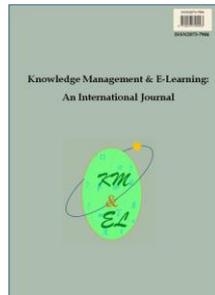


*Knowledge Management & E-Learning: An International Journal, Vol.5, No.1. Mar 2013*

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## **Knowledge Management & E-Learning: An International Journal**

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ISSN 2073-7904

### **Empirical study of the important elements in the researcher development journey**

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**Recommended citation:**

Ward, A. E. (2013). Empirical study of the important elements in the researcher development journey. *Knowledge Management & E-Learning*, 5(1), 42–55.

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## **Empirical study of the important elements in the researcher development journey**

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**Abstract:** This paper presents the results of a study into what is important in the researcher development journey as perceived by students, academic supervisors and research administrators. The study was undertaken within the Department of Electronics at the University of York to test the survey instrument for a wider, multidisciplinary and multi-institutional survey. It was undertaken in the National context of a focus on the importance of postgraduate skills development being an integral part of the researcher journey. An integrated support system is used in the department for all postgraduate students. Results show that students and supervisors both agree that helping the student gain a PhD and seeing them as a professional researcher are of high importance. Research outputs were rated lowest for students and both rate administrative needs low. The study informs engagement with the administrative and skills development agendas thinking and is being used by the system development team.

**Keywords:** Postgraduate training; Postgraduate professional development; Postgraduate career development

**Biographical notes:** Tony Ward is a Senior Lecturer in Engineering Management and Head of the Engineering Management Research Group in the Department of Electronics at the University of York, York, England. He was the President of the European Association for Education in Electrical and Information Engineering from 2006 – 2012. His research interests are skills development and the understanding of the higher education process.

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### **1. Introduction**

The researcher development journey can be a lifelong journey for those who undertake a PhD at University and then progress into industry as a professional researcher. Along this journey they acquire the skills of fundamental inquiry and research, the skills of questioning, hypothesis formation, experiment construction, data collection and analysis and communication as well as more generic skills of negotiation, argument, team working, and so on. This researcher development journey usually starts with the PhD project undertaken at a University. At the end of this first stage of development, with their PhD in hand, the researcher transitions from the University into employment – be it into a research team within a university, industry or a research institute. This transition is very competitive and the employment market place demands higher levels of researcher skills. The war for talent is here and getting fiercer. Recognition that the PhD process is

an early stage in the development of future researchers, if not the formal training stage of that outcome, has been around since the 1990s (Collinson, 1998). The Dearing (Dearing, 1997), Harris (Harris, 2001) and Roberts (Roberts, 2002) reports and the United Kingdom (UK) Higher Education Funding Council for Education (HEFCE) (Metcalf, Thompson, & Green, 2002) have all put forward recommendations, at the UK governmental level, on the provision of skills training in the PhD process. In turn this has led to the development of more prescribed but better developed researcher skills frameworks and the need for clearer career development planning.

But skills are not the only 'environmental' factor that is important for the researcher development, especially for the PhD student. Record keeping, administrative rules and regulations, forms and statistics are growing in importance for equality, reporting and legal needs. Adherence to institutionally designed quality procedures and the ability to demonstrate audit trails have led to more formalized administrative systems, more paperwork and more time taken up with administration that cannot be spent developing the student or enhancing the quality of the research project. This tension for time leads to the inevitable choice being made by academic supervisors, students and administrators as to what is most important for them and these do not always align comfortably. Software system solutions have grown to support the administrative system to help take away the burden of paperwork and reverse the attendant trend of declining efficiency. However, these systems, where they are not dedicated to the specific process and where they are not fully integrated introduce 'islands of technology' solutions which in themselves lead to inefficiencies and the risks of errors and problems.

This paper explores the current context of the first stage in the researcher development journey, that of the PhD process, in the UK, the needs for skills development, a good relationship between the student and supervisor, attention to administrative needs and how these are brought together. A main component of this report is a quantitative survey of students and supervisors perceptions of what is important about the PhD journey. In particular it sets out to compare the perception of importance of researcher skills development and general administration. The paper starts by setting the scene in the UK especially in respect of skills development and the problems that can result during the PhD process. This is followed by a description of different administrative approaches including a dedicated integrated 'Software as a Service' system. It then describes the results of a study that explores the question what is important about the PhD journey for the student, the academic supervisor and the research administrator? How the perceptions of importance align between these stakeholder groups and how they bear on the success of the researcher journey, reduce the incidences of problems and give the students an advantage in the war for talent at their employment transition.

