, when learning with others, cross-cultural teamwork (Sola and Wilkinson, 2008). There is also concern over high stakes assessment and its negative impact on learner self-efficacy (Knight and Yorke, 2003).

Much of the above discourse emphasises the need to embed development of requisite ‘skilful practices’ in the curriculum rather than treating them in isolation (Yorke, 2010). It also suggests that learning actively, constructing knowledge and managing themselves and others, develops in university students the ‘functioning knowledge’ (Biggs and Tang, 2011, p. 81) and personal attributes which universities and employers both wish to see in graduates.

At the University of West London (UWL), the Level 5 ‘Work Related Learning and Research’ (WRLR) module on the Higher National Diploma (HND) Business course sought to develop such learning for employability and inquiry through group work by developing research proposals and individual reflection on the experience. However, assessment results in the first two years were disappointing. While this may be partly explained by the academic profile of the students, typically lower than for those on bachelor programmes, the module tutor (Wilkinson) was concerned that the poor results reflected shortcomings in his initial teaching approach, which comprised a one-hour lecture plus two seminars per week. Difficulties related especially to: students’ lack of critical engagement with theoretical perspectives; understanding of research methods theory; self, time and group project management; application and transfer of theory; and confidence, autonomy and identity.

Responses included significant reduction of lecture time, allowing longer sessions spent coaching small groups and interventions designed to encourage more active, self-directed, inquiry based learning to facilitate improved, employability related practices of self, time and group project management. A further innovation was to allow students to critique examples of the tutor’s own research outputs, including not only polished but also rough drafts.

These changes were introduced over a number of years, in a largely ad hoc manner. With improving results came a desire to evaluate, articulate and conceptualise the above pedagogical approach. In 2009-2010, funding by UWL’s ‘Research in the Teaching Environment’ scheme supported a study conducted by the module tutor to realise these aims, and the University’s ‘Graduate Internship’ programme provided administrative support (Olason).

This paper starts by describing and explaining methods used in the study. To facilitate presentation and analysis of the considerable volume of data, and to illustrate the above narrative, selected findings will be presented thematically in five parts:

1. Engaging critically with theoretical perspectives;
2. Understanding of research methods theory;
3. Self, time and group project management;
4. Application and transfer of theory; and
5. Confidence, autonomy and identity.

The findings section concludes with presentation of module performance statistics. Because of the study’s inductive approach, theoretical perspectives will be presented after the findings, as recommended by Creswell (2003), followed by a summarised conceptual framework for the ‘CLEAR’ approach, and our conclusion.
Methods

Because of the study’s aim of researching an evolving, complex innovation in an educational rather than laboratory setting, a design-based approach was adopted.

Design-based research seeks to address the challenge to develop theories of learning and teaching that explain the ’multiple interactions’ of learners and teachers acting in complex social settings in response to ‘intervention designs in situ’ (Sandoval and Bell, 2004, p.199, acknowledging Brown,1992). The Design-Based Research Collective proposes that rich, descriptive accounts of educational interventions and of the way these are enacted, typically triangulating ‘multiple sources and kinds of data’, can assist in explaining innovative practice and in providing ‘principles that can be localized for others to apply to new settings’ (DRBC 2003, pp.7-8).

Multiple sets of data were gathered in three stages from: student reflections, module statistics and tutor observations; interviews with research methods tutors and students (pre/post experiencing CLEAR); and literature perspectives used to develop a conceptual framework.

Stage 1: Pre-intervention observations and interviews
i. observations of three years’ experience with the module, prior to 2009, written by the module tutor (Wilkinson);
ii. interviews with three Level 6 tutors, who all had many years’ experience teaching research methods and supervising dissertations on final year bachelor programmes; and
iii. interviews with eight students prior to experiencing the CLEAR approach.

Stage 2: Post-intervention interviews and students’ written work
i. interviews with eight students after experiencing the CLEAR approach;
ii. student reflective portfolios.

Stage 3: Analysis of theoretical perspectives
Literature was examined before, alongside and after the various Stage 1 and Stage 2 activities, with the aim of ‘analysing in a circular fashion the progression between parts and whole... ’ as advocated by Addison (in Crabtree and Miller, 1999, p. 151) and other authors in relation to qualitative research (eg. Creswell,2003; Cousin, 2011).

To establish baseline data, a questionnaire comprising a repertory grid of ten opposing constructs was completed by students prior to the interviews and their responses acted as prompts for discussion during the Stage 1 interviews. For example, to establish students’ understanding and attitude towards autonomous learning, prior to experiencing the CLEAR approach, they were asked to enter the letter ‘I’ for ‘ideal’ and ‘C’ to indicate their actual (current) position on a line between the following pair of opposing statements:

“I like learning by myself” ..............“I prefer if the teacher tells me”

Stage 1 and 2 interviews and the students’ portfolios produced qualitative data, analysis of which was facilitated with NVivo software. Codes identified in transcripts of recorded interviews were organised using editing and template styles described in Crabtree and Miller (1999), producing 12 themes, reduced eventually to the above five core categories. In addition to developing theory inductively, analysis of qualitative data aimed to reveal complex layers of meaning, to facilitate understanding of student and tutor perspectives, and to provide ‘vivid, illuminative and substantive evidence of such behaviour and experiences’ (Cousin, 2009, p.8).

The CLEAR story

Observations and extracts from interviews and students’ work presented in this section provide substance for the narrative which was briefly summarised in the introduction. The selection and structuring of the evidence also reflects attempts at making sense of the data and aligning it with literature perspectives presented in the following section. In general, commentary expressed in the post-intervention interviews and reflective portfolios was positive, and the selected comments presented here are representative. However, instances of disconfirming evidence are also presented where relevant.

Interviews with Level 6 tutors suggest that many of the difficulties encountered on the WRLR module are not limited to Level 5 HND students, and may resonate with other higher education colleagues’ experience.
Engaging critically with theoretical perspectives:

“Many, if not all students had difficulty grasping the process and even the purpose of literature review when it came to identifying a clear focus for their research, placing their work in relation to current thinking, critically analysing and synthesising ideas drawn from multiple perspectives, producing a conceptual, analytical framework for research, and explaining and justifying methods and methodology choices”. (WRLR Module Tutor Observations)

Indeed, engaging actively and critically with relevant literature appeared to be a significant area of difficulty, acknowledged by the students and emphasised in the Level 6 tutors’ comments. Implicit in the above observation are difficulties relating to reading and writing for research and academic purposes.

Reading

“Many students appeared to have done very little reading as their grasp of the concepts needed in their research proposals was typically limited or patchy.” (WRLR Module Tutor observations)

Tutor 2 believed that poor reading skills affected students’ ability to develop a specific focus for their research:

“They need to be more diligent in terms of their reading. They need to develop an accumulation of knowledge of what the subjects actually mean and what their subdivisions mean so that they can be clear. They seem to fear being specific as if that requires more knowledge than they really want to ... either have or to acquire.”

Moreover, students acknowledged that they should read better and more. Student I also admitted to a disinclination to take on the necessary hard work:

“...I don’t think I read enough as I should. I feel, like, whatever’s convenient, I’ll just, like, sort of rely on that for my research. Like I do get a lot of books from the library, and then, the internet is quite good, so I mean... I don’t use as much books. I suppose I use more internet than books. (Pause)... I mean, it’s just having to go out and umm, just look at other things ... I think it’s just laziness (laughs) in my case.”

From the Level 6 tutors’ comments, such reading behaviour is not untypical and they repeatedly linked this lack of reading to difficulties achieving a clear research focus:

Tutor 2: “I find that some of the weaker students sometimes have the best ideas, but they don’t know how to narrow them down.... Some of them really do start with something but it’s too general and they need to focus down on it.

Tutor 1: “It’s difficult when they haven’t read anything and they don’t know where they’re going....”

The WRLR module tutor’s reduction of time spent lecturing and more time working with small groups created a less formal atmosphere in which students were more ready to ask questions. Getting students to undertake inquiry during class time appeared also to motivate them to engage more responsibly:

“They asked me to show them how to access academic journal articles via the university’s electronic data bases. They had attended a presentation on this but could not remember how to do it. They even seemed receptive to tips on skim-reading and ways to structure complex ideas. Previous attempts to pass on such study skills had usually coincided with their eyes taking on a curiously glass-like appearance. They seemed now to understand that being specific in their research aims required deeper knowledge than they actually possessed, and that reading might give them this”. (WRLR Module Tutor observations)

Several post-intervention interviews suggested that the module had encouraged greater commitment to reading. Student I, for example, believed that working in a group had helped. Her statement of what might seem obvious also suggests that the benefits of reading were new to her:
“… we would always come in to do research in the library and just check out books and see what we could get so… I think I have learnt from them, like how they do research … (and) … actually go to the sources and even, like – I don’t know – just reading books and stuff, and I think that helped quite a lot ‘cause it just broadens my knowledge a bit.”

Student N also found that the module had helped her to engage more diligently and critically with literature, making her more open to wider perspectives and helping her to focus her efforts:

“Doing this project has prepared me to look deeper into a topic and find out all I can about it, from more than one angle. I feel I can research more strategically and practically.” (Student N – reflective portfolio)

Writing:

“There were worrying numbers of suspected plagiarism cases, and where students did produce their own writing, this was often poorly structured, descriptive and lacking effective and critical analysis.” (WRLR Module Tutor observations)

The Level 6 tutors likewise referred to instances of plagiarism and were also concerned that students lacked the necessary analytical skills, as is illustrated by concerns expressed by Tutor 3 and her efforts to address these:

“I mean, we say to students, you know ‘You should critically evaluate these articles and you should put it all in your own words’ and we think we know what that means, and we think that they know what that means, but my experience is: they don’t…, and so the idea is to actually say: ‘What are the skills you need to put things in your own words. You need to be able to paraphrase, you need to be able to use quotations, you need to be able to summarise. What does that skill mean? Show me that you can do it. Yes, that’s what you need to be doing in your essay’.

Similar difficulties linking reading, understanding and writing were also reported by Student C:

“Sometimes it is a bit difficult to put into your own words and sometimes you need to … before you put (it) into your words, you need to kind of think: “how well do I understand it and how well does it make sense to me?”

According to the tutors, students also failed to appreciate the iterative nature of writing and how articulating research intentions, underpinning theory, processes and outputs requires “a huge number of drafts.” (Tutor 1).

“They’re unused to this idea of writing and editing….. What they’d rather do is to keep it in their head and somehow magically and mysteriously have it appear perfectly on a sheet of paper, and it doesn’t quite work like that” (Tutor 2).

Tutor 2 also saw weaknesses in critical analysis as an attitude problem:

“They lack the reasoning and argumentative part of it…. I mean, I’m quite happy when someone argues with what I’ve said and proves that I’m wrong. I think: “Well done! Great! Go on!” But that happens only one in every 20 students a year.”

Understanding research methods:

Concerning research methods, Tutor 2 highlighted both conceptual and linguistic difficulties, as well as the need for tenacity:

“…it’s quite complicated, and you start introducing … lots of new words to them that they haven’t heard before … and you’ve got ‘quantitative’ and ‘qualitative’, ‘methodologies’ and you’ve got ‘sampling frames’ and you’ve got ‘populations’ and ‘variables’ and all these words that are quite … ‘swimmy’ when you first start and … they’re a bit worried, I think, and they almost give up, and I try and tell them that … you’ve just got to plod away with it. It does become bearable and you don’t get everything right.”

Asked to characterise the ‘good’ students, tutors again emphasised the importance of engaging with literature and of applying it purposefully:
Preparing for work and inquiry via a CLEAR approach: Combined Learning for Employability and Research

James Wilkinson and Carlotta Olason

“... the better students are the ones that are able to do the reading, synthesise what they’ve got and then apply it to a methodology, or at least have thought of how they can apply it, maybe to different ones and then have selected something. Mostly, though, that’s a struggle for a lot of students. With the better ones, that’s definitely the hallmark, it’s reading....”

Writing post-intervention, Student N claimed in her portfolio to have learnt the importance of specifying aims, planning and persistence:

“I have also learnt how to put together a research project and the elements involved. At the beginning of the work related learning module I didn’t know much about the writing up of a research project. ... I have now learnt how clear aims and objectives need to be to make them achievable. I also have learnt that you need to keep working on a project, and planning it out is key to covering everything in that topic.”

While this is encouraging, it should be noted that knowledge and understanding of research methods featured much less prominently in most interviews and portfolios, where students tended rather to emphasise gains in employability-related skills.

**Self, time and group project management:**

“Group work was intended to fulfil several employability related learning outcomes, and also to make the challenges of undertaking research more manageable by spreading the load amongst individuals. A few groups achieved considerable cohesion and synergy but for many, sharing the work with others merely confounded an already challenging task. In particular, there were issues with self, time, project and group management”

(WRLR Module Tutor observations)

The Level 6 tutors did not mention group work because the dissertation is an individual task. Their reticence concerning project management specifically may be more telling, suggesting that it was not uppermost in their minds. However, they did comment on time management issues.

**Time and self management:**

Indeed, managing time was highlighted by tutors and students alike.

“... in the first week or so, when they’re getting started, you kind of want to really shake them up and get them to realise that they’ve got to get going now....” (Tutor 1)

“Time management: it’s something I think we all struggle with.... They don’t work quickly enough. There’s a tendency to wait and leave it, rather than quickly getting to the nub of the whole thing”. (Tutor 2)

This tendency was echoed by Student C, for whom imminent deadlines served to concentrate the mind:

“I tend to do things at the last minute but I always get on time, for some strange reason, and I think the reason why is that ... I work well under pressure when knowing that I have to finish something the next day: my mind is just focused and information just starts to come together....”

However, such procrastination came at a price, as he conceded when asked if he was happy with his grades:

“No, I feel like I could have done a lot better if I spent a bit more time”.

Reflecting post-intervention on skills she had improved, Student O emphasised self- and time management, explaining that the module had helped to develop her planning skills:

“During the assignment I had many other responsibilities outside of school as I am (a) single parent and am working as well. Good planning helped me in organisation of day to day tasks and I was able to find enough time to do my assignment as well.”

For another student, working in a group proved motivating in relation to self-management and commitment:

“When I first started the course this year I wasn’t able to manage work, and home responsibilities, plus hobbies, I also wasn’t prioritizing well, I thought work
was important, and home responsibilities but this course was for some reason coming last. This module changed that for me, when we first were put into groups and we started working on our assignments. I felt that I had to show the same level of commitment as other team members, I think seeing how seriously they took this project motivated me to do just as well." (Student P, reflective portfolio)

Experiencing such problems and also reflecting on them appeared to help her feel better able to confront such individuals in future:

“...put it right first time... I’d make sure I would speak to him earlier.”

And if this sounds only theoretical, there was also evidence of her having developed greater assertiveness for real when working with a colleague on the group project:

“...whenever I put my idea or opinion forward she would find fault in it and give it no value…. When things became excruciating, I confronted her. When we discussed the matters she realised that she was in the wrong and agreed to take on board other people’s opinion…. It made me feel much better and we were able to work smoothly.”

During the WRLR module, students were introduced to concepts relating to emotional intelligence, and these may have contributed to more empathic attitudes and helped them to manage their own emotional responses to situations, as is suggested in these examples:

“Before the module I used to be, like, ‘Their problem is their problem, not really my issue’, but now I …look at the problem and kind of try and help.”

(Student E, Stage 2 interview)

“Emotions are quicker than rational thought. That is why learning how to control them is so important. I am normally (an) enthusiastic person and easily express myself. However, I am impulsive and often respond to situations before thinking it through. Being able to analyze a situation and look at it from (the) perspective of others enabled me to understand other people’s feelings, analyze their motives and connect better with them in what they want to achieve”.

(Student O’s reflective portfolio).

The early years of the WRLR module coincided with the module tutor’s co-ordination of a European project which designed a module on cross-cultural project management, elements of which were incorporated on the WRLR module.

“I used less time talking at all the students, and spent longer coaching...
Preparing for work and inquiry via a CLEAR approach: Combined Learning for Employability and Research

James Wilkinson and Carlotta Olason

small groups undertaking their projects during class contact time. Now they produced ground rules, developed project plans and responsibility matrices, and sought to achieve in their groups cohesion (Rathje, 2007), an atmosphere of inclusivity and creativity (Ceserani and Greatwood, 1995), and to develop mindfulness (Langer, 1989) in handling uncertainty and anxiety in the face of different others (Gudykunst, 2004). Every week they wrote minutes and action plans, reported on progress and reflected on this learning in their journals”.

(WRLR Module Tutor observation)

As an example of the benefits of this approach, student O’s portfolio reflections on group project management were more fully articulated than most, but were not unrepresentative:

“On our project, we have planned our actions and to make sure we do tasks on time we took minutes of our meetings. Tasks have been given to each member regarding … skills and abilities. We divided the complex assignment into little tasks and monitored progress of achievement regarding our milestones. I learned that planning, control, team management, communication and integration are crucial for project management. Starting work without planning is not (a) good strategy. Setting clear aims and objectives are crucial for success of a project. In addition, communication between team members is very important and lack of good communication can lead to misunderstandings, conflicts or delay in work. Sharing tasks between team members is beneficial for the team. Knowing all of above, I have bigger knowledge on project management than I had before I started this module”.

Application and transfer:

“It was not as if I had not told them how to do all of this. In lectures and in on-line materials, I thought I had spelled it out for them”. (WRLR Module Tutor Observations)

The module tutor’s frustration implicit in this comment relates to the apparent difficulty students had applying what he believed he had taught them. Level 6 tutors reported similar difficulties, several of which related to research methods being taught out of context:

“I mean, I’ve got quite a lot of experience teaching research methods, but I think… for me, when it’s any kind of academic study skills, whatever you want to call it….. if they’re taught in isolation, I don’t think they, umm, the students don’t see, they just think: …. ’Someone’s telling me how to write again’ , and they don’t really apply it. It’s giving the application that’s the challenge with these sorts of skills.” (Tutor 3)

“I think teaching research methods by itself is a problem because, unless you’re applying it, you can have some inspiring lectures and talks, but there’s a question of reality. I mean, (adopting the voice of somebody listening to such a talk) ‘Bloody hell! This is amazing stuff!’ But – this is the way I learn – unless I do it at the same time I find it very difficult.” (Tutor 1)

For the tutors, timing might achieve better application, and in more ways than one. On the one hand, research methods could be taught when relevant to students’ needs:

“…. I’d be doing it at the same time. …. I’d be much more in favour of drip feeding and try to strategically deliver the stuff as they need it”. (Tutor 1)

On the other, there was a view that teaching research methods needed to start earlier:

“Teach it in Level 5. Don’t wait until Level 6 and cram it into a semester. …they arrive at this point, Level 6, with a lack of confidence, a lack of knowledge, a lack of skills in many cases, and we do cram it in there. …I suspect if you did a full research methods module at Level 5 (it) might bring about a different situation, with students coming to this in a completely different state of preparation”. (Tutor 2)

In contrast, Tutor 1 questioned whether research methods should not be left until later:

“I’m not sure we should be doing it at undergraduate level”.

”
In theory, many of the skills are developed earlier in the curriculum, but Tutor 3 suggested that students can fail to appreciate how they apply in different contexts:

"...a lot of them (i.e. research skills) apply to many assessments that students do, so for example looking for information and evaluating it would apply to writing an essay and in the same way it would apply to research. I think one of the problems is that students don’t always see transferability of these skills.” (Tutor 3)

Evidence that the changes introduced on the WRLR module were helping students to become better able to apply their learning in practice could be observed in the improved research proposals (assignment 1), which were typically better conceptualised and articulated, and in the learning logs and portfolios (assignment 2), where students’ reflections generally provided fuller analysis. These improvements were reflected in improved grades (see 3.7 below).

The emphasis given by students to improved self, time and project management suggests that these generic employability skills were important in helping them to manage the complexities involved in working in a team to produce a research proposal. However, students’ relative reticence over more specific areas related to inquiry and research means that apart from the improved grades, it is less easy to be certain over what it was about the module’s approach that was helpful.

In fact the way the second, reflective assignment was designed and structured encouraged students to reflect more on employability aspects than on skills relating to inquiry and research. Such bias may explain the above reticence and may also be linked to disconfirming evidence reported by one of the students:

"...the research methods we used were quite difficult to apply, ‘cause nobody had done this sort of thing before. We weren’t really clear on how to apply it to be honest.” (Student G).

