Developing effective supervisors: Concepts of research supervision

A. M. Lee
University of Surrey
Guildford, United Kingdom
e-mail: a.lee@surrey.ac.uk

Abstract

Educating our early career researchers is becoming more complex. The range of doctoral degrees, the fast moving nature of knowledge, internationalisation, the demands of funding bodies and employers are all pulling on PhD supervisors. The untrained PhD supervisor will copy (or avoid copying) the way that they were supervised themselves. Current literature on PhD supervision focuses either on lists of tasks that the supervisor must undertake or on conceptions of research. There is a need for a conceptual approach to research supervision. This review of the literature relating to research supervision identifies six main concepts all of which contribute to our understanding. These are not competing concepts. Supervisors, supervisory teams and co-supervisors might use them to define or illuminate their practice.

It is proposed that the range and depth of concepts that a supervisor holds will dictate how they supervise and the type of researcher who emerges at the end of the process. In an age of supercomplexity, when demands of academic and other employers are unpredictable, the skills of the effective researcher, and thus their supervisor, are likely to become even more important.

A REVIEW OF CURRENT LITERATURE

We are educating early stage researchers in the age of supercomplexity (Barnett 2000). This means that our researchers skills' will become ever more needed, but only if they enable constant inquiry, scrutiny and reframing. Barnett argues that, in addition to the skills of reframing, uncertainty in our environment means we need to increase the amount of revolutionary research, as opposed to norm-endorsing research, we also need to have as a goal to enable greater public understanding of this research (Barnett 2000). The PhD supervisor (or in some cases the supervisory team) have a crucial role to play, in this paper it is argued that the conceptions that the supervisor has of research supervision will affect the type of research student that is produced at the end of the process.

This review of the literature identified several conceptual approaches. These

approaches were then tested in a series of a dozen in-depth interviews. The supervisors interviewed came from across all disciplines and these have been described in a subsequent paper. The approaches tested were never intended to be completely separate from each other and some supervisory skills may be common to several different frameworks. However, it is argued that, for example, an emancipatory intent is likely to produce a different outcome to a supervisor approaching his or her task with a functional model in mind. The emancipatory intent is going to involve an holistic approach which will facilitate transformative learning, the functional model may encourage a more linear, logical attitude in the doctoral researcher.

Some supervisors might aim for transformation "I want my PhD students to be successful and achieving whatever their goals are" whilst another may seek enculturation "I would be disappointed if any of my students left the discipline" and another might seek a functional outcome "I want my students to be able to apply what they have learned".

The problems which confront all PhD students are similar. They ask themselves: can they ever reach the impossible standard of scholarly rigour which appears to be being demanded? Hockey (1994) identified the common issues that doctoral researchers face as: isolation, time management and supervision. These may vary in intensity across disciplines, cohorts, for full or part time students and for those doing distance learning, but the nature of the programme for current traditional PhD students means that they are still likely to be present in some form.

The successful PhD student is expected to have made an original and valuable contribution to knowledge (Wisker 2005). Delamont et al (2000) argue that this is particularly true for arts and humanities researchers, whilst in other disciplines, especially sciences, PhDs are primarily expected to add to an established body of knowledge by publication of new results, and these results may be superseded within a short time of the completion of research. Any supervisory training needs to acknowledge these differences but also acknowledge that an understanding of frameworks can enhance skills.

Expectations are growing. There is an increased emphasis on employment outcomes, skills formation and timely completion. Perhaps in reaction to this there is a concern that competency-based training might narrow the production of knowledge (Pearson and Brew 2002). Park (2007) highlights the potential conflict between needing to understand and manage the process that develops the doctoral researcher and the demands of the thesis as the final document of assessment. He asks key questions such as: who is the doctorate for, are the demands of an academic life and more the broader employability demands compatible and where does the doctorate fit in an interdisciplinary world?