## **2. UK postgraduate student context**

Postgraduate research is primarily aimed at providing a "... mechanism by which graduate students learn how to undertake a systematic investigation, founded upon the work built by peers in the field, ..." (Toncich, 2006). The creation of a novel outcome or artifact, or other research outcomes is a secondary objective. This definition focuses on skills development or the 'how' over the 'what'. The objective being to train the student researcher to be a professional researcher by the time they complete their period of 'training' or the first stage in their research development journey. Before 2000 skills development of postgraduates was the responsibility of the academic supervisor with

little or no structured guidance on the skills that need developing. The model was one of ‘Apprenticeship’ alongside the more experienced academic supervisor ‘Master’.

A contrasting model, the administrative model supports the view that “*successful supervision in the UK is now often assumed to be synonymous with successful completion within four years; and, ergo, non-completion has become synonymous with poor supervision.*” (Peelo, 2011). This view rather too heavily focuses on completion being the ‘end’ and supervision being the ‘means’ and the focus being on the project rather than the student.

The educational dimension of the PhD process is considered a central concern (Peelo, 2011) so the tighter alignment of skills development into the student journey and embedding it into the administrative model can be viewed as developing the basic administrative model to remove one dimension of risk, that of the research ability of the student, although this clearly relies on their being a fully agreed skills framework for the development of the professional researcher, appropriate engagement with the skills development agenda and clear career development planning.

In 2002 Sir Gareth Roberts published the “Set for Success” report (Roberts, 2002) which advanced the UK towards this goal. His report made two strong recommendations: that postgraduate students receive at least 2 weeks dedicated training per year; and they should have a clear career development plan. This required them to have access to training opportunities and hence required Higher Education Institutions to make such opportunities available. The report stated that most of the training should be in transferable skills. In parallel the UK Quality Assurance Agency (QAA) revised its code of practice for the assurance of academic standards in higher education, especially section 1 (QAA, 2004), relating to postgraduate research programmes, which was rewritten in ‘a firmer style’ to ‘give institutions clear guidance on the funding councils’, research councils’, and Agency expectations in respect of the management, quality and academic standards of research programmes.’ Chronologically following the Robert’s Report and the updating of the QAA code, the European Union Code and Charter for early career researchers was published in 2005 (European Commission, 2005). Recommendation 6 states, “New instruments for the career development of researchers should be introduced and implemented, thus contributing to the improvement of career prospects for researchers in Europe.”

In support of the need to develop the skills of postgraduate researchers in the UK a Joint Statement of Skills (JSS) was developed (The UK Research Councils, 2001). The JSS defined the skills that doctoral research students funded by UK Research Councils are expected to develop during their PhD journey. The JSS was the first formally adopted skills framework for postgraduate researchers in the UK. In 2010 Vitae replaced the JSS with the Researcher Development Framework<sup>1</sup>.

Researcher skills development requires the active engagement of the PhD student, the academic supervisor and the administrative process. The emphasis placed on skills development, in no small part depends on the supervision model adopted.

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<sup>1</sup> Vitae®, © 2010 Careers Research and Advisory Centre (CRAC) Limited

### 3. Models of PhD supervision

There are three main models of the PhD supervision process, the apprenticeship model, the mentor model and the administrative model (Peelo, 2011). The apprenticeship model involves the student undertaking a very personalized and sometimes relatively private (Park, 2005) process with their personal academic supervisor who 'shows them the ropes' and transforms them into a good researcher. This model clearly relies on the quality of the 'Master' and their own standard of performance measures of what makes a good researcher. Consistency of quality is assured by the examination process and the external, peer review process however attention to the student's skills development requires the academic supervisor to take an active interest in the student's skills need, through a training needs analysis and personal development plan and of their career aspirations which can then be converted to a career development plan. Weak engagement by the academic supervisor and the over-reliance on the student to do this on their own is at best likely to result in an unpredictable quality of researcher and one who is not best placed to win the talent war at the transition to employment.

The mentor model considers the student more of an equal to the academic supervisor creating a closer coaching model of working. The mentor model is often to be found in more mature part-time PhDs where the student and academic supervisor are of similar age. Here again, this model requires the active engagement of the supervisor in the skills development agenda.