This study has drawn attention to the need to articulate inquiry more clearly in learning activities and intended outcomes, and to place greater emphasis on reflection on the research skills developed.

Confidence, autonomy and identity:

“You know, you’d like them to come back next week and say: “Ok, this week, now I’ve got something, come on smart guy : let’s see you pick holes in this!” And that’s what you want from them, but they don’t seem to have that innate confidence, knowledge, and ability to want to do that or be prepared to do that.” (Tutor 2)

More ‘diligent’ reading would no doubt give them the knowledge, as has already been discussed. However, this is not the only skill or attribute that would give students the stronger sense of agency that Tutor 2 suggests is needed. Several of the tutor and student comments suggest that underlying several of the difficulties already discussed might be issues relating to learner confidence, autonomy and identity. For example, Student 1’s comments revealed ambivalence when asked how she felt about being required to find things out for herself:

Student I:
“I think it’s sort of good, ‘cos it helps increase your knowledge, like I mean, it’s independent learning, they want you to think for yourself, kind of thing, so I mean, going out there to find... I mean, use resources like internet, books, or talk to people, I think that’s it, yeah.”

Interviewer:
“And you don’t mind doing that?”

Student I:
“I absolutely don’t mind doing it ‘cos I feel like, it gives me a sense of satisfaction that I can do it for myself, so it’s like a skill, really .... “

Her apparent enthusiasm may, however, have been prompted by a desire to say what she thought the interviewer (her tutor) wanted to hear. A little more probing yielded the concession that

“Actually I would prefer if the teachers did tell me”.

Indeed, this was an attitude shared by several of the students. Asked how she felt about handling multiple perspectives, Student G’s response reveals her lacking sense of personal agency. Her reliance on guidance provided by an expert authority figure also reflects
her expectations about identities and roles of students and teachers:

“I would find it confusing, to be honest, because... I wouldn’t know what to write, but from what I’ve been told, like, from a lecturer that “This is your main source, that’s the latest edition, that’s what should be correct”, then that’s one I would mostly rely on. Because I’ve been told by them ... that this is the right source, I find because obviously they know a lot more than what we do, I find that more valuable and I would trust that source more than I would trust anything else that I would look into”. (Student G)

The inquiry based learning approach adopted on the WRLR module required students to be active, and they were also introduced to theory intended to develop a stronger sense of agency:

“I used to have fixed ‘self-belief’ (Knight and Yorke, 2003), which means I believed that I just could not (achieve) success in disciplines that I found difficult to learn. I was always proud of myself when I succeeded but disappointed when I failed. Now I have learned that little failures on the way to success should not be big disappointments for me.” (Student O, reflective portfolio)

Several students also commented on the value of having to reflect on their learning experiences, in their weekly learning logs and reflective portfolios. Student B contrasts her experience on other modules with WRLR, where not only the output of group work counted but also experience and reflection on the process.

“It was challenging but I think it enables you to grow in those areas that you find yourself challenged in. Like being able to deal in situations ... and then having to evaluate it is a completely different thing – you don’t do that at all in any other module: you just get set to do group work and then produce the work whereas here you look at every difficulty, analyse it in different ways and then not only that but you looked to find ways of improving on it which is also quite good ‘cause it enables you to find out, like, a problem and a solution rather than just having the normal module that does not do anything like that.” (Student B, Stage 2 Interview)
Module performance statistics:

Grades achieved on the WRLR module across the four years leading up to and including the year of the study suggest improving student performance.

Figure 1. Grade Distribution on the WRLR module (as % of class size)
CLEAR ideas

Unsurprisingly, the above narrative reflects concerns that are also expressed in the literature on research based education and employability. Some of the strategies intended to address these concerns are themselves questioned. Student-centred approaches may be poorly thought through and applied, and fail to provide sufficient challenge (Furedi, in Gill (2008)). This may indeed have been a problem in the early days of the WRLR module. Moreover, with social forms of learning, these risk students losing sight of individual responsibility (Sanger, 2010), an issue highlighted by several of the students. It is of course also possible that the module tutor’s lectures and teaching materials were simply not very good, but their failure to inspire and facilitate understanding, critical engagement with and application of theory, can be linked to widespread concerns over transmission-based approaches (eg. Boyer Commission, 1998; Elton, 2001; Ramsden, 2008). Elton argues that these work only with the most able students and even they learn better when they engage with and own the processes of learning. Key criticisms of transmission-based teaching are that it encourages surface (Marton, 1994), and passive learning (eg. Elton, 2001) and ‘learned helplessness’, making students fail to engage readily in intentional, self-directed action (Brown 1998, p.399). Such learning does not equip learners for the journey from ‘uncritical acceptance of external authority to self-authorship’ (Baxter Magolda, 2010, p.2).

The decision to reduce lecture time also links to the related view that learners need to be active, not simply receptive, and that they should reflect on their learning (eg. Brown, 1998; Laurillard, 2002). Laurillard’s ‘conversational framework’ makes particular reference to the work of Schön (1987) and Wenger (1998), involving on one level, discourse, theory and conceptual understanding and on the other, active, practical and experiential learning, the two levels bridged through engaged participation in ‘adaptation (practice in relation to theory) and reflection (theory in the light of practice)’ (Laurillard, 2002, p.22). On the WRLR module, such reflection was facilitated via the weekly learning logs and the final assessed portfolio. Biggs and Tang (2011) explain that the introduction of assessed portfolios, where students show evidence of their learning, was the starting point for the highly influential practice of outcomes based teaching and learning which Biggs called ‘constructive alignment’. This is ‘constructive' in the sense that learners ‘use their own activity to construct their knowledge as interpreted through their own schemata’ (Biggs and Tang, p.97).

Approaches that entail experience, reflection and constructivism include inquiry based learning (IBL), originally developed at McMaster University in Canada. IBL practice described by Justice et al. (2007), Allan and Powell (2007) and Spronken-Smith and Walker (2010) involves not only activity aiming to acquire and construct new knowledge and understanding, but also a pedagogical approach based around this process (Justice et al.). It entails a student-centred, teacher-facilitated approach where learners are engaged in a self-directed process of discovering and co-constructing knowledge and new understanding, gradually engaging more and more responsibly in their learning and self-reflection. Spronken-Smith and Walker thus describe ‘structured’, ‘guided’ and ‘open’ categories of IBL relating to the degree of independent learning, and problems in the early years of the WRLR module may have related to too high a degree of openness, with insufficient structure and guidance. They also report (p.723) that IBL has been said to ‘enhance student learning outcomes, particularly the development of higher order skills ... as well as strengthen the teaching-research nexus’.

According to the conceptual framework for the teaching-research nexus by Healey and Jenkins’ (2009, p.7), the CLEAR approach might be interpreted as being mainly ‘research-oriented’, ‘developing research and inquiry skills and techniques’, but because students are active in conducting literature review and making research methods choices (if not actually carrying them out), elements of it can also be described as ‘research-based’ (‘undertaking research and inquiry’). Empirical data reported by Trowler and Wareham (2007) suggest benefits relating to the development of a range of knowledge and skills, as well as epistemological awareness. However, they also point to a range of related ‘possible dysfunctions’ concerning ‘slow’ and ‘patchy’ coverage of the curriculum, ‘low quality research with poor ethical control’, learner resistance and the constraints linked to the timetable and modularised curriculum. These dysfunctions may, like Tutor 1, lead to a
questioning of the appropriateness of research activity for undergraduate students. However, the need for students to be urged away from passive acceptance of certainties provided by authorities to actively constructing knowledge for themselves makes a compelling case for more rather than less inquiry based learning on undergraduate courses, and for this to start much sooner. To illustrate the point, contrast the experiences of students whose induction involves sitting in lecture theatres with those at the University of Gloucestershire who head out into the community, to places of natural beauty, or the local zoo to investigate topics relevant to their subject disciplines (Healey and Jenkins, 2008). It is not difficult to imagine which of the two sets of students is likely to engage better with their subject and who will understand sooner the processes of knowledge construction.

Small group coaching and supportive mentoring, practised on the WRLR module, bears similarities with the cognitive apprenticeship model envisaged by Collins, Seely, Brown and Newman, cited by Woolley and Jarvis (2007). This, like IBL, provides structure and guidance intended to facilitate the learning process and which is gradually reduced. In addition to modelling, the tutor provides coaching and scaffolding, helps students to articulate knowledge and engage in reflection, and facilitates exploration of ideas and problem-solving processes.

Experiential learning models tend to emphasise application by the individual. Citing the work of Vygotsky (1981), Davis et al. (2000), as well as Lave and Wenger (1991), Quay (2003) is concerned that such emphasis risks taking insufficient account of more holistic conceptions of learning, which embrace also social constructivism and discourse related to the cultural context in which learning is situated. In fact, Justice et al’s (2007) IBL model acknowledges these concerns and appears to balance these competing requirements, as does the model for developing intercultural communication competence proposed by the IICCE project team (2009). Both the ‘Manchester Steps’ and ‘Portsmouth’ Models described by Allan and Powell (2007) also include elements of social learning.

At Portsmouth, a ‘small-group dialectical component’ involves tutors facilitating students engaging in dialogue to address contradictory or divergent theoretical perspectives. The importance of culture and context links to another problem with lectures, namely to the suggestion that however skilfully a message is crafted and conveyed, the values, preconceptions, and current situation of the intended recipients (Mackay, 1994) or their ‘frames of reference’, ‘habits of mind’ and ‘structures of assumptions’ (Mezirow, 1997, p.5) either prevent them or affect how they receive it. This appears consistent with the view that initiating learners into academic practice requires a process of enculturation, and transformation of learners’ identity (Mezirow, 1997; Wenger, 1998; Quay, 2003), legitimising their peripheral situation as newcomers, and facilitating their entry and membership of a community of practice (Lave and Wenger, 1991). Given the ‘work related’ aspect of the WRLR module, this link to Lave and Wenger’s work appears appropriate, though there are also similarities with the learning communities described by Brown (1998, p.399), which emphasise ‘independent and group research on some subset of a topic of inquiry’, and on meta-cognitive reflection.

This emphasis on social and transformational learning suggests that rather than acting as didactic experts, it would therefore be more appropriate for teachers to see themselves as one side of a partnership (Justice et al, 2007; Ramsden, 2008), sharing expertise and authority with learners (Baxter Magolda, 2010), as happened when drafts of the WRLR tutor’s work were subjected to students’ critical scrutiny.

Finally, the issue of confidence, suggested as a factor underlying poor student performance may relate to concepts of self-efficacy (Bandura, 1994). This theory figures prominently in the USEM (Understanding, Skills, Efficacy and Metacognition) model proposed by Knight and Yorke (eg. 2003; also, Yorke and Knight, 2007) who, drawing on the work of Dweck (1999), argue that high stakes assessment is unhelpful in promoting positive self-efficacy beliefs. Hence the decision on the WRLR module to reduce weighting on the group assignment and to build in regular low-stakes assessment that offers possibilities for students to develop confidence and improved performance through feedback and further reflection.
CLEAR framework

In summary, as a response to five years’ experience with the WRLR module, and to primary and secondary findings from this study, the CLEAR approach seeks to integrate practices where learning is: **active and student-centred** (eg. Elton 2001); **experiential and reflective** (eg. Laurillard, 2002; Kolb and Kolb, 2005); **inquiry based** (eg. Allan and Powell, 2007, Justice et al., 2007; Spronken-Smith and Walker, 2010); **socially constructed** (eg. Lave and Wenger, 1991); **situated** with reference to **cultural discourses** (eg. Quay, 2003; Sola and Wilkinson, 2008); and involving a process of **enculturation** which **transforms tutor and student identities** (eg. Brown, 1997, Mezirow, 1997, Wenger, 1998; Quay, 2003).

Accordingly, second year undergraduates work in groups to develop a research proposal. As individuals, they reflect on the process both in weekly learning logs and in a final evaluation of their research and group project experience, submitted in week 14. In line with Baxter Magolda’s (2010) call for **shared authority and expertise**, the CLEAR approach involves learners critiquing both rough and polished examples of the tutor’s as well as each others’ work. The approach also draws on the **cognitive apprenticeship** model proposed by Collins, Seely Brown and Newman (cited by Woolley and Jarvis, 2007) which places emphasis on the tutor acting as a coach and role model for students, guiding learners in self, group and project management. The CLEAR approach limits transmission forms of teaching and allows time to be spent by the tutor working intensively with groups, simulating the role of line manager. In class, groups present minutes and reports, allowing both students and the tutor to monitor progress and provide weekly feedback. Students also apply creativity and project management techniques, together with an understanding of cross-cultural management issues (Sola and Wilkinson, 2008). Low-stakes formative assessment, in the form of a draft research proposal submitted in week 6 of the module and a group presentation in week 9, yields feedback for student groups to use in their final summative piece of written coursework in week 11. Students likewise are given feedback on their learning logs, submitted in week 7 (Weeks 1-6) and in week 12 (weeks 7-11). The following representations of the framework, in tabular and dynamic formats, are attempts to articulate the CLEAR approach.
STUDENTS...

<table>
<thead>
<tr>
<th>INDIVIDUAL LEARNING</th>
<th>SOCIAL LEARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>…construct knowledge and understanding, engaging responsibly in the learning process, contributing their fair share to group work, keeping weekly learning journals and producing a final reflective assignment. (Laurillard, 2002; Kolb and Kolb, 2005; DAR, 2009)</td>
<td>…co-construct knowledge and understanding, offering each other constructive, critical feedback in communities of practice (Lave and Wenger, 1991) and of learning (Brown, 1999); applying project management and creativity techniques and applying theory relating to emotional intelligence (Goleman, 1995) and cultural discourse (Quay, 2003; Sola and Wilkinson, 2008).</td>
</tr>
</tbody>
</table>

**inquiry based learning**

- the inquiry process; taking responsibility; engaging with issue; developing good question(s); determining information needed; accessing information; evaluating information; synthesising a coherent whole; and applying the ‘inquiry paper checklist’ (Justice et al., 2007).
- The ‘Manchester Steps’ and ‘Portsmouth’ Models (Allan and Powell, 2007).
- Structured Guided Open inquiry (Spronken-Smith and Walker, 2010)

TUTORS...

…facilitate a supportive, non-threatening environment, encouraging students to see tutors less as authoritative experts, more as equal partners, sharing authority and expertise (Brown, 1997; Mezirow, 1997; Baxter Magolda 2010); model supportive, collegial behaviour and share both rough and polished examples of practice, provide coaching and scaffolding, assist articulation of knowledge and reflection on experience, and encourage exploration of problem-solving processes (Collins et al., 1989, cited by Woolley and Jarvis, 2007) and application of creativity and project management techniques (Sola and Wilkinson, 2008); design assessment which includes tasks that are low stakes and formative, and provide feedback (Knight and Yorke, 2003).
Preparing for work and inquiry via a CLEAR approach: Combined Learning for Employability and Research

Figure 3. Combined Learning for Employability and Research: a CLEAR approach (dynamic representation)

- **Individual Learning**
  - **Ontology / Pedagogies**: constructivism; reflective / experiential, inquiry based learning
  - **Activities**: responsible contribution to group work, in class and/or on-line, reflection on individual and participative learning

- **Social Learning**
  - **Ontology / Pedagogies**: social constructivism; learning related to cultural discourses; inquiry based learning
  - **Activities**: group work, peer assessment and feedback

- **The Tutor**
  
  facilitates entry to communities of practice and of learning via
  
  transformative learning, inquiry based learning and
cognitive apprenticeship showing examples of own practice

- **The Student**

- **Academic Practice**
  - Graduate / employability attributes
  - Research capability
  - Lifelong learning skills
Strengths, limitations and further work

Depending on their epistemological orientation, readers may view the rich qualitative data as providing vivid and illuminating insights into tutor and student perspectives on learning behaviour and experience, and see this as the study’s major strength. Others of course may consider that the data does not amount to very much more than a series of organised anecdotes.

Nevertheless, the study can be said to exhibit characteristics considered to be the goal of design-based research (DBRC, 2003, p.5) in the way that the design of the CLEAR learning environment and the process of conceptualising the approach were ‘intertwined’, took place via ‘cycles of design, enactment, analysis and redesign’, and have led to theory that helps to ‘communicate relevant implications to practitioners...’. The study also shows how the CLEAR design functions in ‘authentic settings’ and the presentation of rich, qualitative findings from multiple sources and types of data have documented and connected ‘processes of enactment to outcomes of interest’.

While they provide apparently encouraging evidence of improving performance on the WRLR module, the study’s only quantitative data – the module performance statistics – need treating with caution. Smaller class sizes in the two later years and variations in the academic abilities and motivation of individual students mean that it is not possible to describe with confidence a firm causal link between improved performance and the innovations described.

Further limitations restrict the study’s ability to make claims concerning the first aim of the study, which was to evaluate the CLEAR approach as enacted on the WRLR module. In particular, despite the lack of problems found when piloting the repertory grid questionnaire with another group of students, when used with the actual participant group, inconsistencies in students’ responses and the small sample size (16) made quantitative analysis unusable in any meaningful way. A further issue relates to the inductive, circular process by which primary and secondary data were gathered and analysed. While this eventually resulted in the above core categories, which provide useful points to consider when designing modules, themes identified by a more deductive process would have permitted more rigorous testing of claims relating to the CLEAR approach’s benefits. Indeed, it would be useful to undertake such testing in future studies and in these, greater emphasis should be given to evaluating learning for research and inquiry.

Conclusions

Our paper, and the practices, behaviours and experience that it reports, reflects concerns and issues raised in discourse relating to the teaching-research nexus and to employability. The CLEAR approach’s explicit emphasis on employability development, including application of and reflection on practices relating to self, group and project management, may be a point of difference from other inquiry based learning approaches and a possible justification for the approach’s title. We believe that making these employability enhancing features explicit is important, not only serving generic ‘work related’ aims but also assisting students to manage the skilful practices needed for the ‘good’ university learning embraced by Knight and Yorke’s (2004) USEM model (understanding, skilful practices, efficacy and metacognition). However, this study draws attention to the need for stronger articulation of skills and knowledge needed for inquiry and research, and for the provision of structures that facilitate suitable activities for developing inquiry and research capability and reflection on them.

As we wrote in the introduction, calls for universities to develop employability and inquiry have been persistent and compelling. Yet our experience in higher education suggests that these calls are experienced by many university lecturers merely as part of the background noise in which they practise, and that they are often drowned out by other competing agendas and constraints, several of which prioritise transmission of content above all else. Indeed, we hear of courses where the number of lecture hours is increasing while tutorials are being reduced. Our study suggests that such strategies are unlikely to engage students and turn them into active and responsible learners. Given the limitations in the study, the CLEAR approach is presented tentatively, but we believe that it offers potential for such transformation.
References


A new tool for city decision makers: the new “Expériences Touristiques Company” branding tool approach

Mathieu Poitevin | matlondon_@hotmail.fr
Andrew Pennington | andrew.pennington@uwl.ac.uk
The London School of Hospitality and Tourism, University of West London

Camille Chamard | camille.chamard@univ-pau.fr
Université de Pau

Veronique Seel | veronique@expériences-touristiques.fr
Expériences Touristiques

This paper explores the subjective components that make up the structure of a city’s brand. Fieldwork was carried out to test a new way of assessing the public’s image of a city based on the differences and similarities of perceptions between residents and tourists. The main objectives of this study were to gather sufficient information to construct a useful prototype tool for place branding analysis and city development.

The approach involved using a live touristic experience “sketch coffee event”, enabling the development of a qualitative and quantitative approach to create a specific index of city brand image based on lived experiences - called the NHDI score index.

The findings and conclusions support the view that the approach offers a strategic way to overcome some branding problems in today’s market place for cities. It provides tactical decision making frameworks for a city’s spatial and urban development stakeholders.

Keywords | city branding; place branding; place marketing; destination branding; place image; experiential marketing; NHDI Score; perception branding; sketch coffee event
Background

‘Few people are capable of expressing with equanimity opinions which differ from the prejudices of their social environment. Most people are even incapable of forming such opinions’. Albert Einstein

Maintaining a sustainable and stable branding policy and development framework is a strategic key for aligning the relationship between a city, its residents and tourist visitors. Insch and Florek (2008, p.138) state that ‘cities, by their very nature, depend on their stakeholders for economic, social, cultural and environmental vibrancy’. Furthermore, the perceptions of a city’s population is made up of philosophical, sociological and psychological aspects that provide a diversity of sensitive factors about a destination. Significant attempts at importing new concepts and techniques to help improve and analyse place branding, place marketing and destination image theories have been suggested by both academic and practitioner literature. However, until now, few theories have been realistically used as an accurate strategic tool to examine and evaluate the brand and image of a city or a specific area. The current study will emphasise that a place provides an array of distinctive features. From this perspective, it is critical for a destination to identify and differentiate the subjective opinions and views of its residents and/or tourists in order to further differentiate the destination’s unique needs.