There are therefore several conflicting pressures: the pressure to produce high quality original research versus the pressure to complete. The pressure to produce high quality original researc*hers* versus the pressure to meet the demands of governmental or commercial organisations. There are other pressures from the growing numbers of international students. Add to this mix the fact that postgraduate supervision has been

an essentially private act undertaken by consenting adults – and potential difficulties are brewing.

This paper attempts to help supervisors maintain a balance between all of these demands and sees the doctorate as providing key core skills in researching to enable the reframing skills that Barnett identifies as essential for today's fast-moving world.

The growing use of the term 'early stage researchers' (as agreed within the ten 'Salzburg principles' by the European Universities Association 2005) instead of 'doctoral students' is already in use (eg University of Cardiff, UK). It emphasises that they are looking to develop people who will have a career in research, rather than people who will complete or crown their studies with a doctoral degree.

A phenomenographic study of supervisors' ideas about what research is, suggested that supervisors have four main conceptions of research. The table below (Table 1) proposes links between Brew's research and the models of supervision identified in this paper.

Table 1: Links between Brew and models of supervision

	Research is interpreted as:	What is in the foreground is:	Possible links to models of supervision
Domino conception	A process of synthesising separate elements so that problems are solved, questions answered or opened up	Sets (lists) of atomistic things: techniques, problems etc. These separate elements are viewed as linking together in a linear fashion	Functional
Layer conception	A process of discovering, uncovering or creating underlying meanings	Data containing ideas together with (linked to) hidden meanings	Critical thinking
Trading conception	A kind of social market place where the exchange of products takes place	Products, end points, publications, grants and social networks. These are linked together in relationships of personal recognition and reward.	Enculturation
Journey conception	A personal journey of discovery, possibly leading to transformation	The personal existential issues and dilemmas. They are linked through an awareness of the career of the researcher and viewed as having been explored for a long time.	Mentoring

(adapted from Brew 2001)

Brew argued that these conceptions of research are key to understanding how academics will supervise doctoral students. Further study is required to establish

whether or how these conceptions of research map on to conceptions of research supervision.

There is no clear place in Brew's conceptions for the feminist or qualities models which this literature review as a whole proposes.

Pearson and Kayrooz (2004) proposed that supervision can be framed as a series of tasks and responsibilities that can be clustered and operationalised (expert coaching, facilitating, mentoring and reflective practice). This is a view which is half way between an understanding of a functional approach to research and the conceptual approach that this paper is proposing.

What is 'proper' research?

Bills' (2004) ethnomethodological study found a binary divide between theory and practice. 'Proper' academic researchers versus those who come from the professions, business or industry. She argues that we need to be aware that supervisors may have this construct because of its potential impact on the learning of students. She found elements of people being seen as either 'a university person' or not. There is a view that those who are not 'proper university researchers' cannot understand conceptually what the problem was. (p92) She suggests that supervisors can become aware of any simplifying binary constructs that they may be holding by becoming more reflective.

Taylor and Beasley (2005) also comment on this divide when they refer to 'curiosity-driven research and the utilitarian view' (that the ultimate purpose of education is to further economic growth)' (p 11).

This binary divide may be fostered by the growing range of doctoral awards: the traditional PhD has been joined by the PhD by publication, a new route for international students, a professional doctorate (see below) and the practice-based doctorate (usually for the performing arts) (Park 2007). Further research is needed to establish whether views about the nature of research differ across disciplinary boundaries.

The professional doctorate

The rapid advent of the professional doctorate is particularly worth acknowledging. This differs from the traditional PhD in that it is taken predominantly, if not exclusively, by practising professionals in a vocation. There is normally a taught component and the research project usually relates to the professional practice of the student, is undertaken in the workplace and the thesis is expected to be useful as well as original. (Taylor and Beasley 2005, Maxwell 2003, Park 2007).