In the administrative model the PhD journey is systematized into a process with a set of stages and gates. The process is enshrouded with procedures, rules, regulations and paperwork. In this model the privacy of the traditional supervisory methodology noted in (Park, 2005) is replaced with the need for greater transparency, equity and the ability to be audited, especially in the event of a complaint. In the UK development of the researcher skills framework, Funding Council requirements on completion, and UK Border Agency reporting requirements all encourage use of the administrative model. The administrative model has the advantage that focus on the students early skills audit, development of a training needs analysis and personal development plan can be taken away from the supervisor and embedded in the process. This embedding can at least ensure that it is undertaken, it may still require the academic supervisor to take an active interest when the process indicates it needs to be considered.

For all the merits of the administrative model, there is some controversy on its application because it is founded on the premise that all PhD projects can follow the same systematic roadmap, all can lead to a thesis and presentable outcome and that, as Morley et al suggest "*supervision is fundamentally a reasonable practice.*" (Morley, Leonard, & David, 2002). Perhaps the over-riding objectives of the administrative model are to ensure transparency of process, fairness and equity of treatment of all students and the minimization of the risk of problems during the PhD journey. It is certainly true to say that not all students progress through their PhD journey without problems.

### 4. Potential problems in the PhD journey

Potential problems in PhD journeys can result from a range of causes. All can potentially lead to expensive and time consuming disputes, complaints and/or appeals. Four generic problem areas with some specific examples in each have been identified as shown in Table 1 and are explained in detail below.

**Table 1**  
Generic PhD problem areas

<b>Problem Area</b>	<b>Example problems</b>
Supervisor Problems	<ul style="list-style-type: none"> <li>• Supervision Quality</li> <li>• Supervisors poor at giving bad news</li> <li>• Neglect</li> </ul>
Relationship Problems	<ul style="list-style-type: none"> <li>• Lack of clarity of roles and responsibilities</li> <li>• Mismatch of expectations</li> </ul>
Student Problems	<ul style="list-style-type: none"> <li>• Effort</li> <li>• Mitigating circumstances not registered</li> <li>• Financial pressures</li> <li>• Plagiarism</li> <li>• Not my fault!</li> </ul>
Process Problems	<ul style="list-style-type: none"> <li>• Poor record keeping</li> <li>• Mitigating circumstances not registered</li> <li>• Inability to access required resources</li> <li>• Ineffective transfer process</li> <li>• Problematic PhD examination</li> </ul>

#### 4.1. Supervisor problems

The academic supervisor, or supervisors can inadvertently cause or lead to problems in a number of different ways. The general quality of the supervision meetings, guidance versus prescription, too much versus too little (Johnston & Broda, 1996), quality of the advice and guidance, possibly dependent on their experience as a PhD supervisor or of their supervision as a research student, or of their particular experience in the research methodology adopted by the student is potentially variable. The QAA notes the importance of alternative sources of advice being available to students in cases where the student to supervisor relationship is not working well (QAA, 2004) but such cases do not always become visible until the situation has become quite difficult.

Supervisors must be able to deliver good and bad news as and when required. Praise for work well done but fair and honest feedback when the student is not performing at the required level. This is an area of potential weakness for some individuals who do not find delivering bad news easy or they will defer meetings or use weak or ambiguous language. Such behaviours could especially be problematic between cultures where such 'hidden messages' may not pass through the cultural communications barrier. There needs to be a clear place in whatever administrative

system is used for written comments that provide space for the supervisor to reflect carefully on the message they wish to convey and to be more clear and assertive in their communication. A record of such messages is also key evidence in appeals cases, the written records can work in favour of or against either party depending on what is written and how it is written, verbal feedback is less likely to carry weight in an appeal.

Perhaps the ultimate problem is one of neglect. Situations where the academic supervisor leaves the student to get on with their research and only talk to them when they really need to or at the minimum frequency prescribed by the institution. The QAA (QAA, 2004) defines a framework for systematic and clear supervision arrangements with four principles relating to the appropriateness of supervisors skills and subject knowledge; the obligation to provide at least one clearly identified supervisor; the provision of written statements of responsibilities; and that the quality of supervisions are not compromised by supervisor's other responsibilities.