The authors will draw particular attention to how significant touristic experiences are important throughout the decision making process of understanding and evaluating the brand of a city. Accordingly, Ritchie et al. (2011, p.420) states that ‘the emergence and ongoing evolution of the tourism experience owes its origins to the pioneering works of Csikszentmihalyi (1975, 1990), Csikszentmihalyi and Larson (1984), Abrahams (1986) and others who have formed part of a continually evolving process’. Thus, a number of approaches to city branding have been conceptualised and practiced. However, fewer branding concept methods have realistically taken into consideration the very subjective factors that are involved in a specific environment as well as the precise subjective views and opinions that a person could provide in a city branding analysis.

Subsequently, a place’s image needs to be regarded as an important asset of a brand and that the unique image correlated within a specific area, influences destination survival within the globally competitive market place. Hence, an image as well as a resident and/or tourist view about a place is the essence of a potential touristic destination positioning within its spatial community and socio-economic environment. Evaluating and critically analysing the subjective, cognitive and affective components that identify an area (place), would allow a place to show its full ability to differentiate itself from its competitors as well as to continuously and proactively intervene into people’s (resident/tourist) minds, (Botha, Crompton and Kim, 1999; Buhalis, 2000; Calantone, Benedetto, Hakam and Bojanic, 1989; Chon, Weaver and Kim, 1991; Crompton, Fakeye and Lue, 1992; Fan, 2006; Go and Govers, 2000; Mishalic, 2000; Mykletun, Crotts and Mykletun, 2001; Uysal et al., 2000). Consequently, this study emphasises that destination branding is not an entity itself, in fact, it is made of a plethora of entities which exercise a power to differentiate it from its competitors. Therefore, the current study proposes that a place’s image should not only be regarded but lived, experienced and artistically expressed by its stakeholders (residents and tourists) as a ‘clash’ of high quality, reliable and truthfully sincere views and perspectives of their city.

Literature review

The relationship between place marketing, experimental marketing and experiential marketing: Place marketing, a term used to define the marketing of a place designation such as place branding (Niedomysl, 2007) and giving a brand name to a territory, is a technique used for city branding (city marketing) for every city marketing plan (Zhang and Zhao 2009). In accordance with Morgan et al. (2004), Anholt (2005 and 2007) and Jaffe and Nebensahl (2006) there is a growing academic view and literature on place marketing. Morgan et al. (2004) observe that place marketing underpins the challenge of monitoring the external environment. In fact, it aims to understand the threats and opportunities within a place as well as its competitive strength. These are essential to strategically position itself in the market environment and to enhance a dynamic between its stakeholders and tourists.
The process of place marketing substantially involves elected officials and services who hold a monopoly on several elements related to local politics including taxes/budget, operational management of the territory, local economic development and urbanism. Besides, the powers in place must integrate variables that they have none or little say on, for example, their marketing strategy, governmental politics and private actions. Also important are the past heritage and natural characteristics of the area which are according to De Carlo, Canali, Pritchard and Morgan (2009, p.9) ‘the key essentials in destination development and marketing, a brand strategy can work to fuse public and private sector interests, raise the economic value of produce and products, increase pride and confidence in places and change how they are seen internally and externally’.

During the 1920s, Chicago was a centre of criminal activities. This image continues to be attached to this city, despite Chicago’s low crime record in comparison to the rest of the United States (Tal, 1993). Consequently, it is critical to understand how the image of a tourism destination or a place has been influenced and transformed through inclusion and exclusion marketing processes to build a sustainable place’s image to thus provide the best representation of a visual cliché (Dann, 2002 cited in Marzano and Scott (2009)).

Moreover, Schmitt (1999, 2003) cited in Keller and Lehmann (2006, p. 742) ‘consider that experimental marketing is an important trend in marketing thinking and therefore can provide strategic brand management that can help ‘create five different types of experiences such as the Sense experiences involving sensory perception; Feel experiences involving affect and emotions; Think experiences which are creative and cognitive; Act experiences involving physical behaviour and incorporating individual actions and lifestyles; and Relate experiences that result from connecting with a reference group or culture’. Furthermore, O’ Sullivan and Spangler (1998) stress the point that experience is an integral part of a marketing process, juxtaposing a framework of the people’s inner needs as well as the continual changes that interact within a place’s environment.

Although Kavaratzis and Ashworth (2005) cited in Kavaratzis (2009) suggest that place marketing is about branding the whole entity of a place’s product, in order to achieve consistency of interrelated views and concepts about place management and development, as well as brand equity’s cohesion effects. Similarly, the marketing of cities reflects ‘the dominant emphasis of place marketing research’ (Warnaby, 2009, p. 405) cited in Hospers (2010, p.182). From this point of view place marketing, experimental marketing and experiential marketing aims at newcomers, generating strategic development and management, interacting with holistic experiences that fuse and stimulate people senses, underpinning the rational and emotional eclectic methods that influence tourism and residential likability of a place or an area (Schmitt, 1999).

Place images; from shared diagnostic to decision making dynamics: Since the late 1980s there has been a plethora of work-based marketing focusing on the impact of brand knowledge on consumer behaviour. Keller (1993, p.1) suggests that customer-based brand equity can be defined as ‘the differential effect of brand knowledge on consumer response to the marketing of the brand’. In general, authors establish the difference between evaluations linked to actual product characteristics and associations based on symbolic elements not linked to the product (Park and Srinivasan, 1994). Thus, a consumer’s final decision is the result of a collection of associations such as mental images linked to the brand, which are influenced by the individual’s experience with/ and of the marketing practices of the brand. Since the late 1990s research helped develop a strategic array of brand image concepts to take initially into consideration the augmentative character and the dynamics of the brand’s image relating to the measurement instrument. According to Aaker (1991), Kapferer (1991), and Keller (1998) there is a distinction between the evaluated values realised by firm-based brand equity and customer-based brand equity that demonstrates the advantages a brand develops from human resource capital and brand value. From a territory viewpoint, the analogy of differential effects of knowledge about a place and the consumer response to the territorial offer defines territorial capital. This intangible capital is evaluated through individual cognitive associations gathered collectively within the city, indicating strength, number, specific identity and positive character (Czellar and Denis, 2002). In addition, in terms of sharing diagnostic and decision making processes, it is significant and interesting to provide for this study a
collaborative and distinctive outcome feature of a destination’s brand conceptualisation. Foucault (1980, p.131) cited in Marzano and Scott (2009, p. 250) observed that ‘while tourism literature has mainly focused on how the destination brand has been analysed as an expression of a general politics of truth’, less consideration has been given to the understanding of how residents and tourists exerted power to create those meanings, and therefore, providing a clear, sufficient and robust decision making and diagnostic attribute to the place’s brand (Marzano and Scott, 2009).

City branding; its philosophy, human psychology and sociology: ‘The human brain is marvellously adaptable, that with some experience one can learn to pick one’s way through the most disordered or featureless surroundings’(Lynch,1960, p.5). ‘The image of the city concerns the general meaning and idea of a place. In this sense, it is worthwhile to examine the symbols embodied in the material components of the city (roads, monuments, buildings)’ Haddock (2010, p.31).

City branding (place marketing) has a logic and philosophy. This philosophy involves a psychological state of motivation (Jamrozy et al.,1996). Hence, as Crouch et al. (2001, p.287) states ‘the importance and evaluative components of the consumer’s attitude towards a destination can be identified then theoretically, the destination’s strengths and weaknesses, from the consumer perspective, can be determined’. Consequently, Kotler, Keller, Brady, Goodman and Hansen (2009), point out that, there is a synergy interacting and engaging consumers at a level of senses and emotions, allowing a constructive deep lasting, intimate connection to the brand that transcends consumer satisfaction. It involves creating holistic experience as well as a sustainable cohesive approach to emotional fulfillment, so that the consumer can develop special interests and bond to a unique trust within a place and a city. Psychologically and socially, Schmitt (1999) cited in Walls (2011, p. 11) suggest that ‘experiences are private, personal events that occur in response to some stimulation and involve the entire being as a result of observing or participating in an event’.

Additionally, Lynch (1960, p.4) argued that ‘a good environmental image gives its possessor an important sense of emotional security; he can establish a harmonious relationship between himself and the outside world’. As stated in Insch and Florek (2008, p.141), Rubinstein and Parmelee (1992) gain the idea that, ‘personal experience and social interaction are crucial aspects of attaching people to particular places and, what is more to make a place one’s identity’. This suggests that experience is necessary to evaluate an individual’s satisfaction, as a clash of expectations with a place’s reality’. In effect, every individual participates in its elaboration and design; sometimes there are even social ambassadors for a territory’s image.

Hence, Wilson (1980) cited in Pile (1996, p.55-56) assumes that ‘the whole of a person’s lived experience involves to a certain extent the attempt to establish some degree of symmetry between self and external behavior in space’. Pile (1996) psychoanalyses human behaviour, and in fact, finds that the most fundamental concern of human behaviour is the existence of a dynamic unconscious; therefore, by exploring, subjectively and understanding the different components that make up the brand or city’s image it is essential to develop synergy and composure within a city’s environment. Consequently, and following the foregoing discussion, Wing Sun Tung and Brent Ritchie (2011, p 1372) ‘turn our attention to the link between memory and experiences’, and therefore, connect to the concept provided within this paper.

Correlatively, Walsh et al. (2001) cited in MacCool and Moisey (2008, p.139) suggests ‘using the sense of place of the resident instead of a perceived destination’. Similarly, with Cai, Gartner and Munar (2009, p.9), the method discussed in this study aims to benefit from other quantitative/ qualitative methods, to observe ‘tourism branding’s continuing process to create affective experiences through building and sustaining a consistent destination identity and image that emotionally bonds with the host community and resonates with tourists’.
Methodology

‘To raise new questions, new possibilities, to regard old problems from a new angle, require creative imagination and marks real advance in science.’

Albert Einstein cited in Morgan (1993)

As a research methodology, approaches to build on coherent ideas and sufficient knowledge to analyse an entity is critical. Therefore, Morgan (1993, p.296) distinguished that ‘it is possible for the research process to have a dual objective in (a) trying to produce useful research knowledge while (b) using a process that can help the people involved in the research gain a better understanding of their situations’. The past several years have seen theories and literacy about research methods and concepts significantly come across particular situations and brought consciousness within their philosophy. Accordingly, Lather (1991, 1993) cited in Denzin and Lincoln (2005, p.324) observed and developed the view that ‘the ideology of qualitative methodologies depict the degree to which research moves those it studies to understand the world, and the way it is shaped in order for them to transform it. Therefore, those aspects emphasis a phenomenon, termed ‘catalytic validity’’. Moreover, the challenges and criteria of using reliable and efficient research methods should reflect on the precondition of maintaining, to a certain extent, a practical relationship between the quantitative and qualitative method approaches. Consequently, this research paper, as previously stated in the introduction, proposes a new city branding qualitative/quantitative method, based on lived experiences. Besides, compared to more common quantitative methods and practices (eg. interviews), this relatively simple method is effective in (a) providing objective and real opinions about an inquiry, (b) integrating quantitative and qualitative aspects for better and more efficient decision-making in the future analysis, and (c) gathering a large amount of valuable data.

Description of the ‘sketch coffee’ experience: The core activities of ‘Experiences Touristiques’ are to produce and analyse tourist experiences from both the tourist and resident viewpoint, with the objective of gathering sufficient information to construct the first step of a new valuable tool of in-place branding analysis and development for cities. This experience provides a new way for participants to further stimulate their imagination and provides personal expression of their location experiences, while giving the researcher core information about place branding.

The experience under the name ‘sketch coffee’ is an original and simple experience to be enjoyed alone or in groups. Thus, in order to have a visualised understanding about the sketch coffee event process and how it works, please see figureure 1 (sketch coffee event process.)
1. People are brought together in specific areas.

2. Views are offered to the participants:

3. Experience Touristiques’s (ET) team offer them all sketching materials needed to draw as well as cups of coffee in order to create a good atmosphere for everybody.

4. Participants (293 peoples, including 86 children, in this case) pick a scene they wish to draw and the scene they wish to remember.

5. When the “artists” have finished their drawing, they can leave a copy for other participants to see. Meanwhile, they can add comments and answer a few questions about themselves (e.g. nationality, tourist vs. residents, etc…).

6. ET’s Team scans all sketches which are put directly to Flickr.
The idea behind sketch coffee is to get the resident or tourist to really look at the ‘view in front of them’. The person (tourist/ resident) expresses graphically (draws/ sketches) the ideas, sensations and features they perceive in the place chosen. Participants are free to draw whatever they have in mind as well as the actual view of the location they may have in front of them. This experience has no rules and allows participants to draw freely or combine subjective viewing perspectives.

**Research method from a qualitative perspective:** According to Decaudin and Moulins (1998) cited in Hetzel (1998), the purpose of the method is to understand the subjective aspect attached to a city through the analysis of sketches produced by residents and willing tourists, who are not aware of the real objective of the experiment. The method used by *Expériences Touristiques* does not utilise the usual qualitative methods, which are limited usually by time and the size of the sample (fewer than 30 interviews on average). Thus, the ‘sketch coffee’ experience held in Paris has allowed the present researchers to collect 110 sketches full of essential features in order to contribute to the city brand analysis. Furthermore, the sketch coffee event has been established to promote three emblematic recently refurbished monuments such as (figures 2, 3 and 4).

**Figure 2** - “les colonnes du Trone” Nation area

![Figure 2](image2.png)

**Figure 3** - “Le parvis de l’église Saint-Sulpice” Saint-Sulpice area

![Figure 3](image3.png)

**Figure 4** - “La tour Saint-Jacques” Chatelet area

![Figure 4](image4.png)
The whole event has been co-organised and partly funded by the Mayor’s (Paris) assistant, in charge of the city heritage, who thus facilitated the creation of the sketch coffee events. Subsequently the events have been sponsored by the ‘Geant des beaux arts’ (the leading French wholesaler of ‘beaux-arts materials’) who promoted the event in two of their Paris stores as well as on their website. In addition, press releases have also been published via various social media websites.

Research process assessment (place branding model: the new NHDI score index)

In order to fully comprehend the experience and city branding tool it is critical to recognize how the experiment has been conducted to build a quantitative tool capable of measuring place image. Moreover, it must be rationally and statistically robust to be utilisable in various contexts. The foundation is a methodology developed including qualitative and quantitative approaches by Chamard (2004) and Chamard and Liquet (2010). In collaboration with the IFOP Institute, a major company specializing in online data collection, data were collected between January and February 2010. An online questionnaire was sent to 1610 representatives of the French population aged 15 and over. The characteristics of each group were exploited by quota sampling (eg. sex, age, head of family, profession) after implementation of region and peripheral environment categories.

A direct quotation method (Krech and Crutchfield 1948; Vernette 1994) was used to preserve respondent spontaneity. Two questions were asked of the interviewees:

1. Please indicate all the terms (words, verbs, expressions, etc.) that come to mind when you think about region X?

2. What is your opinion about these terms?

Scaled replies included 1=Very Negative, 2=Negative, 3=Neutral, 4=Positive, 5=Very Positive. Verbatim data (30,271) were collected in the 22 regions. Two steps were used to process these data. First, three researchers classified each word and drew up a cross table. Based on this table, each category was labeled to synthesize a sense of the words. Then, to build a useful tool for managers the number of dimensions was reduced. Findings are shown in the table 1.
### Table 1 - Summary of NHDI score elements (Source: Chamard and Seel)

<table>
<thead>
<tr>
<th>NHDI Score Elements (dimensions)</th>
<th>Category</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural characteristics associated with the place</td>
<td>Landscape</td>
<td>All the place’s physical aspects</td>
<td>Mountains, beauty of landscape, cliffs, pebbles, stone, rock, charm, picturesque, forest…</td>
</tr>
<tr>
<td></td>
<td>Geographical proper nouns</td>
<td>All the proper nouns indicating a specific geographical location</td>
<td>Montpellier, Toulouse, The Cévennes, the Great Dune of Pyla, Futuroscope…</td>
</tr>
<tr>
<td></td>
<td>Flora and fauna</td>
<td>All the botanical and animal species associated with the place</td>
<td>Flora and local fruits, animals…</td>
</tr>
<tr>
<td>Hospitality of the place</td>
<td>Quality of life</td>
<td>The elements that make the place pleasant to live.</td>
<td>Gentle way of life, happiness, pleasant, pollution, isolation, lost, loneliness…</td>
</tr>
<tr>
<td></td>
<td>Residents features</td>
<td>All personality features of the inhabitants associated with the place</td>
<td>Square, tacky, backward, friendly, welcoming, nice, lively atmosphere…</td>
</tr>
<tr>
<td></td>
<td>Transport</td>
<td>All equipment and infrastructure connected to transport within the place</td>
<td>Underground, suburbs train, traffic jam, ring road…</td>
</tr>
<tr>
<td></td>
<td>Demography</td>
<td>All the characteristics connected to the demography of the local population</td>
<td>Overpopulation, density, packed, retired people, cosmopolitan, social mix, diversity…</td>
</tr>
<tr>
<td></td>
<td>Climate</td>
<td>All types of weather conditions associated with the place</td>
<td>Sun, beautiful weather, warmth, blue sky, humidity, rain, grayness…</td>
</tr>
<tr>
<td>Dynamism of place’s cultural activities</td>
<td>Local culture and tradition</td>
<td>All the habits and local customs associated with the place</td>
<td>Patios, local language, heritage of history, tradition, history, folklore, traditional singing…</td>
</tr>
<tr>
<td></td>
<td>Leisure</td>
<td>All the leisure activities associated with the place</td>
<td>Stroll, walk, hike, idleness, hydrotherapy, cure…</td>
</tr>
<tr>
<td></td>
<td>Sport</td>
<td>All the sports activities associated with the place</td>
<td>Football, rugby, surfs, ski…</td>
</tr>
<tr>
<td></td>
<td>Events</td>
<td>All the events associated with the place</td>
<td>Festivals, carnival, feria…</td>
</tr>
<tr>
<td>Influence of the place</td>
<td>Gastronomic</td>
<td>All the food products associated with the place</td>
<td>Bouillabaisse, olive oil, olives, Pancakes and buckwheat pancakes, oysters, shellfish, foie gras, wine…</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>All the economic activities associated with the place</td>
<td>Tourism, aeronautics, aviation, fishing, unemployment, poverty…</td>
</tr>
<tr>
<td></td>
<td>Famous local personalities</td>
<td>All the personalities, current or past, associated with the place</td>
<td>Nicolas Sarkozy, Napoleon…</td>
</tr>
</tbody>
</table>
Furthermore, once these four dimensions (as seen in table 2) were created, it was possible to calculate a global and comparative view of the 22 French regions (please see figure 5).

Figure 5 - French regional NHDI scores

![Figure 5 - French regional NHDI scores](image)

Figure 6 - NHDI score index for the Corsica region

![Figure 6 - NHDI score index for the Corsica region](image)
The second question deals with the valency conferred on every association. Respondents were invited to give their opinion about each term. This offers an affective evaluation by calculating a ratio between the judged positive citations and those that were evaluated negatively. The researchers created an index that is both qualitative and quantitative; it is useful for managers of a region who work for local authorities like cities, counties, districts, and so on.

The NHDI score index is interpreted in the following manner: according to the diagram in figureure 6, the image of the Corsica region (one of the 22 French regions) is composed of 57% related identity factors including, 12% hospitality factors, 24% cultural dynamism factors, and 7% influence factors. Moreover, the second indicative factor establishes the ratio between the positive valency and its negative influence. Thus, for the identity composure, there is 91% more positive relation than negative. However, for the hospitality dimension, the reciprocity is reversed regarding the 40% negative influences compared with positive influences. The cultural dynamism reciprocal aspect is close to 0, which signifies that the positive influences are proportional to the negatively judged equivalence. Finally, the influence factor primarily has positive authority.