Supervision in this context requires an appreciation of and ability to negotiate with external employers

A.M. Lee

SOME CONCEPTUAL MODELS OF RESEARCH SUPERVISION

A functional model

Many of the books written about effective supervision are instruction manuals. They are full of practical advice about interviewing, agreeing the ground rules, introducing the student to new colleagues, project and time management, transfer from M Phil to PhD, preparation for the viva etc.

This is similar to the technical rational model which gives priority to issues of skills development (Acker et al 1994). The supervisor's task becomes one of directing and project management.

A synthesis of the tasks which various writers have suggested supervisors should become adept at is in the table below. (Whisker 2005, Eley and Jennings 2005, Taylor and Beasley 2005).

Table 2: A table for discussion during a training programme for supervisors

Processes	Directed	Negotiated	Facilitated
Background Understanding the context Recruitment Paperwork, codes of practice etc Funding sources			
Supervisory functions with students Interviewing Setting/agreeing the ground rules Common expectations Meetings timetabled Negotiating resources Introductions to colleagues Planning for the unexpected Ethics Feedback on early writing Fraud and plagiarism Arrangements for transfer from MPhil to PhD Monitor progress/project management/time management Testing the argument Submission and preparation for Viva Evaluation and dissemination of the thesis Evaluation of supervisory practice			
Mentoring other supervisors			
External examining			

A table like this can provide a useful discussion document between supervisor and student for managing expectations and allocating responsibilities. The functional model provides a first stage approach for understanding supervision.

Discussion of the table (Table 2) between supervisor and student could examine expectations for direction or independence. It would surface supervisors' current practices. Discussion of this table between supervisors could enable the sharing of best practice.

Relationship development: a qualities model

The search to identify the qualities of a good supervisor is not exactly a model in itself, but Wisker et al (2003a) argue that emotional intelligence and flexibility play a big part in working with students through to successful completion. There is some evidence that poor emotional intelligence, a mismatch in styles (such as when the student is still dependent but the supervision style is one of 'benign neglect') leads unsurprisingly to poor completion rates (Taylor and Beasley 2005).

The list of indicators below could be used to identify a mismatch in qualities expressed and desired. Supervisors and students could be asked to rate the supervisor on a Likert scale and the scores compared (a more affirming approach would be to rate only the effective constructs).

In a study endeavouring to uncover personal constructs, thirteen students were introduced to the Kelly repertory grid and the following constructs were elicited.

Table 3: Indicators of effective and ineffective postgraduate supervisors

Indicators of an effective-ineffective postgraduate supervisor role	
Effective	**Ineffective**
Larger experience base	Small experience base
Encouraging	No encouragement given
Facilitator of learning	Uncertain of role
Resourceful	Not resourceful
Committed to student	No interest in student
Multidisciplinary	Expert in narrow field
Directed by student's needs	Driven by self-needs
Highly organised	Lacks supervision experience
Positive self-image	Lacks research experience
Good writer	Not good at writing
Insightful	Neophyte
Intelligent	Ill-equipped
Knows what he/she wants	Does not know what he/she wants
Supportive	Judgemental

P 11 Zuber Skerritt and Roche (2004)

The problem with this model is that is leaves us with unanswered questions about whether and how such qualities or emotional intelligence can be developed and

how the different qualities affect completion rates or research quality. It is proposed that the untrained supervisor will copy or deliberately avoid copying their own supervisor. Whilst the description of this model is weak and emotional intelligence is a contested concept, it does exist in the literature.

The proposition is that the untrained supervisor will emulate (or consciously avoid emulating) the qualities that their supervisors demonstrated to them when they were students.

Emancipation: a mentoring process

Pearson & Kayrooz (2004) argue that research supervision is a facilitative process requiring support and challenge. It involves providing educational tasks and activities which include: progressing the candidature, mentoring, coaching the research project and sponsoring student participation in academic practice. This is similar to the journey conception identified by Brew (2001). A defining question which can mark the line between the facilitation and enculturation model is: "how much responsibility should the student or the supervisor take for arriving at the destination?" Mentoring is a powerful concept in this arena (Pearson and Brew 2002).