#### *4.2. Relationship problems*

The supervisor problems touch on some of the potential relationship problems at the personal level but there is also the potential for problems at the structural level with scope for lack of clarity or ambiguity in the roles and responsibilities of all the key actors. Precept 13 of the QAA Code of Practice (QAA, 2004) states "*Institutions will ensure that the responsibilities of all research student supervisors are clearly communicated to supervisors and students through written guidance.*"

Relationship problems can also result from a mismatch in expectations between the student and supervisor. Mismatches are common at the undergraduate study level (Jawah et al., 2004) where an emphasis is placed, by some, on appropriate feedback (Perera, Lee, Win, Perera, & Wijesuriya, 2008), the same fundamental principles apply at the postgraduate study level.

In their study of International students studying in Australia, Ingleby and Chung (Ingleby & Chung, 2009) identify some key differences between the relationship expectations between the researcher and supervisor, in particular in: the social familiarity, the use of informal names and no title in face to face communications; the joint venture approach to the PhD journey as opposed to the student and master model with all its associated interaction dynamics; the critical review in which the student is expected to question published works; and the difficulty or inability to admit they are having difficulties. Ibrahim et al (Ibrahim, McEwen, & Pilblado, 1980) list "excessive high standard demands" as one of the student raised issues in their study at Sydney University.

The idea of a student supervisor contract in which the roles and responsibilities and expectations can be defined and agreed is a good potential solution to this risk factor (Hockey, 1996).

#### *4.3. Student problems*

The student can potentially create a number of problems with the most basic being a lack of effort (mediated against the level of effort expected by the supervisor).

The second problem area in the student section is that of not recording mitigating circumstances, this is also a process problem. Student problems range from the relatively minor short-term illness, to family problems to longer-term mental issues. It is a matter of institutional policy as to what situations require an allowance or adjustment but what is

important is that all such issues are noted and raised at the appropriate level within the institution so that they are not raised unexpectedly at any complaint or appeal meeting.

The ‘not my fault’ potential problem can, up to a point, be avoided by clarity of expectations and roles and responsibilities. This is perhaps especially important where the requirement to gain access to specialist equipment or tools to undertake the research is critical to the success of the research.

#### *4.4. Process problems*

In the event of a student appeal a key source of defence for the academic supervisor and the institution will be the records of meetings, interactions and correspondence. Over half of the 96 institutional officials surveyed by Schreier et al reported inadequate research records. They provide best practice principles for individual researchers, research group leaders and institutions (Schreier, Wilson, & Resnik, 2006).

Potential problems from mitigating circumstances have already been addressed, as has the inability to access required resources be this at the individual, research group, department or institutional level.

Other potential process problems lie in ineffective progression and assessment arrangements. UK Funding Councils are taking a much tougher line when they place research projects and linking this closely to submission rates (Rudd, 1986) so the pressure to meet the final submission and intermediate deadlines (such as transfer) is becoming more acute. A number of these problems can be ‘insured’ against through the administrative processes used.

### **5. PhD journey administrative approaches**

Postgraduate journey record keeping systems range from paper based forms and freeform notes of supervision meetings through “Islands of IT” to fully integrated dedicated software solutions. In the islands of IT approach personal development planning are typically on one system; training course provision and management in a separate system; formal progression using a component of the institution’s student record keeping system (such as ‘SITS’ in the UK); records of supervision meetings may be managed using the institution’s Virtual Learning Environment, and so on.

The “Islands of IT” solution and those where paper based record keeping are the order of the day have all been developed to meet local needs however all suffer some common drawbacks:

- Data is fundamentally disconnected being stored in a number of different locations.
- Require key actors to log into different systems for different activities.
- Rely on separate data storage, security and backup approaches, some very reliant on human care and attention.
- The lack of connected data results in the inability to simply and cost effectively create required management information.

An example of a fully integrated, dedicated solution is the Skillsforge system. The Skillsforge system is a ‘software as a service’ system designed specifically to support the researcher journey from initial registration through to completion and beyond. It

recognises and supports the student, supervisor, administrator, training provider roles as well as the additional roles of thesis advisor and examiners in a single fully integrated system.

The key objectives of the Skillsforge system are:

- To help develop better qualified researchers, by making their personal development a very visible and integrated part of their research journey;
- Enhance the student supervisor relationship through a structured and transparent student led (appraisal) process;
- Improve supervisor and administrator efficiency through a standardized interaction recording system and ability to extract reporting statistics;
- Enhance training efficiency by intelligent management of bookings and providing statistics to maximize the efficiency of your training budget, enhance research outcomes;
- Reducing complaints and appeals by providing early indicators of problems through transparent meeting records, action follow-up and attendance recording.