The NHDI score index can be calculated as an absolute or relative value. These scores permit a user to compare rapidly the different constitutive elements of a territory’s image and the influential valence of factors expressed by the participants. Consequently, a place’s image brand can be demonstrated and its territorial capital evaluated. To sum up this process, it was broken down into four steps (figure 7).

In the case of a city, the protocol can be utilised under the same conditions. The experience undertaken in the city of Paris (France) was as follows. Firstly, the strategy was to utilise a simple and original method of data collection (sketch coffee events) that are rich in information. Secondly, the data was examined using the NHDI score and is effective for providing crucial information on decision-making elements.
Figure 7 - Four step process for the NHDI score

<table>
<thead>
<tr>
<th>Step 1: categorization</th>
<th>Step 2: labelling of NHDI dimensions</th>
<th>Step 3: calculation of positive valence</th>
<th>Step 4: calculation of NHDI score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbatum collection</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 - NHDI score elements

<table>
<thead>
<tr>
<th>NHDI Score Elements</th>
<th>Category</th>
<th>Presence</th>
<th>Precise elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural characteristics of the territory</td>
<td>Landscape</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Geographical features</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flora and Fauna</td>
<td>1</td>
<td>Cat</td>
</tr>
<tr>
<td>Hospitality of the territory</td>
<td>Quality of life</td>
<td>1</td>
<td>Idleness, outside a cafe</td>
</tr>
<tr>
<td></td>
<td>Resident characteristics</td>
<td>1</td>
<td>Talking</td>
</tr>
<tr>
<td></td>
<td>Transportation</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demography</td>
<td>1</td>
<td>A few people</td>
</tr>
<tr>
<td></td>
<td>Climate</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Dynamism and culture of the territory</td>
<td>Local culture</td>
<td>1</td>
<td>Beret</td>
</tr>
<tr>
<td></td>
<td>Leisure</td>
<td>1</td>
<td>Idleness, smoking</td>
</tr>
<tr>
<td></td>
<td>Sports</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Events</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gastronomic</td>
<td>1</td>
<td>Bistro, cafe</td>
</tr>
<tr>
<td>Influence of the territory</td>
<td>Economics</td>
<td>1</td>
<td>Tourists sat at a table having a drink</td>
</tr>
<tr>
<td></td>
<td>Local figureures/ personalities</td>
<td>1</td>
<td>Sailors</td>
</tr>
</tbody>
</table>

Table 3 - Assessment grid

<table>
<thead>
<tr>
<th></th>
<th>Coder 1</th>
<th>Coder 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of realism (View):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imaginary (3), mixed (2), real (1)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Valence: very negative (1), negative (2), neutral (3), positive (4), very positive (5)</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Results/findings

The three steps of the method analysis scheme:

**Step 1: Categorization of the sketch**
This step allows the researcher to manage the sample of sketches in relation to where the sketch was created. Whether the sketch was imaginary or not did not matter because the location where the sketch was made was already known.

The idea of ‘valency’ was used to assess the attraction/repulsion of the sketches with the degree of liberty that participants authorised themselves, and the degree of reality captured in the sketch. An analysis that measured the experiences lived by the participants was also assessed. A combination of these criteria avoids the question of ‘what does that mean?’ and ‘if I only drew perfectly the view in front of me?’

Accordingly, a matrix was created:
- Valency: negative/neutral/positive
- Level of realism: real/mix of imaginary reality/totally imaginary

Once the matrix was created (table 3) categories were reunified in relation to their dispersion using the following questions:

1. Valency: Did the participant play with the view?
2. Reality: Is there a strong correlation between what participants viewed and the sketch they created?

If the answers to the questions are no, it was assumed that what the participants produced was what they observed.

**Step 2: Description of the sketch in relation to the NHDI Categories**

Counting category marks of 0 or 1 on all categories were tabulated for every sketch (table 2) including transportation, quality of life, demography, local economy, geographic features, local culture and tradition, resident characteristics, activities, climate, fauna and flora, sports, events, local figures/personalities, and gastronomy. Further precise key elements such as tree, monument, sun, and statue were also assessed.

**Step 3: Managerial angle of the branding**

Combinations of the Valency and NHDI index scores were analysed through a descriptive tool (Excel for Microsoft, version 2010) and statistical tool (SPSS for Windows, version 18).

Discussion analysis

In light of widespread acceptance by academics, these place/city branding study findings support theoretical expectations and ideals concerning past researches. So, this research does provide additional controversy in term of place branding analysis and touristic experience initiatives. Hence, findings have demonstrated that in terms of place marketing, the ‘sketch coffee experience’ as well as the ‘NHDI score’ provided an elemental practice and tool for place ‘image/brand analysis. Thus, inextricably, this research and results agree with the suggestion by Morgan et al. (2004) that the challenge of monitoring the external environment, aims to understand the threats and opportunities within a place as well as its competitive strength. These are essential to strategically position itself in the market environment and to enhance the dynamic between its stakeholders and tourists.

The research recognises Kotler et al. (1993) emphasis on place image and the need to include individuals’ beliefs, ideas, and observations concerning a place. To support that statement the study has shown that (54%) of tourists in comparison to (46%) of residents came to the events (figure 8).

The majority of the participants were French (60%) and (40%) were foreigners (figure 9).

In this respect, (40%) of French against (29%) of foreigners liked the events (table 3). Interestingly, we can observe that regarding the need to strategically develop sufficient aspects of the city the beliefs, objectives views and opinions of its stakeholders are crucial. Accordingly, (figures 8, 9, 10 and table 5) connect to Schmitt’s (1999) approach of place marketing, experimental marketing as well as experiential marketing which aims to generate newcomers strategic development and management, interacting holistic experience that fuse and stimulate people senses, underpinning the rational and emotional eclectic method that influence tourism and residential likeability of a place or an area.
Figure 8 - Residents vs tourists attending the event

Figure 9 - French vs foreigners attending the event
Table 4 - Comparative likeability by group attending event

<table>
<thead>
<tr>
<th>Did you like it?</th>
<th>N/A</th>
<th>% YES</th>
<th>% N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td>44</td>
<td>22</td>
<td>40</td>
</tr>
<tr>
<td>Foreigners</td>
<td>32</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Residents</td>
<td>32</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>Tourists</td>
<td>48</td>
<td>12</td>
<td>44</td>
</tr>
</tbody>
</table>

Figure 10 - Residents vs tourists likeability scores
To enhance this research perspective, experimental marketing has been gradually exercised. ‘Views’ and ‘valence’ of the city, from its residents and tourists have had a predominant authority whilst considering the city’s brand aspects. Furthermore, this intentional link to Schmitt (1999, 2003) is cited in Keller and Lehmann (2006, p. 742) who consider ‘that experimental marketing is an important trend in marketing thinking’ and therefore can provide strategic brand management that can help ‘create five different types of experiences such as the Sense experiences involving sensory perception; Feel experiences involving affect and emotions; Think experiences which are creative and cognitive; Act experiences involving physical behaviour and incorporating individual actions and lifestyles; and Relate experiences that result from connecting with a reference group or culture’. Therefore, this critical image of the city’s aspects strengthens the O’Sullivan and Spangler (1998, p. 47) standpoint that ‘people are at the center of an experience. If there is no people, there is no experience’ to create a credible place analysis thus allowing an in depth research dimension.

Furthermore, statistical findings of the valency (figure 11) and the view (figure 12), have critically distinguished that residents and tourists have had a ‘mixed view’ and ‘neutral/positive’ opinions of their city. This challenged and confirmed Cai (2002), Gartner (1993), Woodside and Lyonski (1989) cited in Qu et al. (2011, p. 467) claims, that ‘cognitive and affective image components are hierarchically correlated to form a destination image’ and thus ‘destination image is also viewed as an attitudinal construct consisted of cognitive and affective evaluations’ (Baloglu and McCleary (1999) cited in Qu et al. (2011, p. 467). The ‘view and valence’ analysis supports the Czellar and Denis (2002) argument, and makes the analogy of differential effects of knowledge about a place and the consumer response to the territorial offer as defining territorial capital. This intangible capital is evaluated through individual cognitive associations gathered collectively within the city, indicating strength, number, specific identity, and positive character of the city.

Henceforth, the NHDI score dimensions can be directly interrelated with (Lynch, 1960, p.5) assessment of human sociology and psychology; ‘The human brain is marvelously adaptable, that with some experience one can learn to pick one’s way through the most disordered or featureless surroundings’ and puts into practice through Haddock (2010, p.31) a philosophy which considers that ‘the image of the city concerns the general meaning and idea of a place. In this sense, it is worthwhile to examine the symbols embodied in the material components of the city (roads, monuments, buildings)’. In correlation with Rubinstein and Parmelee (1992) cited in Insch and Florek (2008, p. 141) is the idea that, ‘personal experience and social interaction are crucial aspects of attaching people to particular places and, what is more to make a place one’s identity. This suggests that experience is necessary to evaluate an individual’s satisfaction, as a clash of expectations with a place’s reality’. As a result, the global NHDI score within this research (figures 13, 14 as below) significantly raise the different characteristic dimensions that need (or do not need) improvement within the city. Judgmentally, the NHDI scores demonstrate a structured and relatively simple framework for potential managers to use. In fact, the NHDI score as a city branding tool can provide a strategic approach to destination branding from its residents and tourists responses to competitive needs and more effectively creates a strategic decision-making framework within the city (Baker 2007 cited in De Carlo, Canali, Pritchard and Morgan (2009)) meanwhile, integrating local politics including taxes/budget, operational management of the territory, local economic development and urbanism (Morgan et al., 2004).

Overall, the essences of this study and its findings gather an essential part of city/place branding analysis history using subjectivity within its process and objective criticality within its respondent’s ‘artistic’ replies.
Figure 11. Average global valence chart

Figure 12. Average global valence chart: view
Figure 13 - Paris NHDI scores by item/category
Figure 14 - Paris NHDI scores: overall results
Figure 15 - Residents vs tourists global NHDI score

![Resident VS tourists Radar chart](image.png)
Evaluation/recommendations

Key findings:

- The ‘sketch coffee experience’ as well as the ‘NHDI score’ have delivered an elemental practice and tool for place image analysis, underpinning the need to include individuals’ beliefs, ideas, and observations for potential place development.

- Residents and tourists involvement as well as their interest throughout a touristic experience (sketch coffee event) can be observed. Therefore, ‘views’ and ‘valency’ of the city from its residents and tourists could be objectively evaluated, whilst considering the city’s territorial aspects (figure 15).

- The NHDI score dimensions can be directly interrelated with relevant literature. Consequently, the global NHDI score raises the different characteristic dimensions and key performance indicators that need (e.g. influential characteristics) or not need (e.g. Natural and hospitality characteristics) prioritised physical improvement within the city.

Recommendations for further research:

This study has provided the first step in understanding how, in involving residents and tourists in city branding throughout special event tourism such as ‘sketch coffee’ and an adequate analytic tool known as the ‘NHDI score’, it is possible to improve and recognise a city’s physical characteristics. Although, the sample of respondents was adequate for general analytical examination of the city brand a more concise target group of sample would yield more specific results in order to respond and improve the city’s assets with respect to particular community needs. Besides, the process of data collection could interestingly be implemented within other areas in Paris, in order to tackle and correlate as a whole the city’s general improvement priorities and reach for a more mass market sample. Additionally, the data collection of this study was conducted during September, and was during the ‘heritage days’ in Paris. Consequently, this could have biased responses, since this event (heritage days) could have altered positive feelings in people’s minds.

Therefore, to assess reliability of the NHDI score and the ‘lived experience method’, future study could be implemented all year round within the city. Accordingly, this would give responses, regarding the variations that could be found in residents’ and tourist’ responses. Henceforward, when implementing other sketch coffee events it would be stimulating to provide colour pencils to the participants, in order to supplement city’s brand dichotomies in relation with the resident-tourist’s colour sketches. As a result, it would allow more assertive qualitative evidences of the city’s assets dichotomy.

Finally, from an academic perspective, it would be inspiring and instructive to identify and understand all the new research themes that are active in the world of city branding and to assess new ways of city tourism /branding resources and lived touristic applications.
Conclusion

This research has strategically shed some light on the importance of involving a city’s residents and tourists in place branding, and raised the point that perceptions and attitudes towards an entity’s broad prospect and characteristics could influence the social and cultural, economic and environmental assets of a place.

This study also examined residents and tourists perceptions of a city’s dimensions, and as the most fundamental need, has built a stimulating and enlightening framework of opinions about perceived physical impacts and the means of incorporating community life within a city’s touristic experience. Thereby, the perceptions of resident and tourist about a place have been clearly distinguished and findings have shown that a city’s subjective assets could be transcribed throughout objective and optimal responses (sketches) whilst analysed within a specific and visual NhDI tool.

In addition, the general influencing factors that are interacting within the Paris area were studied and could visually be identified throughout the NhDI score. In this regard, identification of interesting curtailed factors was found; influence characteristic dimension of the city’ examined was the dominative finding, and the most unexpected.

Accordingly, this study has permitted to further secure the knowledge that there is a great value for local authority and local stakeholders to use the NhDI score and the lived touristic experience ‘sketch coffee events’ in order to gain and further develop strategic decision-making initiatives and front line competitive understanding of a city’s market segmentation, destination image, branding and promotion, as well as the destination competitiveness. Finally, consumer opinions were used throughout qualitative (sketches) and quantitative (NhDI score) and brought efforts to an unknown evaluation on the tourism experience, and acknowledged that there was a great value in underpinning in greater depth, the characteristics of the city, its promotion or challenge, and any negative or positive perceptions that may exist.
References:


Mobility, migration and networking within the Cuban scientific community: developing scientific capital in the digital age

Miriam Palacios-Callender  |  m.palacios-callender@ucl.ac.uk
Wolfson Institute for Biomedical Research, University College London

Stephen A. Roberts    |  stephen.roberts@uwl.ac.uk
School of Computing and Technology, University of West London

Since 1959 Cuba has developed a strong base of higher education and has used this as a foundation for an active scientific research sector to support the national economy. Following the global political changes of the early 1990s the country has maintained this trajectory. These influences have impacted on the normal processes of mobility, migration and networking in the scientific community. This paper reports on a programme of investigation which will study the influence of changes in the global scientific community and the impact of emerging digital communication technologies on the development of the Cuban scientific community. The main historical influences and the contemporary context are reviewed, a pilot study using bibliometric analysis is reported and some key propositions examined which will be used to guide future studies and define investigative questions.

Keywords  |  Cuba; mobility; migration; networking; brain drain; brain gain; brain networking; science policy; bibliometric studies
Background and context

The Republic of Cuba is the largest island bordering the Caribbean with a surface area of 109,886 km² including 4,000 smaller islands and keys and a population of 11.2 million in 2010 (ONE, 2010). Cuba was the last colony of Spain in Hispanic America becoming a Republic in 1902, after 30 years of wars fighting for independence and 4 years occupation by US troops in 1898. The evidence shows that little was achieved in education and health for the general population during the first half of the 20th Century (Truslow, 1950) and the science and technology infrastructure was weak despite the existence of an Academy of Sciences founded in 1861.

The year 1959 marked a radical shift in the history of Cuba when a revolutionary group brought an end to the Batista dictatorship (Perez, 1988; Bethell, 1993). Since the early days of the revolution, the socialist system favoured the development of equity across society and considered health care and education as rights of the Cuban citizen. Access to services was provided free of charge at all levels. In 1960, the President of the revolutionary government Fidel Castro made the first science policy statement: “The future of our country has to be necessarily a future of men (and women) of science”... “because that is precisely what we are mostly sowing; what we are sowing are opportunities for intelligence” (Castro, 1960).

In the process of providing health and education to the Cuban population, and to develop science and technology, the Cuban government sent abroad thousands of students to obtain degrees in higher education (HE) in universities of the Socialist Countries, starting as early as 1961. This was the first kind of mobility of human capital to improve the scientific and technological capabilities of the country. Further flows of individuals rather than groups took place later in order to support centres for research and development and the fast growing university campuses. In this case, personnel were sent either to obtain a post-graduate degree or to continue with further specialization and/ or collaboration in science and technology. In the last decade the mobility of scientists has depended more on the network of scientists with international connections through collaborations of mutual interest. In both cases the mobility is to acquire and develop capabilities inside Cuban centres of research and/or education. There is another kind of mobility, in this case to deliver scientific, educational, technological capabilities towards developing countries, which is part of the ethical nature of the socialist system. In the period from 1963 to 2010, around 135,000 Cuban specialists in healthcare collaborated in 108 countries (Marimon Torres and Martinez Cruz, 2010).

For the purpose of this study mobility is defined as the migratory condition of the students/ specialists/ specialists moving back and forward between Cuba and the collaborating countries and migration is defined when students/ scientists/ specialists change residency to a country different than Cuba. Mobility generates migration and in the case of Cuba, migration generally increased after the collapse of Socialist Europe and Soviet Union, aggravated by the American blockade. This particular phenomenon has only received limited study in depth in the Cuban scientific and technological community. Furthermore, there appears to be no evidence indicating that regardless of the number of emigrants in science and technology, this migration has impaired the development and achievement of Cuba in science and technology. The Cuban scientific elite is justifiably protagonist about their scientific achievements, especially in biotechnology (Reid Henry, 2010), infectious diseases (Guzman, 2005) and neuroscience (Becker Barroso, 2009) among others.

The landscape of science in the 21st century has emerged with a great expansion of global networks in which individuals in the same field of research collaborate across different international institutions. In scientific publications, for instance, over one-third of research papers come from authors’ addresses from more than one country (Royal Society, 2010). The expansion of the global network of knowledge is a consequence of the proliferation of digital information and communication technology, as well as more affordable ways to travel. Lack of permanent jobs in academia and industry has contributed to mobility of trained specialists among developed countries, where leaders in science move from country to country searching for permanent positions and better funding. However, due to the economic instability of globalization and inequality between regions, the migration of scientists has increased towards countries with better funding and infrastructure, creating a ‘brain drain’ for countries with lesser resources. New
emerging economies are breaking this one-way flow of human capital towards developed countries by attempting to reverse the brain drain into ‘brain gain’ through re-engagement with those who had left.

Today, there are more than 900,000 university graduates in Cuba (Clark Arxer, 2010) reflecting the government’s effort in developing the human capital of a country with limited natural resources. Donella Meadows (the founder of the Institute of Sustainability and adjunct professor of environmental studies at Dartmouth College) when reviewing the achievement of Cuban scientists in sustainable agriculture as the country had to face the economic crisis of the former Socialist countries in Europe (and the American blockade since 1962), pointed out that ‘Cuba has only two percent of Latin America’s population, but eleven percent of its scientists’ (Meadows, 2000).

It is precisely the worsening of living conditions under the economic crisis of the 1990s that lead to a wave of migration of Cubans from that decade to the present. With Cuba having a significant number of scientists, and with the evidence of scientific migration from other countries of the region, the mobility and migration of Cuban scientists presents a novel area for research. Such a programme of study opens the possibility to transform the disadvantage of losing highly qualified human capital into opportunities for the country of origin to reconnect to this resource by improving communication with Cuban scientists living abroad. Some nations have already made good progress by enabling their scientific diasporas to engage with the home country (Boyle and Kitchin, 2011). Scientific diasporas are defined as ‘Self-organized communities of expatriate scientists and engineers working to develop their home country or region, mainly in science, technology, and education’ (Barre 2003). But in this realm Cuba has yet to maximize her potential advantages. The first stage in this process is to audit and better understand the dynamic of the Cuban scientific community. Later will come an attempt to develop innovations in communication which have the potential to reinvigorate Cuban scientific capital.