The doctoral supervisor can be a mentor in two ways in this situation, being responsible both for doctoral students and for overseeing probationary staff acting as a co-supervisor (Code of Practice for Research Degrees 2000).

There is much literature on mentoring in general and facilitation skills in particular (Lee 2006, 2007). The mentor is usually seen as a non-judgemental adviser. Mentoring builds upon Rogers' belief that self experience and self-discovery are important facets of learning (Morton-Cooper and Palmer 2000). It involves acknowledging that adults can move from being dependent to being self-directed, accumulate experiences and create a biography from which they can learn and can change. The expected movement is from needing to acquire knowledge and being subject centred to becoming more performance centred. The objective is the application of experience and the development of sound critical thinking abilities.

A mentor can be primary or secondary (Kram 1985, Freeman 1998). The secondary mentor has much more of a businesslike relationship with their mentee. They concentrate on providing support for career development. They can suggest projects, help to solve work-based problems, provide coaching where they have particular skills and might actively promote their mentee where they think it could be helpful.

The primary mentor can provide a more profound experience and some supervisors will feel that this goes beyond what they are expected to do. When an emotional bond is developed the mentee is deemed to have a primary mentor. The strength of the primary mentor is that they provide acceptance and confirmation that the mentee is worthwhile and this leads to personal empowerment. They can help the mentee to learn from a variety of life experiences as well as planning and rehearsing future encounters.

Secondary mentors are obviously easier to find. Sometimes a relationship starts

with more functional, secondary mentoring expectations, and goes on to become extremely fundamental for both parties.

"What do you want to learn"? Herman and Mandell (2004) recommend that every mentor asks this powerful question at each meeting and every mentee prepares themselves to answer that same question before the meeting.

Darling (1985) coined the term 'toxic mentors' and these include avoiders, destroyers and criticisers. Egoists could be added to the list. This begins to explain another necessity for training in supervision. Supervisors need to be particularly aware of the dangers of mentoring over issues that they have not fully resolved themselves. The boundaries need to be clearly thought through. The mentoring supervisor does not direct, they 'midwife' the dissertation.

The enculturalisation model

In this perception achieving a PhD is about becoming a member of an academic discipline. (Leonard 2001 p 98). Direction may be more apparent here.

Conceptualising research communities as communities of practice enables us to look at the social dimensions of the research supervision model (Pearson and Brew 2002, Lave & Wenger 1991). There are issues of acculturalisation into both the institution, the community of the discipline, the country/civilisation and epistemological access.

The supervisor may see themselves as being like the family doctor. They will provide some specific expertise but will also be a gatekeeper to many more learning resources, specialist opinions and networks. The supervisor can choose which gates to open, particularly in the early stages of the researcher's life. Within this understanding therefore, there is also an understanding of the power of the supervisor in its widest sense. Not only is the researcher 'present' (Brew 2001) in this model, the supervisor is also 'present' as well.

There is another aspect of the power dynamic that arises from the supervisor being gatekeeper to the qualification and the academic discipline: that of ownership (or even suppression) of the final result. Original research can be dangerous in that it can undermine previously dearly held beliefs and careers. The struggle can be political on several levels. The student needs to be aware of how powerful (or not) their supervisor is in the institution. In the case of international students the supervisor is also gatekeeper to an even bigger issue: the cultural context in which the degree is being taken (Wisker 2005 p 202). There are opportunities for power games and argument about who 'owns' the research and subsequent conference presentations and publications.

In Western Universities there are an increasing number of international students and it is easy to make assumptions about them and, unwittingly, to pedagogically alienate them.

How does the supervisor overcome the problem of the student who expects to 'receive instructions' and who believes that to do anything other than nod and agree with the teacher is poor behaviour?

Another difficult problem can be to learn the skill of critical thinking, to be able to formulate an argument, anticipate complex problems and put it coherently on paper.