The system considers the PhD journey to be a set of interlocked parallel processes: the researcher competence development journey; the completion of a substantial individual research project; and the administrative process and hence recognises the apprenticeship, mentor and administrative supervision models. The researcher competence development journey starts with the student undertaking a self-audit of their skills against an appropriate competence framework. In the UK this is currently the Researcher Development Framework (Vitae). The students rating of their competence is recorded within the Skillsforge system and is used to form the agenda for a discussion between the student and supervisor about competence ratings from which a Training Needs Analysis and personal development plan emerges. If done sensitively this uses the student's career aspirations and hence becomes part of their career development plan. The student and supervisor then jointly manage the development. The Skillsforge system has an embedded training course management system allowing single sign-in registration facility and automatic updating of their personal records with the training they undertake. The supervisor can see the training and check that real benefit has been gained from the course undertaken.

The administrative process requires meetings to take place; records to be maintained; deadlines to be met and defined paperwork to be completed. The Skillsforge system includes full record keeping with date stamped and digitally signed meeting records, action tracking and a diary facility.

The author uses the Skillsforge system as a vehicle for monitoring what the student is doing and how well they are doing it during the early, literature review phase of their PhD journey by requiring all supervisees to use the Skillsforge system as the place to record reviews of papers they read. A general meeting template is used as the recording medium and the student is asked to record the full paper reference and answer or comment on the following general questions about the paper:

- Reason for the review: - meaning why has the student read this paper – what is the connection between it and the research project scope?

- Research methodology: - what research methodology was used, is there anything unique about the methodology? Is there anything of specific use from the methodology that could be useful or used in the student's research project?
- Summary of results: - what are the key findings of the paper relevant to the research project?
- Summary of implications: - meaning what are the implications of this paper for the research project?
- Other reflections: - is there anything else about this paper that is worth recording for the supervisor or for the student for the future?
- Review value summary: - overall what is the value of this paper to the research project?

This is no more than any academic expects each student to do for each paper they read and, by recording the review in Skillsforge the author has a view on the student's thinking and on their level of activity (although clearly only during the literature review stage). This not only provides a measure of the reading rate, but also of breadth and depth of the literature review. It can provide an early warning of the student starting to stray off down a blind alley or being too blinkered in their reading. The author is able to comment on the review giving appropriate feedback (ticking the formative feedback and motivational boxes), can note questions for discussion at the next supervision and, peripherally but importantly, the supervisor gains a review of a paper.

With these administrative elements the system aligns with the administrative development model, however it recognises the individualistic relationship that must exist between the student and supervisor that brings the uniqueness and benefits of the apprenticeship and mentor models. Skillsforge has been designed and developed with the risks associated with the PhD process that are a feature of the administrative model (Peelo, 2011) firmly in mind. For the institution Skillsforge integrates with other Management Information Systems to eliminate paper re-entry of information, single sign-in and management statistics at the group, department, faculty and institutional levels. For the training course provider the system provides full administration of training courses (including one-click sign-up, management of course attendance and waiting lists, auto promotion from waiting list following a withdrawal and creating of attendance sign-in sheets).

Having set the scene for skills development and administration in the PhD journey the remainder of this paper focuses on the survey that sets out to explore what is important to the student, the academic supervisor and the research administrator, how the perceptions of importance align and how they bear on the success of the researcher journey, reduce the incidences of problems and give the students an advantage in the war for talent at their employment transition.

## **6. Servey results**

29 responses were obtained over the test period, 11 from research students (38%), 17 from research supervisors (59%) and 1 research administrator (3%). This response, whilst being low in absolute numbers, is high in terms of percentage representation of the Department. The percentages shown are those for the stakeholder group compared to the total responses but they also closely (coincidentally) resemble the percentage to the total

number of research active individuals in each group. 21 of the respondents (72.4%) are male. 43% of the responding research students have been students for <1 year and a further 43% between 1 and 2 years.

*6.1. Reasons why supervision happens*

In this section 12 questions were asked. Table 2 shows the student and supervisor ranking of importance (research administrators, being n=1 are not shown).