Scientific production, mobility and migration: the Cuban experience

Cuba started the development of science and technology with the creation of the National Centre of Scientific Research (NCSR) in 1965, with excellent infrastructure for the formation of scientists who then went to create or support other institutions of research in specialised fields, like the Centre of Animal Health, and eight specialised institutes of research in the Ministry of Health (MINSAP) in 1966. This was the phase of expansion of research capacity in different fields, more freedom of the scientist to do research as well as more geographically dispersed throughout Cuba. In 1981 a new small Centre of Biological Research near the NCSR experienced a different approach: intensive and focussed research projects with an enterprise mode of operation and directly subordinated to the government. As a result a small multidisciplinary group of scientists produced interferon gamma from human leukocytes in record time to treat the dengue epidemic. Following this model of operation the Centre of Genetic Engineering and Biotechnology (CGEB) created in 1986 embodied new forms of high technology research/development and production but on a much larger scale. It was the first time in which a research institution in Cuba covered all the processes of drug discovery from research to commercialization. The 1980s was the beginning of transformation from the model A (the linear theory) in which pure research, technological development and production and market were growing independently to the model C (Goldemberg,1998) in which the three phases of development were completely superimposed. The success of this strategy prompted the creation of the Scientific Pole (Polo Cientifico) with new installations and expansion of spin off groups of successful research projects/prototypes mainly from NCSR. Among them, the Centre for Immunoassay to produce laboratory instruments for hospital clinical analysis, Centre for the Production of PPG, a policosanol derived from by-products of the sugarcane industry to treat high levels of cholesterol. Projects were integrated through a cycle from Research and Development to Production and Marketing. The flow of communication and cooperation among institutions of the Scientific Pole had a substantial impact in the overall scientific production and creation of knowledge for the rational use of scarce Cuban resources. The Scientific Pole represents another step forward
The investment in human capital to produce a highly qualified workforce allowed Cuba to develop the biotechnology industry in the 1980s (Limonta, 1989), the first vaccine against meningitis B in 1985 and subsequently another vaccine against Haemophilus influenza type B, the latter the first human vaccine made from synthetic antigen (Kaiser, 2004; Verez-Bencorno et al., 2004) among other innovations. The products coming from this innovative industry have benefited the Cuban population thanks to the efficiency of Cuban Health System (Marquez, 2009) and products like CIMAvax, a vaccine for the immunotherapy of non-small cell lung cancer which even at the trial stage has been well received in the developed world (Randal, 2000; Perez et al., 2011).

In 1994 the Cuban Academy of Sciences (ACC) merged with the National Commission for Environment and Natural Resources, and the Executive Secretariat for Nuclear Affairs to form the new Ministry for Science, Technology and Environment (CITMA). This new structure aimed to harness Cuban scientific and technological knowledge to a more efficient and sustainable form of development. Later in 1996 the Cuban Academy of Sciences was established by law as an official institution of the Cuban State. (Clark Arxer, 2010). Stressed by the economical crisis of the 1990s, Cuban scientists and technicians joined the government programme to develop organic agriculture as the only way out of the precarious consequences of the reduction in availability of pesticides by more than 60% and fertilizers by 77%. Innovative approaches were put in practice by experimenting with bio-fertilizers, bio-pesticides and the use of fermentation and tissue culture. To strengthen this organic agricultural revolution the country continued investing in knowledge and technology for organic agriculture, ensuring that both are incorporated in the higher education curricula to create a new generation of agronomists. In the Scientific Conference of the Food and Agriculture Organization of United Nation (FAO-UN) Nadia Scialabba (2000) praised the new development in sustainable agriculture that was taking place in Cuba: "Cuba is perhaps the best example of large-scale government support for organic agriculture and is an encouraging model to replicate in other countries". This observation, as it can be noticed in other fields of Science and Technology is a consequence of the priority of the CITMA to encourage and guide research projects towards social needs through sustainable approaches and methods.

Although migration is intrinsically linked to the development of the human race, it is currently a problem for developing nations when it concerns their highly skilled citizens. It was the exodus of British scientists to the United States after World War II that lead to the concerns of the Royal Society about the migration of scientists, which they called at the time ‘brain drain’ (Balmer et al, 2009). The brain drain often referred to highly skilled workers, the latter defined as those who achieve tertiary education, moving from low-to high-income countries. This definition refers to ‘all highly skilled workers’ in any sector or discipline and is in general a useful start point. But for the purpose of this study our focus is narrower looking specifically at scientists and engineers. Nevertheless, the general definition provides a good basis to explore the different levels of the problem.

Between 1990 and 2000 the movement of skilled immigrants to OECD countries increased by 64% from which, 93% were from developing countries. (Docquier et al., 2007). The OECD study (OECD, 2008) found that the net total gain in highly skilled expatriates is 7.8 million for the United States, about 1.4 million for Europe, 1.6 million for Canada and about 700,000 for Australia. Although these values include both developed and developing countries, the brain drain affects small developing countries more. This is the case of Jamaica, Haiti, Trinidad and Tobago, Mauritius and Fiji with the loss of more than 40% of their highly skilled citizens. In 2000 there were 44 countries (41 developing) with emigration rates above 20% for graduates from tertiary education (Hanson, 2010) with African countries like Ghana, Sierra Leone, Gambia and Uganda in the worst situation. In terms of brain gain to the developed receiving countries the contributions are mainly from the new growing economies with large populations like China and India. Between 1993 and 2003 the number of foreign scholars employed by US universities increased by more than 70% especially in natural sciences (Thorn and Holm-Nielsen, 2006). China lost more than 700,000 professionals who studied abroad between 1978 and 2006 (Royal Society, 2011), Philippines 1,111,000, India 1,035,000 million and Mexico 949,000 and Cuba 332,000 (Docquier and Rapoport, 2011). Interestingly migration of highly skill workers is observed in developed countries as well with United...
Kingdom in the top of the list with 1,479,000, Germany 994,000, then United States with 427,000, Italy with 397,000 and France 318,000 respectively.

Migration in the 21st century continues to drive global demography and development. In the first place its size is significant, with a global population of first generation migrants around 250 million. Secondly, unlike in earlier migrations the new migrant populations have greater possibilities to reconnect with their homeland through the availability of cheap flights and the revolution in communication (Economist, 2011). Although the brain drain is still a concern for sender countries, new forms of engagement of talented scientific diasporas are building new engines for growth and development in their homelands (Solimano, 2006; Seguin et al., 2006; Economist, 2011). The governments of China, India and Nigeria have pioneered different initiatives to articulate in one way or the other the potential for their scientific and technological diasporas to meet their specific needs (Royal Society, 2011). The apparent expectation of transforming the brain drain into brain gain or brain circulation has still an unresolved humanitarian problem: the emigration of health professionals from low- to high-income countries. The dramatic situation faced by countries with fragile health systems has called the attention of the World Health Organization and in 2010 a Global Code of Practice for recruitment of health personnel was approved during the 63rd World Health Assembly. An analysis of the overall loss of returns on investments in the formation of doctors in countries from the sub-Saharan region was estimated as $2.17 billion while the benefits to destination countries are concentrated in the United Kingdom ($2.7bn) and United States ($846m) (Mills et al., 2011).

Exploring the consequences of mobility and migration: a Cuban pilot study

A pilot study has been carried out to help shape a future investigation of the theme. The general hypothesis which informs this pilot study is that currently, there exists a scientific population of Cubans abroad that continues to develop itself professionally. This hypothesis will be tested using bibliometric analysis. If this hypothesis holds true, there is great potential to harness this brain-rich population of Cubans to further develop science and technology in Cuba i.e. brain gain as is occurring in other emerging economies.

In order to explore these emerging ideas an exploratory study was developed to test out the potential and possibilities for a more extended investigation. This study was initially reported at the UWL VISTAS Colloquium under the title of ‘Mobility, Migration and Networking of Cuban working in Science and Technology’ (Palacios-Callender, 2012). The results of this can be summarized as follows.

Methodology for pilot study: A case study of 25 Cuban scientists with residence abroad were analysed using bibliometrics as an attempt to measure the state and development of the group (Laudel, 2005). The publications of these scientists were followed for 25 years beginning in 1986.

Mobility phase was defined as the period of time where the scientists moved back and forward between Cuba and other collaborating countries. All scientists in the group had experienced periods of mobility of variable length, but the exact duration couldn’t be found using bibliometrics. Migration phase was the period when the scientist changed residency to a country different than Cuba. The year of migration as well as places of destination were taken from the publications showing the addresses of the authors. The composition of the sample in terms of generation and gender is shown in table 1 and in terms of regional location where the Higher Education (HE) and post-graduate studies were carried out in table 2. Information in both tables was taken from the professional network LinkedIn and information collected by the author. One scientist was American of Cuban Origin (AOC) who received the education (HE and PhD) in Cuba. The list of publications per scientist/specialist were made by searching
through PubMed and Google scholar and a database per scientist was created with the names of the scientific journals per year, the times each article was cited and impact factor of the scientific journals. The database was then made anonymous before processing the information.

Table 1: Composition of scientists by generation and sex

<table>
<thead>
<tr>
<th></th>
<th>female</th>
<th>male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born between 1946 - 1964</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Born between 1965 - 1980</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>total</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 2: Distribution of scientists in different countries during their professional formation

<table>
<thead>
<tr>
<th>Country</th>
<th>High Education</th>
<th>Post-graduate degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuba</td>
<td>16</td>
<td>12* + 2</td>
</tr>
<tr>
<td>Spain</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Italy</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Belgium</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Germany (East Germany)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hungary</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>UK</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Russia</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Canada</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

(*) PhD Research partially or totally done abroad (during Mobility phase). Italy, Spain, UK, Germany, Belgium and Czech Republic.
Results of pilot study: Once scientists migrated from Cuba to a new country of residence, they often migrated later on to another country. The distribution of destination countries at the time of the last publication was: 3 in developing countries of the region (Chile and Mexico) and 22 in developed countries (15 in Europe/UK and 7 in North America). Areas where the scientists are currently employed include: research in academia (18), health services and research (3), industry (2) private sector (1) and international agency (1). Distribution of scientists per areas of research regardless of the migratory status is shown in figure 2.

Publications per area of research taking into account the migratory status is shown in figure 3, with 188 and 314 scientific papers from scientists with the status of mobility and migration respectively. There is an increase in scientific publications by 67% coming from scientists that have migrated. This substantial increase is explained by two reasons: first, 80% of scientists belong to the generation that was born between 1965 and 1980 (see table 1) and therefore during the first 12 years of the present case study they were still at universities as students or recently graduated. Secondly, international publications in the area of the research included in this study, increased more than 30% in the last 15 years. This can be observed when plotting the number of publications over time (Figure 4) taking into account the migration status. Figure 4 also shows the number of publications as a result of collaboration or networking between scientists with residency abroad (migration) and Cuba (total of 6 papers out of 314). A summary of the research output of the case study is shown in table 3 indicating those articles that have been cited as well as the number of times they were cited and how many of them were published in scientific journals with more than 4 and 9 impact factor (IF). Although the size of the sample is small and we do not know how much it represents the entire population, it seems that the main feature of the migration phase is the achievement of publishing in journals with higher impact factors, with a ratio of 1:7 (mobility phase: migration phase) in the top 70 scientific journals of the field. The relevance of the research measured by the times they were cited per publication showed that it is more relevant in the mobility group (52.5 vs 37.3). However, it is due to one particular paper cited 1,263 times and not to the pattern of the whole group. The number of publications as a result of the collaboration or networking between Cuban scientists abroad and at home is small (6 out 314 papers) and they were mainly between universities.
Figure 3: Publications per area of research

![Image of figure 3 showing publications per area of research with various categories like Cell Biology/Biochemistry, Metabolism/Cardiovascular, Clinical Science/Experimental Medicine, etc.]

Figure 4: Publications in 25 years (1986 – 2011)

![Image of figure 4 showing the number of publications over years with categories for mobility, migration, and networking with Cuba.]
Table 3: Summary of bibliometric findings

<table>
<thead>
<tr>
<th>Phase</th>
<th>Total publications</th>
<th>Number of cited publications</th>
<th>Total times of cited articles</th>
<th>Average citation per paper</th>
<th>Number of publications in scientific journals with Impact Factor (IF)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;4</td>
</tr>
<tr>
<td>Mobility</td>
<td>188</td>
<td>141</td>
<td>7401</td>
<td>52.5</td>
<td>40</td>
</tr>
<tr>
<td>Migration</td>
<td>314</td>
<td>281</td>
<td>10,467</td>
<td>37.3</td>
<td>153</td>
</tr>
<tr>
<td>Networking</td>
<td>6</td>
<td>5</td>
<td>61</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>502</td>
<td>422</td>
<td>17,891</td>
<td>42.4</td>
<td>192</td>
</tr>
</tbody>
</table>

Some findings from the pilot study: By looking only at publications, the power of innovation of the group was not measured and therefore an important contributor to the development of science and technology was not taken into account but this will be included in the extended study proposed.

Interestingly, the migration of Cuban scientists to the US represents only 20% (5/25) when the total migration of Cubans to US is about 81% (Martinez-Fernandez, 2006). The international trend however shows that the US is the first choice for international migration of scholars and scientists. Although the size of the sample is too small to support any conclusion, it suggests that the almost non-existence of scientific exchange between Cuba and the US, and therefore lack of direct contact between scientific institutions of both countries, are at least the partial explanation and should be further investigated. The number of publications in collaboration between Cuban scientists at home and abroad is very small, but it might not reflect other types of collaborations or networking, which should also be taken into account in further studies.

There is no doubt that Cuban social achievements stem from investing consistently in the development of its human capital, which is epitomised in the words of Clark Arxer: “By harnessing [Science and Technology] to social needs over the past 40 years, Cuba has managed to eradicate illiteracy, extreme poverty, hunger and infant deaths due to preventive diseases” (Clark Arxer, 2010). International organizations have acknowledged the effectiveness of Cuban policies improving the human indicators for which these institutions work, in relation to health, education and human development (WHO, 2008; WHO, 2010; UNDP, 2011; WWF, 2006). Thus, WHO, UNDP and WWF have recognized the increased effectiveness of Cuban policies to improve human indicators.

Despite those achievements, Cuba might benefit from its scientific and technological population abroad in a world where the global network of knowledge is becoming an asset for those countries and organizations which master its use. One advantage to countries that incorporate networking with their scientific diaspora is that these very individuals can help advance science and technology while possessing a deep understanding of the national culture and ideology. Cuban scientists are part of global science and those working abroad might search for opportunities to benefit their country of origin, like identifying sources of funds, access to new technology and infrastructure to be used in collaboration with their institutes, local knowledge relevant to translational science, etc. Expectations of the new Migration Act (Gaceta Oficial de Cuba, 2011) have to meet reality in the coming years if there is any real interest to find a role for the scientific and technological migration (Global Commission, 2005; Florida International University, 2011).

The present case study, although limited by the size of the sample, illustrates how Cuban scientific migration has the potential to be part of Cuban development in science and technology. Bibliometrics was an essential tool in this study to identify the number of scientists in active positions, but requires...
Further improvement especially if the number of scientists in the sample increases. Qualitative research methods will be required to assess the potential contribution of this scientific population to the development of a network project. To transform this possibility in reality both Cuban authorities and the scientific and technological community abroad must work together towards the creation of an effective network system.

**Studying mobility and migration: underpinning propositions**

The themes of history of science and social studies of scientific activity are already well established specialities. The theme of mobility, migration and networking in the Cuban scientific community forms part of this wider area which it is planned to explore through a combination of study methods including scientific production and productivity (using bibliometric and scientometric methods), modes of communication and the use of the emerging digital technologies. To this can be added the study of the institutional and organizational apparatus of scientific development.

There is a very small number of UK based specialists studying the Cuban scientific community (one such is Dr Simon Reid Henry at Queen Mary University of London) but many more looking at the wider issues of scientific communities in the developing world (Alboroz et al., 2010; Holmgrem and Schnitzer, 2004; RICYT, 2011). Thus the work proposed has scope to make an original contribution to knowledge and to serve as a contribution to an important pool of specialist literature with wider ramifications for policymaking. The use of the ICTs and web based platforms is a growing field of interest and an experimental test bed is envisaged as part of the project and its application potential. The academic study will lead on to action research and development.

There are eight main linked themes which have been identified in the study area and after a general exposition, each of these can be considered in the contemporary Cuban context.

1. **Science is an enterprise based on knowledge and communication**: Scientific endeavour is an institutionalised activity which has developed to allow the discovery and creation of new knowledge. It has become more collaborative in its modes of operation because this ensures the exposure and transparency of findings as a necessary means to attest to the validity of new knowledge claims. The established paradigm of scientific method has evolved and is respected because it provides a consistent means of maintaining this process. Not only is original inquiry subject to scientific method (whether through rigorous and systematic description and/or by experiment, testing and replication) but its validation and acceptance is best ensured through formal communication and variety of social exchanges. Science has developed its activity and integrity by developing normative social behaviours in which communication plays a key part. Thus the preliminary phases of publication and later the primary archival phase of publication have developed normatively to establish a solid foundation for successive phases of activity. Communication has been (and still is) at the heart of a cumulative process of science which extends the boundaries of knowledge and which protects that body from false claims.

Mobility, migration and networking are natural allies of this normative process in the scientific enterprise. The so called ‘republic of science’ does exist but may indeed clash with the needs and constraints engendered by national political, economic and social realities.

For a country like Cuba that has invested so much in their human capital at the expense of social comfort it is not surprising to manifest its concerns when it comes to lose this human capital. Cuba has implemented a controlled system to allow high mobility of academics, scientists and engineers to international institutions and organizations. The mobility of highly qualified personnel has supported not only the development of science and technology in the country but it has contributed to improve the visibility and credibility of this critical mass at international level. Through mobility Cuban scientists, engineers and academics have access to expensive physical resources that allow them to speed up their projects, to exchange knowledge and ideas to boost processes of discoveries and innovation back in Cuba. These are universal reasons behind the engagement of Cuban scientists, engineers and academics with international collaborative activities (Wagner, 2006). The contribution of academic travel as a key factor in the geography of knowledge, science and
Mobility, migration and networking within the Cuban scientific community: developing scientific capital in the digital age

Miriam Palacios-Callender and Stephen A. Roberts

Mobility, migration and networking within the Cuban scientific community: developing scientific capital in the digital age

Cuban science is in its essentials identical to that of other countries. However, the situation of the country for various reasons has suffered some disadvantages in term of volume and quality of scientific communication. A significant concentration of the world publishing capacity in science is in the US, and therefore Cuban scientists have great limitations during the process of publishing their results (an American scientist is not allowed to use part of his/her time in helping with the editing of papers from Cuban institutions). Cuban scientists living abroad can help colleagues from the homeland to overcome the restrictions of the US blockade, at least at the present time. The new digital environment does provide many opportunities and advantages that will overcome these traditional impediments to scientific progress in particular the open access archives or information repositories (Arencibia-Jorge, 2004).

Cuban science in the 21st century has to master all the possible methods and media for scientific publishing in order to let the international scientific community know about Cuban findings. The open access initiatives are essential and important policies, especially when the blockade imposed by the United States on Cuba intends to prevent the publication of Cuban authors’ papers in the main journals of the United States. In spite of the gap in digital development, from which Cuba cannot yet escape, we count on two essential resources: the human resources and the political will of making Cuban science a borderless science.

Taking the idea of scientific endeavour as institutional scientific enterprise makes the activity a focus of national science policy, and thus typically a matter of economic and strategic concern. Thus each nation has evolved an organizational context for its scientific enterprise which it tries to ensure is appropriate to its needs. The ‘republic of science’ may have recourse to national (and international) institutions which are real, formal and physical or ones which are apparent, informal and increasingly virtual. The notion of the ‘scientific academy’ is real and tangible in whatever form it takes and thus forms part of the infrastructure which leads to science having its intrinsic value as well as its economic value.

Mobility, migration and networking thus have a significance and value in the national construction of science activity and enterprise. They are all components of what can be considered as ‘a market space’ of science. Mobility is enriching for scientists as the gains are often returned to the home country in the short term (a brain gain). Migration may imply a longer or even permanent absence and therefore loss to the home country (brain drain). Networking may have a mobility component, but in the digitally and interconnected world it offers the possibilities of extensive gains and collaboration without physical movement or as an alternative or supplement to movement. A case from Romania illustrates this well by following up the concept of brain networking, where digital mobility substitutes for physical mobility (Ciumasu, 2010).

This paper has already noted the significant production of medical doctors and the mobility to a range of countries especially in the developing world. In addition since the early 1990s Cuba established a very strong biotechnology sector. In agriculture and veterinary sciences the same story can be told.

3. The political, economic and geopolitical dimensions of science are closely connected: The links between science and development are absolutely clear. The developed countries (largely of the global north) have realized this link now for well over one hundred years. They realize that their history, creativity and productivity has become an asset, indeed a source of scientific and intellectual capital. Global development (as characterised by the Millenium Development Goals) views science and knowledge as not only

higher education has been well documented (Jones, 2005; Jones, 2009) as well as its role in the formation of centres of knowledge. It seems that the mobility of Cuban scientists and academics has been mainly to developed countries (different from medical doctors as mentioned earlier), and more recently to developing countries of the region. The movement of Cuban scientists and academics and the formation of transnational knowledge networks have not been fully studied and it might be relevant to the network of emerging developing countries of the periphery.
the key to growth and redistribution but also to global sustainability and survival in the context of climate change, energy deficit and population growth.