It is interesting that one student found it very helpful when her supervisor taught her to make arguments one paragraph at a time (Nagata in Ryan and Zuber Skerritt 1999).

So how might international students respond to the challenge of becoming a PhD student in a foreign country? Wisker et al (2003b) suggest that they can resort to learning behaviours that have been 'safe' in the past and overcautious contextualisation because they find it difficult to engage fully with problem solving, reflection and deep study.

The final aspect of the enculturalisation model is that of discourse literacy. This focuses on writing up – which is where many students state their difficulties arise. It includes pedagogical strategies to help the PhD student with project management, writing the literature review, skeleton sentences and creating the argument (Kamler & Thomson 2006).

Thow and Murray (2000) say that the task of writing is often daunting for the PhD student because work is not produced on a sequential basis. They recommend visualising the structure of the project. The supervisor acts as facilitator, introducing a structured approach to writing and enabling students to adapt it to their projects. The discussions are supervisor led but they are also dynamic, the student has to contribute and eventually own the work.

As in other models the boundaries need to be carefully thought through and Taylor & Beasley (2005) recommend another questionnaire which can help establish responsibilities. The dangers of the apprenticeship version of this model were also highlighted by them when they quote McWilliam and James (2002) 'Its pedagogy has been characterised by some – perhaps unfairly – as one in which the precocious few were called to emulate the master as scholar' (Taylor & Beasley N 2005 p 18).

A critical thinking model

Traditionally this is the heart of the PhD supervision. Brown and Freeman (2000) offer the following definition: 'critical thinking comes in many forms, but all possess a single core feature. They presume that human arguments require evaluation if they are to be worthy of widespread respect. Hence critical thinking focuses on a set of skills and attitudes that enable a listener or reader to apply rational criteria to the reasoning of speakers and writers' (p301).

Stevenson and Brand (2006) point out that critical thinking is largely a western, secularist intellectual tradition, and we need to be sensitive to this when applying it in different cultures or to some disciplines (eg theology).

In practice it addresses such questions as what is the underlying conceptual framework, what are the arguments for and against, what has been considered and what has been left out. Wisker (2005) argues that practicing using the metalanguage of viva defence is a very useful supervisory skill because it ensures that the student addresses gaps in knowledge, boundaries, and methodology.

Critical thinking implies a 'researcher absent' process (Brew 2001, Pearson and Brew 2002) and is only part of the model suggested by Barnett (1997) of 'critical

being'. One version of this process has been called 'Gentle Socratic Inquiry' (Jackson 2001). The 'gentle' is inserted to counteract the image of Socratic inquiry where the consummate lawyer cleverly manipulates his adversary into a position of 'got you'. Whilst the common perception of the Socratic method is a methodical questioning and cross-examining, peeling away layers of half-truths, exposing hidden assumptions, the gentler Socratic method proposed by Jackson assumes a position of co-operative inquiry and accepts that there is no right answer.

This type of critical thinking model works through three stages:

- problematising
- finding connections
- uncovering conceptions/the shape of an answer

However other writers support constructive controversy. Johnson and Johnson (2001) argue that more than 40 studies indicate that constructive inquiry produces higher achievement and retention than concurrence seeking debate. The stages they recommend are:

1. Reaching a position on an issue
2. Being challenged and becoming uncertain about one's views (epistemic curiosity)
3. Actively searching for more information and reconceptualising one's knowledge in an attempt to resolve the uncertainty
4. Reaching a new and refined conclusion

Whether the supervisor is opting for being gently Socratic or constructively critical, there are various tools and questions that the supervisor can use to aid critical thinking, these include:

1. What do you mean by? (testing for any ambiguity)
2. What are your reasons for proffering that opinion?
3. What assumptions are you making?
4. If that is true, what are the implications? (looking for inferences)
5. How do we establish whether or not that is true?
6. What examples can you give, what evidence can you show?
7. Offering counter-examples eg "but in another situation the converse is true"

(adapted from Jackson 2001)

Whilst the researcher can be absent in this logical critical stage of the inquiry, the supervisor should also encourage reflection and a recognition of movement. The student needs to recognise 'I used to believe X and now I realise Y.