Despite more than 50 years of focussed international development and aid the overall situation sometimes appears stationary or at best extremely slow moving. Wide disparities exist yet there is much room for optimism even so. The emerging economies of Asia, Africa and Latin America provide some stories of relative success and Brazil, Russia, India and China are the leaders in a reshaping global economy. All four nations have invested heavily in scientific endeavour and enterprise. How their experiences have been and are being shaped at the moment will provide new insights for mobility, migration and networking. There are many more examples (like Cuba and Mexico) in this intermediate and emerging group where science policy needs to be shaped by and react to the trends which can be observed in both the ‘republic of science’ and the ‘market space of science’.

In a study to evaluate the impact of biotechnology in seven countries they found that in all cases the governments have developed specific policies for the development of the field. Reviewing the case study of Cuba they highlighted the following characteristics: ensure long-term governmental vision and policy coherence, promote domestic integration to spur innovation, tap into national pride and capitalize on international linkages (Thorsteinsdóttir et al., 2004). By making the society part of the success and therefore its pride, the government promotes moral sentiment of nationalism that reinforces the engagement of scientists and engineers with the nation. On the other hand, Cuba has also has up-dated a Migratory Act (Gaceta Oficial de Cuba, 2012) to prevent the brain drain.

4. Economies need scientific activity - how can it best be mobilized for economic purposes?: Every national economy (and indeed supranational economy) has to develop scientific endeavour and enterprise as a foundation for growth. In the past much attention was focused on the question of pure/basic versus applied science or between science and technology. National reputations have been characterised (or stereotyped) by such notions. The UK had a reputation for basic science but a poor record on transfer and application; Germany excelled in pure science and technology; Russia was strong on theoretical work and strategic technology, but not good on mass consumer production. Such generalizations often fail on closer examination but do contain a grain of useful truth if only to motivate political debates about ‘how to do science’. Cuba has a very strong awareness of this fact and immediately after 1991 and the special period (periodo especial) recognized the consequences and what it had to do.

But less science will be done in the national economy if the balance between mobility, migration and networking is not aligned with needs. Investment in science is one thing, but once made it cannot be allowed to decline or to depreciate without the consequences being felt.

5. Sustainable scientific culture is going to be increasingly important: A brain drain represents a depreciation in national scientific capability and such loss puts at risk the sustainability of the scientific enterprise. Simply put, the initial investment creates the assets which then go on to help create scientific capital in terms of knowledge gained and economic innovation realized. The question of sustainability becomes more deeply related to needs and requirements. What is the scientific population and resource a country and economy needs? Whilst science can be seen as an ideal and a good in itself one might believe the requirement is always larger than can be achieved. How the requirements are fulfilled depends on many conditions: the demography of the country; the nature and state of its education systems; the ability to absorb and use scientific production and scientists; the esteem in which science and scientists are held, as well as the political and policy goals of the society. It is said that the UK does not produce enough mathematics, physics or engineering graduates and yet UK science still remains internationally buoyant and has prestige. But this position is sustained by ‘draining brains’ from wherever they can be attracted. The UK freely exploits the supply of Indian software talent to meet the needs of the UK IT industry. The UK could satisfy its need for mathematicians by sourcing them from China. Or nearer to home, the UK could import German technologists by taking advantage of the European single market in much the same way that Polish builders and plumbers found a market in the UK in recent years.
6. Migration and the brain drain are well documented phenomena: These are two themes which have received much academic attention since the 1960s by both scientists and social commentators alike. More recently, the themes of migration and the ‘geography of knowledge’ have attracted the attentions of geographers and this is consistent with the contemporary interest in the ideas of the knowledge economy, globalization and a digitally connected world.

Historically the idea of migration carried with it the sense of ‘no return’ seeing migration as a largely irreversible process and a feature of the historical world as was and is. The idea that we may be experiencing the ‘end of history’ (Fukuyama, 1992) could be transient, but new means of digital communication and the creation of virtual worlds might at least help to overcome some consequences of ‘irreversible’ at least amongst scientific communities. The development of electronic and digital publication and the new levels of information provision and service that have already been created are beneficial for science. Now it may be the turn for social and virtual media to not only enhance communication but also to create communities which have some power to counterbalance the irreversibility of migration. This theme is the primary goal of the research study being carried out by the authors.

7. Developing communications and networking can help counteract the deficits created by migration and brain drain. In the ideal world freedom of movement and people is as valuable as the other significant freedoms of expression, belief and worship. In the wider world the internet, WWW and the digital social media are already acting at the general level to sustain these ideals and show how they might be used in the more specialized communities of science which are affected by migration and the brain drain. The mobility of the scientist is both physical and intellectual. Intellectual mobility can exist without movement and above all it is dedicated to creative and expressive liberty. Physical mobility requires economic resources (a potential inequality) as well as opportunity and freedom of choice. The mobile scientist usually returns or possibly continues a journey (the wandering scholar) but has the choice to return to the starting point. Migration may lead to rupture but science has inherent properties which can often mitigate the impact of migration so it may not be final at least in the medium to long term. But, there are times when migration (with its finality) is the result of lack of opportunity and becomes a case of economic necessity. Whatever the causes of migration, networking and communication have some powers to compensate for the deleterious effects.

8. ICT, Web and digital technologies are now vital and are shaping all scientific communities: The last five years, let alone the last ten years, has seen the mass dissemination of the new and mobile digital technologies, not only in the developed world but increasingly in the developing areas of Asia, Africa and Latin America. These digital technologies are not only the basis of organizational communication but of significant personal use. In fact, they are breaking the boundaries of these two major domains. It is a fact that the Internet originated in the scientific community but its intensification has taken place in the worlds of commerce, business and markets. Now is the moment to appreciate that it is opening many new opportunities again in science and its applications, and this realization is a motive force for a programme of investigation now commencing and for the reasons argued in this paper.

Looking forward

The area of the proposed study is significantly novel: there has been no major empirical academic study carried out of mobility, migration and networking of Cuban scientists, and specifically no study carried out by a Cuban scientist with personal experience of working in both environments and cultures.

The results will contribute to the pool of studies on mobility and migration of scientists in and from Cuba by adding empirical knowledge and by enhancing both theoretical perspectives and potentially informing policy and practice.

As part of the data gathering and as a practical exploratory development the ICT and web based technologies will be deployed as experimental and action-orientated research. This phase of the study (and potential post-study) will be innovative. An analysis, reflection and critique of this part of the process will use and test socio-technical theories in the wider study of contemporary and developing science communication.
References


Becker Barroso, E. For neurologists in Cuba, hope is not embargoed. The Lancet Neurology, 8, p.1088-1089.


Castro, F. (1960) Speech at the National Agrarian Reform Institute (INRA), Havana, Cuba.


Palacios-Callender, M. *Mobility, migration and networking of Cubans working in science and technology*. Paper presented to the VISTAS Colloquium, University of West London, Friday 8th June, 2012.


Team knowledge management within an outsourced business systems software maintenance environment: a case study using grounded theory methods

Karen Brome | Kazamkar@hotmail.com
London, UK

The effective management of knowledge is increasingly seen as an essential contributor to the success of a knowledge-based organisation. There is a wealth of methodologies and approaches providing guidelines or frameworks for managing knowledge in a wide range of domains such as software development, IS service delivery and project management but few are dedicated to software maintenance. This paper presents the case study research of an outsourced software maintenance operation in the e-commerce business unit of a large UK retailer, using grounded theory to investigate a framework for assessing and improving the knowledge management capability of the software maintenance teams. The framework assesses the operation in five areas: leadership, communication, tools, processes and cultures. The results offer an insight into the strengths and areas for improvement in the knowledge management arrangements.

Keywords | outsourcing; systems software maintenance; knowledge management; grounded theory; e-commerce business
Introduction

In today’s commercial environment, businesses restructure the way they operate in order to focus organisational resources on the delivery of their core business competencies. By recognising and targeting those core competencies, an organisation seeks to define a strategy that will improve its competitiveness in the marketplace and increase profitability. This strategy, referred to as a knowledge-based strategy, has led organisations to engage in outsourcing relationships with external companies who are able to deliver those non-core functions, commonly the development and support of software and infrastructure (Hu, Gebelt, and Saunders, 1997). Outsourcing is defined as ‘…the organizational decision to turn over part or all of an organisation’s (IS) functions to external service provider(s) in order for an organization to be able to achieve its goals’ (Chen et al., 1995; Chaudhury, 1995; Fitzgerald and Wilcock, 1994; Lacity and Willcocks, 2001). In theory, it can benefit both the client organisation and the service provider but there are a number of factors which affect how well the relationship works in practice. From the outset, the organisations involved must have a clear understanding of what needs to be delivered, how it will be managed, and what management roles the organisations will assume. These points are often built into the outsourcing contract as well as a description of the nature of the relationship (partners or simply customer and provider). Equally important is the compatibility between the organisations, whether their size, structure, organisation cultures and management styles can successfully work alongside each other (Fitzgerald and Wilcock, 1994) and the degree to which the service provider comes to understand and master the client’s IT and IS infrastructure and business domain.

A service provider will establish processes that will enable it to develop over time a high degree of knowledge of and about the client organisation in order to successfully design, build or support that service; it is necessary to identify, elicit, transfer and capture tacit knowledge about the client organisation, its business and systems for the contractual obligations to be met.

Approaches to knowledge management: Garcia-Perez and Ayres (2009), proposed the Collaborative Transfer Approach as a means of extracting and transferring knowledge from an expert source to interested parties making use of a Knowledge Transfer Facilitator. The approach attempts to overcome some of the general difficulties associated with knowledge management such as extracting knowledge from knowledge experts and providing an environment where knowledge can be extracted and shared in a guided, structured and reusable way. The approach tries to facilitate the transfer of knowledge by bringing together the experts and knowledge recipients to discuss, agree and represent the main concepts in a domain. The process of collectively representing the domain according to Garcia-Perez and Ayres (2009) not only ensured the vital participation of the subject matter experts but also establishes a common vocabulary and reduced disparity in understanding due to language differences or domain understanding.

Existing research: framework for team knowledge management: The study done by Eppler and Sukowski (2009) (as a direct result of their research into teams involved in product development in the truck division of Daimler Chrysler) encountered many of the same issues as Garcia-Perez and Ayres (2009). They found that poor communication of teams skills, individual or shared experiences, poor domain knowledge, limited awareness of stakeholder goals and objectives had a negative impact on the effectiveness and cohesion within the teams. They also discovered that the lack of structure around the management of team knowledge meant that opportunities for resolving existing problems, discovering new solutions or overall process improvements were regularly missed. Like Garcia-Perez and Ayres (2009), Eppler and Sukowski state that governance of the knowledge management framework was an important part of the solution. However, in their approach, Eppler and Sukowski took a more holistic view of the team knowledge management problem and considered the working environment, available technology and culture, both organisational and human, in conjunction with the people components and the prevalent knowledge management strategy. This encompassing philosophy as an industry independent approach made it reasonable believe the framework for Team Knowledge Management could be utilized to as a tool for assessing the knowledge management capability in a different domain.
The research problem: Organisations that provide outsourcing services use a range of knowledge management approaches to demonstrate their capability in their field and signal their compatibility to the procuring organisation. In software development methodologies, like Extreme Programming or Agile, the methodology indicates a philosophical approach to dealing with uncertain requirements and the need to develop a ‘fit for purpose’ product quickly, making efficient use of people and resources in the achievement of that goal. The Capability Maturity Model Integration in Software Development and Service Delivery and ITIL versions 1 to 3, suggest that an organisation is aware of its core skills and has embarked on an organisational strategy to continually improve its ability to deliver cost effective technology skills to a client. Equally, project management methodologies such as SCRUM and Prince2 show that there is an understanding that managing people, technology and process simultaneously increases the likelihood of successful project delivery.

Organisations dedicate time, effort and resources to the instigation, review and measurement of knowledge management procedures in areas such as software development, project management and organisational structuring. However, although the challenges of identifying, recruiting and retaining staff with the right blend of technical, industry and domain experience are common, the options for assessing knowledge management within the software maintenance field are limited.

This leads on to defining two core research questions:

- How can knowledge management strategies, tools and processes succeed in an outsourced software maintenance operation?
- How can the knowledge management strategies, tools and processes in place be assessed?

Literature review

Knowledge: Knowledge is ‘information with direction’ (Nonaka and Takeuchi, 1995). Knowledge is ‘...information with decision-making and action-directed utility and purpose’ (Becerra-Fernandez et al., 2004).

Definitions which suggest that knowledge when applied to a situation is an element that stimulates change and underpins evolution, that knowledge is a catalyst for ideas, invention, problem solutions, improvement and progress are widely held.

Where does knowledge come from? Nonaka and Takeuchi (1995) envisage knowledge as the pinnacle of a three layered hierarchy with information in the middle and data at the base. The ascent of the hierarchy is triggered by the application of meaning to transform data, the discrete facts in the form of numbers, records, transactions or observations, into information. In other words data within the context of its environment, importance and function. The transition from information to knowledge takes place as a result of human contribution, in that it is people who define the context that ascribes knowledge its meaning, function and value through their interaction and experience of their environment. The Nonaka and Takeuchi (1995) perspective explains this as ‘a justified belief about relationships among concepts relevant to that particular area.’ This concept is shared by Davenport and Prusak, (1998) who view knowledge as a ‘fluid mix of framed experience, values, contextual information and insight’. Samiotis et al., (2003) expand on the intentions behind the human contribution in the creation and interpretation of knowledge. The emphasis on context is alluded to in the statement that knowledge is ‘as much about the perception arising from information... refracted through the individual’s personal lens’ (Fowler and Pryke, 2003). Whilst Blackler’s (1995) definition, by incorporating the concepts of tacit, explicit, individual and organisational knowledge, recognises the multifarious nature of knowledge as ‘multifaceted and complex, being both situated and abstract, implicit and explicit, distributed and individual, physical and mental, developing and static, verbal and encoded.’

Within academic literature, there are distinctions made between ‘tacit’ and ‘explicit’ knowledge (Polanyi, 1966). Explicit knowledge can be encapsulated and shared with or without the use of technology. It is
documented and public; structured, fixed-content, externalised, and conscious’ (Duffy, 2000). Tacit knowledge evolves from human relationships and requires skill and practice as it ‘resides in the human mind, behaviour, and perception’ (Duffy, 2000). Tacit refers to hunches, intuitions and insights (Guth, 1996), it is personal, undocumented, context-sensitive, dynamically created and derived, internalised and experience-based (Duffy, 2000).

Nonaka and Takeuchi in 1995 also explored the idea that as knowledge is dynamic, tacit knowledge, which originates in individuals via personal experiences and which is inherently difficult to express, evolves into explicit knowledge which can be captured, codified and shared, as a result of four knowledge management processes: socialization, combination, internalization and externalization. These processes contribute to the creation of organizational knowledge which they defined as ‘…the capability of a company as a whole to create new knowledge, disseminate it throughout the organization, and embody it in products, services and systems’ (Nonaka and Takeuchi, 1995). This same premise contends that because knowledge is created by people and used by organisations, knowledge exists on two levels: epistemological and ontological. Tacit and explicit knowledge at an epistemological level progresses ontologically from person to team, group to organisation and further.

Knowledge management: ‘Performing the activities involved in discovering, capturing, sharing, and applying knowledge so as to enhance, in a cost-effective fashion, the impact of knowledge on the unit’s goal achievement.’ (Becerra-Fernandez et al., 2004).

Knowledge, both in academic and commercial communities, is recognised as an essential tool for driving competitive advantage, differentiation within the market place, reducing costs, promoting innovation and achieving organisational objectives. Becerra-Fernandez et al. (2004) support this view, suggesting that by effectively creating, collecting, disseminating and applying knowledge organisational objectives are achieved, defining the ability to recognise and manage essential knowledge as knowledge management. Knowledge management therefore is concerned with creating, identifying, recording and disseminating knowledge. Knowledge is complex territory as it is has to be viewed as ‘both a thing and a flow or a process’ (Snowden, 2002). Knowledge exists where people need, create and use it. Although it is important to ‘organise and make important knowledge available whenever and wherever it is needed’ (Becerra-Fernandez et al., 2004), knowledge is difficult to manage as outlined in Snowden’s heuristics: ‘Knowledge can only be volunteered; it cannot be conscripted’, ‘We can always know more than we can tell, and we will always tell more than we can write down’ and ‘We only know what we know when we need to know it’ (Snowden, 2002). In other words, if you ask the right question, at the right time, an answer can be found or uncovered. Becerra-Fernandez et al. (2004) recognize four knowledge management processes: discovery, capture, sharing and application. Discovery, they define as ‘the development of new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge’. Discovery according to published literature can be dissected into two sub-processes, combination and socialization. Combination refers to the idea that individuals, in the course of an activity, by examining data, information or available explicit knowledge, will uncover new facets of a field and is so doing create an opportunity to either build upon their own or develop new tacit understanding. Socialization describes a situation where new tacit and explicit knowledge comes about where individuals collectively, whether formally or informally, develop knowledge within a common space.

Capture, defined by Becerra-Fernandez et al. (2004) as ‘the process of retrieving either explicit or tacit knowledge that resides within people, artifacts, or organizational entities’ is concerned with the methods that can be employed to access knowledge so that it can be recorded. Sharing is ‘the process through which explicit or tacit knowledge is communicated to other individuals’. Application is the means of utilizing knowledge without the actual transfer or exchange of knowledge.

Knowledge is strategic (Williams, 2001), and is embedded in relationships and context. It operates within a context, and is implemented or used by particular people in particular positions and contexts. To paraphrase, knowledge is a synthesis of the how and the why things get done (Williams, 2003). This is the crux of the issue when dealing with knowledge management within a
geographically extended team. In all likelihood there are people within a sphere of influence who have the required knowledge but who are they and how can the knowledge be accessed?

**Forces influencing knowledge management:**

The trend towards market globalisation is providing a new impetus for knowledge-sharing between organisations, teams and team members. The reasons for IT outsourcing are well-documented in academic and commercial literature, include reducing cost, improving performance, and accessing to wider labour markets (Barthélemy, 2001; Di Romualdo and Gurbaxani, 1998). Traditional ways of localised working now share a landscape with the new concept of ‘global virtual teams’ requiring innovative communication and learning capabilities for different team members to effectively work together across cultural, organisational and geographical boundaries (Zakaria, Amelinckx and Wilemon, 2004). As a strategy outsourcing offers many economic and performance advantages but it can also be problematic when two or more organisations come together. Differences in ways of working and communicating, management styles, hierarchical structure and culture necessitate the need to acknowledge and adapt to the challenges presented. Academic literature suggests that communities of practice within organisations are not only a source of competitive advantage by encouraging the sharing and discovery of knowledge but that they can also overcome the differences between organisations by assuming the role of organisational learning facilitators (Brown and Duguid, 1998) cited in Davenport and Prusak, 1998) leading to greater synergies within a multifarious partner environment.

Culture determines ways of doing business, negotiation and attitudes towards authority. Even management styles for example, can tend to the autocratic, patriarchal or meritocratic through long term cultural programming. Organisations with divergent cultures may have difficulty understanding the styles, attitudes and methods of the opposing culture causing friction in working relationships. Nicholson et al. (2000) suggested that cultural training of at least one of the cultures involved is a way to identify differences in culture and work practices affording an awareness that could facilitate harmonisation between the cultures. Geert Hofstede, the renowned Dutch social psychologist and anthropologist and one of the foremost exponents on the study of cultural differences, has said that ‘Culture is the collective programming of the human mind that distinguishes the members of one human group from those of another’ (Hofstede, 1981).

The ability to create and share knowledge is seen as a key factor contributing towards organisational competitiveness (Holsapple and Joshi (2002) cited in Garcia-Perez and Ayres, 2009) in an increasingly competitive global market place and dynamic labour market. An example of this organisational approach to knowledge and resource management is ITIL, the public framework that describes best practice in IT service management for the governance of IT, the ‘service wrap’, and focuses on the continual measurement and improvement of the quality of IT service delivered from both a business and a customer perspective. Another example in software development the Capability Maturity Model, (CMM), which, after consolidating a number of CMM models evolved into Capability Maturity Model Integration (CMMI), is a model used by organisations to harness and exploit their intellectual capital. The model, devised by the Software Engineering Institute (SEI) at Carnegie Mellon University originated from the US government need to address projects that were late, over budget and which failed to meet project objectives (Glazer et al., 2008). With process management as the core ideology, CMMI provides a five level process maturity continuum for defining and assessing the predictability, effectiveness and control of organisational processes, outlining the process objectives which, if followed will allow an organisation to progress to the higher continuum levels. These process areas contain a set of paradigms common to many software development and project management methodologies: clearly defined goals, measurement, validation and verification. However, unlike those other methodologies CMMI takes a holistic, long term strategic view drawing on learning from all aspects of organisational activity to inform and drive improvements for both people and processes but there is a balance to be struck between ascending the continuum and remaining sufficiently grounded in business and project objectives as well as flexible enough to benefit and motivate projects, individuals and teams or to recognise and take advantage of opportunities to improved product quality and productivity over the long term (Glazer et al.,...
In the age of outsourcing and globalisation, reliable and obtainable technology plays an important role whether as a tool or as a means of communication and can be integrated anywhere (Mårtensson, 2000). Zakaria, Amelinckx and Wilemon (2004) argue that technology alone is not enough to promote effective knowledge management and sharing. They argue that global virtual teams require trust and positive team dynamics in order to create an environment conducive to knowledge sharing. Huber (2001), King et al. (2002) and Davis (1981) expand and develop this idea further in their belief that motivation is also a key factor in determining whether individuals are willing to share what they know. Davis (1981) suggests that communication problems and psychological limitations such as human bias in selecting and using data, or human behaviour in problem-solving situations also impede knowledge management. Another impediment observed by Ostro (1997) is that individuals do not believe they have anything of value to share.

Language and cultural differences create obstacles too (Koudsi, 2000), particularly where the cultural, often corporate, tendency is to view retaining knowledge as preferable to sharing (Warren, 1999; Anthes, 1998; Cole-Gomolski, 1997).

The management and use of tacit knowledge is a focal tenet of Agile methodologies and is at the core knowledge management processes: discovery, sharing, capture and application. Within an Agile activity tacit knowledge is accessed in the close relationships that exist between developers, team members and customers calling for a high level of trust that comes from working closely on an activity to which all parties have a vested interest in the outcome. A project can benefit in the immediacy of the exchange between team members who are all stakeholders, however, the sharing of tacit knowledge and discovery of new knowledge can be lost if not consciously captured. Hillier et al. (2008) counter this argument stating that Agile mitigates against the loss of knowledge by virtue of the typically short project duration, circulating current knowledge within the project team. They also argue that if following Agile principles software development projects will provide documentation in the actual developed code itself, that it is written to be self explanatory, saving time normally spent on producing documents associated with project management or generated during the software or product delivery life cycle. These arguments may be true but it can equally be argued that the tacit knowledge built over the course of a project remains in the minds of the project team and provides little in the way of explicit knowledge for anyone making use of or maintaining the product once the project ends.

Research methodology

Case study - the Application Maintenance Support Team in context: The research subject for the study was the knowledge management infrastructure within an e-commerce systems maintenance IT support unit for a large UK retailer. The retailer is a very experienced consumer of outsourced IS services having begun the process of outsourcing development and maintenance of their business systems over ten years ago. The current service provider took over the e-commerce systems maintenance contract nearly three years ago and is a large, well known Indian outsource services provider with a large number of clients based all over the world in a wide range of industries. The services provider is accredited to CMMI level 5 in software development and service delivery and according to published literature has a complex structure based on two strategic concepts: industry and technology. It can combine those concepts to provide a support service specific to each client, by aligning to both the industry, business function, and the technology, business application.

For management purposes the retail organisation is divided into separate organisation functions: core business, business support and IT, which in turn consist of a number of core and peripheral business units which may be present in other functions. IT is responsible and accountable for providing IS services, the IT infrastructure and all IT systems used by the different business functions who are also referred to as customers. As well as providing overarching service to the retail business as a whole, the IT function is subdivided into smaller units that are aligned to individual business units.

Figure 1 shows the functional relationships within the retail organisation and those between the IT function and the service provider.
Figure 1. Client and Service Provider Organisational Structure
The applications include a website, website content applications and customer order, customer delivery, customer services and customer order delivery management systems. There is a high level of dependency between the teams as the applications together cover the start, middle and end of the e-commerce business processes and are connected by system interfaces. The applications are operated on a number of technical platforms from mainframe to distributed systems hosted by hardware service providers. The support teams vary in size according to either the complexity of the application or the level of demand for an application’s business functions.

The flow of data through the applications can be broadly categorised into three types. The first is common to the client organisation as a whole and is known as reference data. The second type is specific to the e-commerce business unit and is used to some extent by all of the e-commerce applications. The third type is data specifically created and stored in an application which may or may not be derived from the other data types. The data is the system representation of an intricate set of business rules that define the client organisation, the e-commerce business, UK tax and distance selling regulations and the service offered to customers. Because of this the support teams are simultaneously independent and interdependent using the same core business rules to operate. The team feature that made it of special interest to the study was the fact the teams are split across geographic locations: half of a team in India and other half in the UK.

Research method: A case study approach (using semi-structured interviews) was used as a research strategy to generate empirical, qualitative data to examine the environment. The resulting data was analysed from an interpretivist viewpoint looking for psychological understanding rather than explanation. These methods and paradigms are fairly typical in European IT outsourcing research (Dwivedi and Kuljis, 2008) and in keeping with their practice only one client and service provider organisation was included in the study with six participants sampled.

The study looks at the importance and behaviour of people in team knowledge management and attempts to find a balance between the interpretation of measured data (considered by some qualitative advocates to be less significant) and the direct interpretation of events.

Use of grounded theory: The idea behind the grounded theory approach as introduced by Glaser and Strauss (1967) cited in Moghaddam (2006) was the appeal of studying available phenomena to arrive at a theory rather than starting with a theory and using study data to prove or disprove the theory. Academic literature already possesses a wealth of information about knowledge management in differing circumstances but few if any examine it from the social aspect in the way proposed by this study. In keeping with grounded theory practice outlined by Strauss and Corbin (1990) cited in Moghaddam (2006) the constant comparative analysis is used as a discovery process to interpret data and derive the key themes or concepts.

Research theoretical sensitivity in grounded theory: The research was carried out by a female researcher educated in the UK, France and Canada, with a background in retail and finance business systems, software development and maintenance and management experience of mainframe and distributed maintenance teams. In terms of organisation experience, the researcher has worked for a small privately owned UK based software consultancy, an Australian insurance conglomerate and the Indian service provider in the study. This career history affords an understanding of the IT industry and both the personal and professional relationships within the sample group and indicates a level of trust between the researcher and the sample group as evidenced by the group’s willingness to participate in the study and to share personal opinions. The researcher’s closeness to the setting has meant that potential issues with language comprehension (none of the group are native English speakers) could be mitigated as the group felt comfortable asking for clarification during the interviews or when completing the questionnaire thereby reducing but not necessarily misinterpreting questions or adversely affecting the richness of the data.

Grounded theory recommends collection and analysis simultaneously but for practical and time considerations the interviews were done before the analysis phase started.

Approach: Framework for Team Knowledge Management: The Framework For Team Knowledge Management (Eppler and Sukowski, 2000), following an ‘interaction’ approach
(Håkansson (1982) cited in Kern and Willcocks, 2002) was taken as the mechanism through which the knowledge management resources, support teams and their environment could be observed. The approach provides a format for the analysis of the structure of and functions within the organisation, the partnerships and relationships between organisations and their knowledge areas.

The framework for team Knowledge Management is shown in figure 2.

Figure 2. Eppler and Sukowski’s Conceptual Framework For Team Knowledge Management (Source: Eppler and Sukowski, 2000, p.335).
Research data: The primary, empirical and qualitative data used in the study came from a variety of sources: semi-structured interviews, semi-structured questionnaires, company documentation and reports available within the organisations and from the public domain. To assure consistency and validity of the process and data collected a journal was kept throughout the investigation and all data captured and stored electronically. All interviews were transcribed and catalogued. Interviews were directed towards the technical and managerial functional elements in the e-commerce maintenance unit and were carried out in two phases: pilot and main study.

Questionnaire design: Before constructing the questionnaire the two organisations in the study were examined by way of the Framework for Team Knowledge Management. Information was sourced directly from the company databases, information repositories and information sources in the public domain, such as news outlets and company websites. With this background information it was decided to structure the questionnaire around the framework layers and in so doing provide a basis of comparison between the information uncovered in the background research with the information gathered from the interviewees.

The questions were constructed in an attempt to open up an avenue of conversation around the aspects of the research so the questionnaire was used as a compass rather than a rigid checklist covering the important topics. The early versions of the questionnaire included both questions and an assessment scale so that the respondents could add emphasis to their replies. The questionnaire included a section for obtaining limited personal and professional information about the participant called the participant profile data capture sheet and questionnaire.

Data validity: pilot interview: To ensure the validity of the research methodology the questionnaire was trialled before introducing it to the sample group. The purpose of the pilot phase was to test the appropriateness of the targeted topics and interview questions. Due to the inexperience of the researcher a pilot trial was used as a technique for validating the research approach, following the example set by Kern and Willcocks (2002) in their study of outsource relationships. This was not entirely necessary as there are examples of research that do not include trials but it gave an opportunity to identify and correct flaws in the approach early in the study. As researcher tools, a voice recorder, laptop, notepad and pen were brought into the pilot interview session to experiment with methods of capturing the interview. For expediency it was later decided to digitally record the sessions.

The pilot interview used both the questionnaire to frame the key areas of interest and the assessment scale. After the control it was decided to exclude the assessment scale as it interrupted the conversational flow of the interview and was too cumbersome. The pilot prompted the addition and expansion of two areas of interest: software maintenance and culture as these were of particular importance to the pilot interviewee.

Data collection: The inclusion of the offshore and onsite team members was necessary for a reasonable representation of team perspectives and richness of data, however the offshore team could not be interviewed directly in the manner of the onsite participants. Gaining access to the participants based in India presented challenges in terms of the time difference and the options for recording the interviews. Conducting interviews via the office telephony system meant high quality recordings were not possible so it was decided to email the participant profile data capture sheet and questionnaire to the participants to fill out and return. There was a risk that participants might not complete the questionnaires independently but the risk was considered acceptable.

The semi-structured nature of the questionnaire allowed a degree of topic latitude in the face to face interviews so that interviewee responses and ideas could be explored more deeply, responses clearly understood by the interviewer and to potentially develop new areas for consideration in future research. This latitude was not possible with the questionnaires completed by the participants in India. All interviews were digitally recorded and transcribed to capture the conversational interaction as only a broad transcription was necessary. Overall recording quality was high, due to the isolation of the interview location. However, there was some difficulty accurately transcribing some conversations due to interviewee accents and level of oral language sophistication.
**Research sample group:** The unit of analysis was the technical support teams responsible for the operational support and maintenance of key e-commerce business applications for a large UK based retailer with global and UK domestic commercial interests. The e-commerce support teams vary in size with between 2 and 15 team members based in two locations: India and the UK. The sample group was made up of six team members, ages ranging from early twenties to late thirties, selected from teams supporting four of the six applications in the e-commerce maintenance unit. All of the participants are university graduates, five hold bachelors’ degrees in IT related subjects and one has a masters degree in IT. All participants have received technical training but none have pursued recognised professional technical certification.

**Data analysis process**

**Open coding of transcripts and questionnaires for general themes:** The transcriptions and completed questionnaires were read and reviewed several times in preparation for the three stage grounded theory coding steps. The identification of key threads from the participants’ responses was the first stage of the iterative analysis process. The responses were reviewed separately to identify phrases or words that encapsulated separate units of meaning (Goulding (1999) cited in Moghaddam, 2006) and were recorded alongside key words or statements. Notes made either during the interviews or upon reviewing transcripts were also referred to at this stage. To make the data manageable the threads were initially organised by sections according to the original question area but new sections were added following another review to identify observable facts (Spiggle (1994) cited in Moghaddam, 2006).

The next stage was to pool and compare the responses, identify labels that allowed discrete categories to emerge (Babchuk (1997), Brown, Stevenson, Troiano and Schneider (2002) cited in Moghaddam, 2006), whilst maintaining a connection to the actual participant responses (Babchuk, 1997). By then comparing the categories (Creswell, 2002; Glaser and Strauss,1967) new categories and sub categories emerged totalling eleven categories in all. This was deemed sufficient and the study diverged from standard grounded theory practice of continuing to the point of theoretical saturation.

**Axial coding: finding relationships between the themes:** The second coding phase, axial coding, sought to establish relationships between concepts to which a ‘gestaltian’ hierarchical system of categories and subcategories could be introduced (Goulding, 1999) where the categories represent the core topics and the subcategories the observed variances or attributes within that topic (Strauss and Corbin, 1990).

**Selective/hierarchical coding:** This final coding phase dealt with the theories alluded to in the axial coding results, taking the core or central categories as the foundation and using the subcategories to explore the emerging and often divergent theories. These theories were reinforced with participant responses.

The central categories were chosen according to the criteria defined by Strauss and Corbin (1998):

- It must be central; that is, all other major categories can be related to it
- It must appear frequently in the data. This means that within all or almost all cases, there are indicators pointing to that concept
- The explanation that evolves by relating the categories is logical and consistent. There is no forcing of data
- The name or phrase used to describe the central category is logical and consistent. The concept is refined analytically through the integration with other concepts, the theory grows in depth and explanatory power
- The concept is able to explain variation as well as the main point made by the data; that is, when conditions vary, the explanations still hold, although the way in which a phenomenon is expressed might look somewhat different. One also should be able to explain contradictory or alternative cases in terms of that central idea (p.147).
Results and discussion

In order to manage the data through the coding phase the data was entered into a spreadsheet with the column headings used to describe the source and level of abstraction. Through the analysis it was clear that some responses pointed in a different direction to the specific framework topic whereas others veered completely off topic and were not actually related to the original topic. These responses were recorded against the originating section but were tagged for later review. The information contained in the responses was valuable and so new themes or categories were added to the structure as appropriate. However, processing the data threw up many questions such as did a subcategory become a category if it appeared multiple times? The answer to this question depended on whether the interview responses that generated the subcategory reflected opposing views in which case both subcategories were retained and distinguished with a new marker indicating a positive or negative perspective using the symbols ‘+’ and ‘-’ respectively. If the responses reinforce the same view a single subcategory was kept but marked with a double symbol depending on the interviewees positive or negative perspective. In some instances the concept, category and subcategory did not present either a positive or negative viewpoint, rather they contributed to the overall impression of the support environment.

Figure 3: Themes and Category Associations Sample

<table>
<thead>
<tr>
<th>Theme/Category</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>84</td>
</tr>
<tr>
<td>Expertise</td>
<td>4</td>
</tr>
<tr>
<td>Use of knowledge</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>6</td>
</tr>
<tr>
<td>Motivation for sharing</td>
<td>5</td>
</tr>
<tr>
<td>Knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge Acquisition</td>
<td>42</td>
</tr>
<tr>
<td>Knowledge Capture</td>
<td>2</td>
</tr>
<tr>
<td>Knowledge Discovery</td>
<td>5</td>
</tr>
<tr>
<td>Knowledge Sharing Barriers overcome</td>
<td>2</td>
</tr>
<tr>
<td>Overall knowledge management</td>
<td>12</td>
</tr>
<tr>
<td>Reason for sharing</td>
<td>1</td>
</tr>
<tr>
<td>Processes</td>
<td>60</td>
</tr>
<tr>
<td>Motivation</td>
<td>1</td>
</tr>
<tr>
<td>People</td>
<td>1</td>
</tr>
<tr>
<td>Process</td>
<td>58</td>
</tr>
<tr>
<td>Software maintenance team requirements</td>
<td>57</td>
</tr>
<tr>
<td>Barriers</td>
<td>1</td>
</tr>
<tr>
<td>Expertise</td>
<td>2</td>
</tr>
<tr>
<td>Job role motivation</td>
<td>1</td>
</tr>
<tr>
<td>Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Karen Brome
<table>
<thead>
<tr>
<th>Theme/Category</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>6</td>
</tr>
<tr>
<td>Norms - culture</td>
<td>11</td>
</tr>
<tr>
<td>People</td>
<td>19</td>
</tr>
<tr>
<td>Process</td>
<td>6</td>
</tr>
<tr>
<td>Time</td>
<td>4</td>
</tr>
<tr>
<td>Time barriers</td>
<td>1</td>
</tr>
<tr>
<td>Tools</td>
<td>1</td>
</tr>
<tr>
<td>Tools and Technology</td>
<td>2</td>
</tr>
<tr>
<td><strong>Leadership</strong></td>
<td><strong>26</strong></td>
</tr>
<tr>
<td>Leadership</td>
<td>12</td>
</tr>
<tr>
<td>Motivation</td>
<td>1</td>
</tr>
<tr>
<td>Norms - culture</td>
<td>4</td>
</tr>
<tr>
<td>Norms - expectations</td>
<td>2</td>
</tr>
<tr>
<td>Role</td>
<td>7</td>
</tr>
<tr>
<td><strong>Platforms - Virtual/real space</strong></td>
<td><strong>26</strong></td>
</tr>
<tr>
<td>Real space</td>
<td>7</td>
</tr>
<tr>
<td>Tools</td>
<td>1</td>
</tr>
<tr>
<td>Tools and Technology</td>
<td>4</td>
</tr>
<tr>
<td>Virtual space</td>
<td>14</td>
</tr>
<tr>
<td><strong>Knowledge Management</strong></td>
<td><strong>24</strong></td>
</tr>
<tr>
<td>Barriers to Knowledge Sharing caused by</td>
<td>21</td>
</tr>
<tr>
<td>Evidence of Barriers to Knowledge Sharing</td>
<td>3</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td><strong>18</strong></td>
</tr>
<tr>
<td>People</td>
<td>1</td>
</tr>
<tr>
<td>Process</td>
<td>3</td>
</tr>
<tr>
<td>Tools</td>
<td>6</td>
</tr>
<tr>
<td>Tools and Technology</td>
<td>8</td>
</tr>
<tr>
<td><strong>Culture</strong></td>
<td><strong>15</strong></td>
</tr>
<tr>
<td>Norms - culture</td>
<td>10</td>
</tr>
<tr>
<td>People</td>
<td>5</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>310</strong></td>
</tr>
</tbody>
</table>
Proposition 1: Communication is the core of almost all support activity but whether the communications tools are as effective as they could be is debatable.

Knowledge: As the topic recurring most frequently amongst the sample group it is clear that knowledge is a significant concept for the group and one can assume the teams as a whole. Knowledge acquisition, discovery, capture and application, as well as how knowledge is used were all discussed during the interviews.

How knowledge is used:

- From their management, team leads, portfolio managers
- By talking with the business community
- In the course of support activities to get the required outcome, to support other team members, satisfy client needs
- The team leads and portfolio managers use knowledge to motivate and engage the teams in their roles. This is in order to reduce the turnover of staff which would affect team productivity
- Data held within monitoring and support tools is used to plan and resource team activities as the planners have knowledge about what events are coming up and what is support is needed.
- As the subject matter for training team members
- By team members in the execution of their support duties.

How the teams source knowledge:

The interviews present a number of ways by which the participants come to possess knowledge. These include:

- Technical and business domain training which can be self study, formal courses, from Subject Matter Experts (SMEs) or other team members according to individual learning preferences
- Documentation, either created by other team members or external sources like the internet
- Sessions with members of their own immediate or wider teams. This includes the SMEs
- Using the informal or formal communities of practice within the client and server provider organisations
- Via knowledge exchange sessions with the client
- Structured knowledge transfer sessions, particularly for new team members
- Reviewing old incident records on the incident support tool
- Reviewing notes and emails created or saved by other team members in the knowledge repositories
- By resolving issues and finding new ways to view a subject
- The interviews suggest the teams recognise the value add offered by the SMEs making use of them whenever possible
- They also recognise that the deep knowledge they possess is accumulated over time.

Knowledge management: Through their responses the participants have demonstrated that the client and service both have a fairly comprehensive knowledge management strategy, although the team exhibit varying degrees of engagement with it. One or two of the responses suggest that some team members are not involved in any knowledge capturing activities for example although no reason for this was given.