Critical thinking is not developed in the same way in every culture. In Confucian societies:

> 'the role of the scholar was to discover those rules set down in these texts, requiring an intensive study of the limited texts within the reference. Study was often rendered as commentary and exigesis rather than a synthesis of different views presented in the form of an individual argument. The role of reading was to (re) discover what the sage was saying'.
>
> (Smith 1999 p 149)

This model of critical thinking is separate from the model of 'Critical being' which Barnett (1997) exhorts us to follow.

The feminist model

Much of the literature does not refer to gender issues, but they surface both in the mentoring model (where the dark side of relationships can involve sexual harassment) and Leonard reports a study by Moses in Australia where it was found that the informal nature of supervision seemed to deny women the support they particularly needed. Women, especially older women, did not get as much access to or help from their own supervisor(s) as men, and they also missed out on other interaction (Leonard 2001 p 94).

Wisker (2005) argues that feminist research practices are likely to recognise the importance of constructivism and conceptualisation, how personal experience affects approach, be strong on analysis and reflection and to recognise a multiplicity of approaches and viewpoints arising out of different angles such as class, context, race and gender. If this perspective is accepted we need to ask: do female students need to seek female supervisors (yet men are more useful as sponsors argues Leonard 2001 p 95) or do we attempt to include a feminist perspective in our training of supervisors?

CONCLUSIONS

These proposed models are summarised in Table 4.

Further research

Further research into conceptions of research supervision is needed to establish whether or not the paradigms that are apparent in the literature translate into today's world. The outcomes of the identified conceptions also need to be researched. Do the different conceptions of research produce researchers who are more or less employable in or outside academia, more or less flexible and more or less able to identify and cross interdisciplinary boundaries?

Table 4: Proposed models of supervision

Concept of research supervision held by supervisor	Most prominent activity	Knowledge and skills needed	Possible student reaction
Functional	Rational move ment through tasks	Directing, Project management	Organised Obedience
Enculturation	Gatekeeping	Diagnosis of deficiencies to be remedied. Nurturing	Apprenticeship, Role modelling
Critical thinking	Evaluation Challenge	Argument (gently Socratic or constructive controversy	Constant inquiry/fight or flight
Emancipation Feminism	Mentoring Supporting student in constructing knowledge	Facilitation Analysis and reflection	Personal growth Reframing knowledge.
Relationship Development Qualities	Supervising according to experience	Emotional intelligence. A range of experiences to draw upon	Emotional intelligence Personal awareness

TRAINING SUPERVISORS

If the thesis of this paper is correct – that the conceptions of research supervision that supervisors hold affect the way the research student operates - then the continuing professional development activity (CPD) that follows becomes obvious.

Research supervisors need to be enabled to uncover the conceptions that they hold and examine them alongside other supervisors. Where a research supervisor wants to enhance their skills within a particular framework (for example: becoming more able at developing critical thinking or effective at supporting a doctoral researcher functionally in improving time management), various paths might be trod. Peer learning and support, mentoring, action learning and specialised seminars are just some of the approaches which may be appropriate.

Developing skills in supervision needs to be tackled in various ways and to form part of ongoing CPD for academics. In what continues to be a turbulent environment there is a need for even experienced supervisors to update their skills and share their experiences. In 2003 the University of Edinburgh introduced a requirement that staff had to undertake at least one day of continuing professional development

every five years in order to remain in good standing as a supervisor (Taylor and Beasley 2005). In most universities, this type of development is voluntary, if it is available at all. How sure can we be that supervisors can supervise effectively in isolation, or even in pairs, if they have not examined their own experience and developed a mature conceptual framework?

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