Proposition 2: Documenting and communicating the purpose of processes for better understanding across the support teams which could improve the process performance.

Processes: From the data it was clear that the team members interviewed were subject to a high number of processes. 83% of the processes mentioned were specific to the support area, 10% were processes more typically found in software development projects and 6% referred to knowledge acquisition processes. Only two process types were recognised in the interviews: Knowledge Acquisition and Organisational processes, and some of the team described processes as being both important and useful. Important because they are part of the support team’s responsibilities and team members needed to be aware of them in order to perform their role. The processes were also described by one participant as time consuming. This individual added he did not know what the processes, specifically the organisational processes, were for. He had not been given any information
about the tool and thought they might be a marketing tool to the company. Another participant noted that some but not all of the organisational processes such as the handing over of an incident to a different support team were not documented and felt that doing so might be a good idea.

When it came to the subject of processes the responses indicated a wide acceptance of a number of processes applicable to the support environment. Regular service reporting, structured client communication, problem escalation and handover were a few of those specifically named suggesting that there is high visibility of the range of processes that exist. However the response indicated that some of the processes were not consistently applied across all teams such as application or domain specific business awareness training for new team members. It was also noted that some but not all of the processes were documented.

It was felt that the processes helped the participants feel part of a team, especially for the offshore team members who felt included in the operation, gaining familiarity with the issues onsite. The regular team meetings used to review current problems and to impart news both social and work related, helped the individuals see themselves as part of something. It also helped build the confidence of individuals in their capabilities as they could see a positive response to their contributions in meetings and acknowledgement at team level at least of their work for the team.

In terms of knowledge, the participants made reference to a number of knowledge acquisition processes such as training from the subject matter experts (SMEs) or the documentation created by team members and shared with their colleagues. Some team members felt that more could be done to publicise and recognise efforts to contribute to the enhancement of team knowledge, particularly for new recruits.

Software maintenance team requirements:
The interviews suggested that the team dynamic is strong. Members are aware of their own roles and responsibilities to the team and to each other. This was determined from the reference to team work and creating tools or documentation for team mates, the fact that they are able to approach anyone either within their immediate team or extended teams.

In terms of the support role, the interviews outlined some of the activities team member are expected to perform and the behaviour protocols they should adhere to. The role itself requires team members to carry out or participate in the investigation of and resolution of as many problems as possible.

The interviews also indicated some the attributes and attitudes a support team member needs to have to be successful as outlined by these quotes from interviewees:

“*The ability to learn, grasp quickly and communicate*”

“*to absorb information and internalise it for future use*”

“*Acquire knowledge or understanding of issues*”

“*Acquire knowledge about the application, technology and business*”

“*They should have correct approach in problem solving in a very short span of time*”

“*Team working*”

“*[Communicate] - Interact with users*”

“*…establishing relationships*”

“*[be..] curious about knowing the root cause […] rather than] just fixing it*”

Software skills were also mentioned but not excessively, in fact only one team member made direct reference to it at all.

Communication is a very important component within the team. Amongst team members it helps to find solutions to problems, exchange and share information and knowledge, find new solutions to existing issues and keep team members up to date with events and activities. It was also suggested by their awareness and interest in each others previous work experiences and skills although this was not true across all participants. For some roles, such as the business co-ordinators, communication is a part of building close relationships with the client and gathering information about a problem.

As far as learning about teammate experiences and skills is concerned some felt they had nothing personally to gain from it. The interest in understanding what their teammates are...
and skills, keeping up to date with issues with the group or as a means of resource management. The former was relevant where participants were keen to improve their technical skills or business knowledge, however, although the intention was expressed the team indicated that they did not always have enough time for training: themselves or others. The latter, monitoring the current team activities, served several purposes for the more senior team members: to ensure rotation of tasks amongst the team to maintain their enthusiasm, to ensure they were trained on and had received practical experience of as many aspects of the role as possible to mitigate the loss of knowledge should a team member leave and to also ensure the work was done correctly and on time.

From the interviews it seems teams are motivated and keen on performing well, and participating in team activities. They are well informed about their role and understand what is expected of them but there is a constant need for more information and the main source for this appears to be other team members. Whilst this is perfectly acceptable it does raise the question whether the teams have sufficient or adequate means to communicate. Certainly from observing the teams and the secondary data source from initial environment investigation it seems the only mode of communication is the telephone. From the observations and the interviews it was not possible to know what the information was or to gauge whether the requested information was ever received or whether once received it was captured in any way.

Proposition 3: Although the support teams seem to be well versed in what is expected of them the leadership influence is not consistent. The management might consider ways to communicate the same messages to the whole team proactively rather than on an intermittent one to one basis.

Leadership: The role of leadership, in the form of team leads, team managers and section service department manager, both onsite and offshore is to define the objectives, goals and for the organisation and the support teams and, in theory, these are filtered to the team member top down through the organisation via email communications, newsletters and company forums. For the onsite/offshore model the high level messages are the same but one interviewee commented that the difference in type of work and pressures are not the same in the two locations. Leadership plays a part in the objectives for the teams and the activities they are responsible for.

Proposition 4: Invest in better quality, more reliable telecommunications and video conferencing technology so that it can be used to overcome the issues caused by teams working in distant locations.

The preliminary research in the early stages of the study showed the teams have access to a wide range of both virtual and ‘real’ facilities including web conferencing and videoconferencing technology and a sophisticated telephone system supporting international calls using abbreviated telephone numbers or ‘short dials’, wireless networks and private LANs as well as a wide range of software and computer hardware. However little of this featured in the responses. In fact video conferencing was only acknowledged when introduced into the conversation by the researcher. In terms of available platforms the telephone, internet and email were commonly the only concessions made as means of communication and information gathering. The interpretation of platform tended towards the technology upon which the business systems were built and hosted.

When analysing the theme Platforms - Virtual/real space four broad areas were mentioned: virtual spaces, real spaces, Tools, Tools & Technology and Process. The virtual space featured prominently in responses both as a barrier and an enabler to team activities. The responses suggest the participants feel there are pros and cons to virtual spaces depending on what they are to be used for. As a team building exercise, for communicating with the offshore team the video conference facilities were thought to be a good idea because it enabled the team to share experiences of the challenges facing the onsite and offshore halves of the team. At the same time it was felt that for training purposes, for example, video conferencing was not appropriate as too much personal contact was lost. The optimum situation for training, according to one participant, is face to face because it allows the exchange of core information, the really important low level, very granular information at a pace to suit the expert and the recipient. The following comments were made in relation to using video conferencing for training:
“… video conference and working on internet, it doesn’t really do the job.”

“… person can’t hear you properly or because I think face to face, the face expressions, the whole body language is a huge part of the conversation. Sharing - face to face, more of an impact and it is easier to explain things to people face to face rather than phone or email.”

One of the downsides of the onsite/offshore model mentioned in an interview is that is it difficult to convey the different pressures faced by the team to their counterparts in another location. This is particularly relevant if one side is depending on the other for a specific reason. The pressures offshore many come from the company and presumably workload whereas as the onsite teams face a different type of workload as well as demands from the client. The comment was made however that with the virtual technology it is possible for the teams to share information to a certain extent, such as documents in shared locations, tools accessible remotely or communicating by email so there is a level of visibility and means of communication across locations.

Proposition 5: Awareness and acceptance of support processes is not widespread. Documenting and communicating the purpose of processes for better understanding across the support teams could improve the process performance.

Another downside of the model is the lack of person to person contact, which one participant actively did not like as he prefers, for at least some of the time, to work in the same location as his teams in order to establish relationships with them. Working in the same location need not be permanent but in the situation where he is training a new recruit on a complex application the distance affects the quality of communication and therefore the level of detail passed on during the training.

An advantage of onsite working mentioned in the interviews is that there is a much closer relationship with the client. The role of business co-ordinator is an example of this. It does however increase the need for the co-ordinator to pass on any information they obtain to ensure the offshore team are kept up to date with issues and events but this is not always practicable.

Overall, the consensus appears to be that the virtual space has its place within the team although it does bring its own challenges with it. The suggestion was made that these challenges could be mitigated if more advanced tools were made available. The interviews specifically articulated improvements where if existing technology such as web conference tools were made available to the individual in their workspace they could communicate on a one to one basis more effectively. Increased capacity for video conferencing and remote working was suggested as a possible improvement to communications between offshore and onsite teams as well as accessing shared tools or repositories.

The teams have access to a range of software tools provided by both Client and Supplier organisations to use in the execution of their role such as those used for system alerting and monitoring, problem and change management, document repositories like Sharepoint and software development.

The team drew a distinction between job required for their role and those required by the organisations citing timesheet application as an example. However there were differing views as to the usefulness and quality of the organisational tools. In some situations the team felt the tools took up a lot of their time for no obvious reason. Equally some felt there was not enough clear information about what the tools were for or were cumbersome to use. The sentiments echo those found when assessing the platform topic.

Opinions were also divided in terms of the tools the team used in their role. Some tools were inherited from development teams and so were not specific to support. This was not considered a major issue as the team often designed and built tools that were specific to a support requirement.

From team comments it appears that they do not always have access to tools appropriate to their job and suggested tools they had worked with previously. This was particularly true for one participant working on a mainframe application who cited code version control tools as a desirable addition to the toolset. Another comment was that they resorted to the internet when they needed help on various issues. Comments from the participants also indicate that the availability of or the understanding of what the tools are for is not
consistent across teams. Whether this is due to poor communication about the tools or is the responsibility of the team member is not clear as the participants worked on different applications using different technologies and toolsets.

‘for example, information about certificates, there is nothing internally.’

In a similar vein, another participant pointed out that if more members of the team were to contribute more information to the knowledge management tools, the centrally held knowledge repository for example it would provide a richer source of information for the team as a whole creating the option for the team to help themselves rather that seek the information from a colleague.

**Proposition 6: Culture does not impede the support operation at team level however there may be a need to revisit the client/service provider relationship at management level to review the impact of the working relationship.**

The results themselves suggest that of the areas mentioned three broad types of culture are apparent: national, referring to beliefs and behaviours commonly found within country boundaries; occupational, referring to the norms of the job and organisational, referring to the behaviours the client and service provider organisations expect from the support teams.

The interview responses offered evidence of occupational behaviour by referring to the presence of communities of practice, a sharing culture where there is a propensity for team members to share information, clear understanding of what is and is not acceptable in the workplace. One interviewee also defined what culture means to them:

‘people culture - good attitude, punctual and recognition’.

This is a literal quote taken from the questionnaire completed by an offshore participant.

The expected gender differences common to Indian culture were not thought to be an issue for the team: there was no perceived difference between male and female team members, however one participant noted national differences affecting both team and management behaviour in the reluctance to challenge the client or internal management on certain matters. Whether this is a display of strictly national culture as opposed to inequalities of the clientupplier relationship the participant could not be sure. The only other reference to cultural difference at national level was a situation where a participant was introduced to the concept of a ‘partner’. A colleague was living and had children with his partner but they were not married. This surprised him as it was not something he has come across before.

Organisational culture was recognised as the practices the participants felt their company encouraged, namely that knowledge should be shared and that because of this team knowledge management as well as the structure of the company itself is evidence of an organisational culture keen to promote knowledge management.

**Conclusion**

The use of a control interview for both information gathering and familiarisation with the interviewing procedures, following the example of more experienced academic research work was a productive way to address the researcher’s lack of experience as a qualitative field researcher. The overall interviewing and research experience meant that some of the challenges of the interviewing, transcribing and coding processes can be avoided in future such as leaving more quiet time between questions for the interviewee to think and respond, or using transcription software to reduce the time to generate the scripts. This was investigated during the study but time did not permit it adoption.

Due to the small scale of the study and the relatively narrow window for its execution there was no opportunity to extend the sample group to other support teams, the client teams or the management. The results from such an experiment may be very different particularly as regards the influence of cultural differences.

The framework used in the study proved to be useful in the assessment of the knowledge management capability for the maintenance teams as was found to be the case in the research by Eppler and Sukowski.
(2000). However the study has concluded that the concerns raised by Garcia-Perez and Ayres (2009) about the impact of poor communication were not mirrored in the study. This may be an influence of the collectivist trait (Hofstede, 1981) of the sample group who are from either India or Pakistan. Further research into this could be interesting.

The study also concurs with Zakaria, Amelinckx and Wilemon (2004) in the sense that the available technology cannot be credited with the knowledge management and sharing observed in the study. It can be said that the study confirms it requires trust and positive team dynamics to create an effective knowledge sharing environment. Other areas that were not developed in the study were the more technical aspects of the maintenance function and the different maintenance types as elucidated by Sneed and Brössler (2003). Future research could expand the use of the framework to incorporate the client perspective which could be insightful when assessing for example critical success factors from the client viewpoint. Or perhaps the extent to which the framework supports the success criteria for software maintenance.
References


INSTRUCTIONS FOR CONTRIBUTORS TO VISTAS:
Education, Economy and Community: The University of West London Journal

Brief Guidelines for Submitting Papers

Policy and Editorial Objectives
These are given in VISTAS Background for Authors.

If you would like to submit a contribution
Intending contributors are encouraged to make contact with the managing editors by email in the first instance (stephen.roberts@uwl.ac.uk and tony.olden@uwl.ac.uk). Other UWL correspondence can be sent to the managing editors at TC346 at St Mary’s Road campus or via the INSPIRE Office.

Unsolicited submissions are accepted. The managing editors also solicit and commission manuscripts to meet particular requirements.

Website
Information and background documents can be obtained from this website: www.uwl.ac.uk/vistas

Preparing a paper and submitting a manuscript

Normally, submitted papers will be from 4000 to 8000 words in length not including the abstract but including the bibliography of sources cited. Papers do not carry footnotes and any supplementary notes should be limited and added to the end of the paper.

Papers are to be submitted as a Word document and should be emailed to the managing editors for initial review and for final submission, after acknowledgment and any subsequent advice and revisions.

Submissions should be prepared in Arial typeface (12pt.) for main text with 14pt. for headings. One and a half line spacing should be used.

The paper should be given a provisional title, followed by author(s) name(s) and affiliations, including an email address.

The abstract should follow the heading (between 100 and 150 words). Keywords should be provided.

Papers should employ some clear structuring to indicate the evolution of the narrative and to highlight any special content or context. Sections should be numbered at the first level only. Within sections a non-numbered subheading may be used. A background / introductory section can be followed by a suitable structure. In an academic / research paper conventional structuring can be used (literature review, methodology/method, results and findings, evaluation and discussion, followed by concluding comments and any practical reflection or recommendations).

The main idea is to provide a clean, well structured and easily intelligible text. Papers will be submitted in English.

References cited in the text should be in the Harvard (author/date) format and given a full bibliographical reference.
A referencing style sheet is available. The authors submitted paper will be reviewed and refereed as required by the managing editors (and may involve members of the editorial board or external sources at editors discretion).

The managing editors will have access to an editorial assistant who will be responsible for text editing for publication.

Authors should be prepared to follow the time schedule indicated by the managing editors and the editorial assistant if employed to handle any detailed editing of their paper.

Copyright and conditions of acceptance

Papers submitted will be original material which has not been accepted for publication or published elsewhere. Authors themselves must ensure that they obtain copyright clearance for any material which they cite or quote above the conventionally limited amount or context.

On completion of the editorial process, authors will sign an approved standard form which passes published copyright to UWL in accordance with its institutional norms and procedures. Authors conventional moral rights are respected, but in the case of further published dissemination authors are requested to inform the editors of their intentions.

Open access principles generally apply with conventional acknowledgment and citation made.

Authors will not receive any fee for use in the event of publication and authors will meet any incidental costs of producing their submission from their own resources.

Authors will receive a PDF version of the paper after publication.

Referencing and house style

A referencing style sheet is available.

Dr Stephen A. Roberts and Dr Tony Olden
Managing Editors
CONTRIBUTORS TO THE ISSUE

Caroline Lafarge is a Research Assistant and PhD student in the School of Psychology, Social Work and Human Sciences at UWL. Her research interests include maternal and reproductive health. As part of her PhD Caroline is currently conducting research into women’s coping processes when terminating a pregnancy for fetal abnormality.

Dr Pauline Fox is a Chartered Psychologist based in the School of Psychology, Social Work and Human Sciences at UWL. Her research areas are health psychology, school-based socio-emotional interventions, and employability in psychology.

Marc Forster is a member of the UWL Library Service and works as an Academic Support Librarian at Paragon House Library. He is currently studying for a PhD at UWL on the theme of information literacy and nursing practice.

James Wilkinson was a Senior Lecturer at UWL until 2011 and then joined the King’s Learning Institute, at King’s College London. His research interests focus on student skill development and competences as a preparation for education, business and careers. Awarded a National Teaching Fellowship in 2010, he is currently co-authoring Developing Employability, a textbook for undergraduates to be published in 2013 by Oxford University Press.

Carlotta Olason is currently undertaking a Doctorate in Health Psychology at City University, London. She completed her Masters in Health Psychology at UWL and currently works for the Sickle Cell Society UK.

Mathieu Poitevin obtained a Bachelor’s degree (first class) in Travel and Tourism Management from UWL in 2012. His research and professional concerns focus mainly on tourism marketing, place branding and the realisation of creative and innovative projects for city decision makers.

Andrew Pennington is a Senior Lecturer and course leader at UWL in the London School of Tourism and Hospitality. He is currently completing a PhD at UWL on the impact of ready meals on the ethnic restaurant industry in the UK. In 2013 he will be moving to HELP University in Malaysia to continue his academic career.

Camille Chamard is Senior Lecturer at the University of Pau (France), and a member of the French Marketing Association. He received a doctorate degree in Marketing from the University of Paris 1, Pantheon-Sorbonne. His research interests cover promotional strategy, territorial marketing and brand images of territories, cities, and countries. In 2008, he founded the Observatoire de l’image des territoires (ODIT) http://imagesdesterritoires.univ-pau.fr

Veronique Seel is the Managing Director of the company Expériences Touristiques. This is an innovative French company working creatively on areas relating to tourism. The company collaborates with specialists, artists, and researchers as well as sampling and surveying the public. Its work explores the relationships between residents and tourists, uses of technology, and memories of experience.

Dr Miriam Palacios-Callender worked as a senior research scientist in Cuba, then after 1988 with the Wellcome Laboratories, and from 1996 at the Wolfson Institute for Biomedical Research (WIBR) in University College London. She was part of a team which discovered a fundamental link between the cell cycle and metabolism with relevance to cell proliferation, immune system and cancer. She has published extensively in her scientific field. Currently she is beginning a second doctorate at UWL, with a long term intention to develop new methods of communications within the Cuban scientific diaspora.

Dr Stephen A. Roberts is a Senior Lecturer and course leader in the School of Computing and Technology at UWL and a Managing Editor of VISTAS. He has researched in social science information, libraries and information services and information and knowledge management and his teaching areas cover information professional education and corporate communications.

Karen Brome is an experienced and passionate service delivery manager currently working for Cognizant who has participated in the wide ranging changes within the IT Service and Operations functions dealing with major business clients. She has developed a particular interest in the progression of outsourcing and off-shoring and its effect on the workplace.
<table>
<thead>
<tr>
<th>ARTICLES</th>
<th>Contributors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of beliefs about infertility on psychological adjustment: a systematic review</td>
<td>Caroline Lafarge and Pauline Fox</td>
<td>7</td>
</tr>
<tr>
<td>The experience of information literacy in nursing practice</td>
<td>Marc Forster</td>
<td>18</td>
</tr>
<tr>
<td>Preparing for work and inquiry via a CLEAR approach: Combined Learning for Employability and Research</td>
<td>James Wilkinson and Carlotta Olason</td>
<td>29</td>
</tr>
<tr>
<td>A new tool for city decision makers: the new Experiences Touristiques company branding tool approach</td>
<td>Mathieu Poitevin, Andrew Pennington, Camille Chamard and Veronique Seel</td>
<td>49</td>
</tr>
<tr>
<td>Mobility, migration and networking within the Cuban scientific community: developing scientific capital in the digital age</td>
<td>Miriam Palacios-Callender and Stephen A. Roberts</td>
<td>74</td>
</tr>
<tr>
<td>Team knowledge management within an outsourced business systems software maintenance environment: a case study using grounded theory methods</td>
<td>Karen Brome</td>
<td>90</td>
</tr>
</tbody>
</table>

INSTRUCTIONS FOR CONTRIBUTORS 112

CONTRIBUTORS TO THE ISSUE 114