**Table 2**  
Why PhD supervision is important

Item	Student ranking	Supervisor ranking
To help students gain a PhD.	1	1
To have others to work with in their research area.	2	6
To have a resource to take their research forward.	3	2
To develop students into professional researchers.	3	3
Research students produce publications that build their or their research team's esteem.	5	5
To encourage diversity in their research area.	6	8
Because PhD successes add to their personal esteem.	7	7
It is part of their job.	7	4
Because a larger team improves their case for more resources	9	11
It is a means of developing industrial links.	10	10
They are successful in bidding for research grants and need people to do the work.	11	9
To support their consultancy work.	12	12

The table shows that the top rated item was 'help students gain a PhD' for both students and supervisors. Whilst an encouraging result alone it masks the reason why this is top ranked. High in importance for students are the collegiality of working in a group, to have a resource to take research forward and to develop themselves into professional researchers. These are all items that can be interpreted by the student as being supporting their development as researchers. For the academic supervisor having a resource to take their research forward, developing the student into professional researchers and it being part of their job are all ranked as important. These items show that there could well be different motivations in supervision with different emphases on skills development.

The two distinctly different rankings are “To have others to work in their research area.” and “It is part of their job”. It is perhaps understandable that students do not think too highly of the fact that it is part of the academic’s job to supervise students. “To have others to work in their research area.” is however more interesting as this is a “Supervisor perspective” item so intuitively one might expect supervisors to rate it higher than students.

Factor analysis was carried out on the combined student, staff and administrator responses. With such a low n it is surprising that the factor analysis showed a significant Bartlett’s Test of Sphericity ( $<0.001$ ) and a KMO=0.49 of only fractionally below what would be considered a minimum acceptable value. Communalities were all high and three factors emerged with all but one of the items loading cleanly to one factor. The three factors together account for 72% of the total variance. One of the three factors is clearly aligned to the student, the second is clearly aligned to the supervisor, the third sees the student as a resource aligning with the research project perspective. The mean response between students and supervisors reveals a consistent order of rated importance with the resource orientation factor having the highest mean (students mean=3.94, supervisors mean=4.12, range 1..5). Student orientation was rated as higher importance than supervisor orientation by both groups but not with statistically significant difference.

### 6.2. *What is important about being supervised?*

This group of questions again yielded three factors that explained 76.7% of the total variance (KMO=0.67, Bartlett’s Test of Sphericity  $<0.001$ ). The factors are person orientation, task orientation and administration/practicalities orientation. Students rated the person orientated items (mean=3.8) higher than the task orientated items (mean=2.8) and the supervisors rated the task orientated items (mean=.25) higher than the person orientated items (mean=4.12). This suggests a greater focus, on the part of the supervisor, to see progress that leads to successful outcomes and outputs. This again supports the difference in emphasis placed on PhD supervision between students and their supervisors.

Both the students (mean=2.0) and supervisors (mean=2.2) rated the administrative component lowest and in the case of the supervisors considerably lower. This result supports the argument for the need for administrators or for an IT support system that removes the pain from the students and academics allowing them to focus on those aspects of the journey they consider more important. With this rated lowest it says that, whatever the system in place, both groups will need to be ‘encouraged’ to engage with the administrative process, it will not happen through their own priorities over skills development or completion of the research work itself. It also suggests that the more the administrative activities can be placed in the background so they are undertaken at the same time as activities that do add value to the skills development and actual research project work (such as the use of a system to add structure and value for student and supervisor to the literature review whilst simultaneous using these entries to record activity, engagement, progression and attendance results) the better the alignment of all stakeholder needs will be.

### 6.3. *What is important to do during the PhD journey?*

This set of questions comprised 22 items that factored into 7 components as shown in Table 3.

**Table 3**

Mean response of respondents to the general importance factors

	Research student	Academic Supervisor
Future view	4.2	3.8
Self development	4.1	3.9
Safe and ethical work practices	3.8	4.4
Domain advancement	3.7	3.5
Relationship	3.3	4
Practicalities	3.5	3.3
Research outputs	3.2	3.8

Students rate the future and their self-development higher than academics. Interestingly, of the surveyed academics, they rate safe and ethical practices higher than relationships. For academic supervisors relationships and preparation of the student for their future is second.

Outputs are rated lowest for students, academics rate this higher. To test whether this last point is supported by the data the mean of the *Research outputs* factor for only students was compared to the time they have been students. The numbers for this subset are very small for this survey but the newest students have the highest mean (mean=3.75) suggesting the early enthusiasm to publish and possibly the influence of early academic supervisor briefings on their expectations. The 1-2 year students are the lowest (mean=2.75), possibly reflecting the mid period of hard project dedicated work and the likely dearth of real new material to publish; with a rise in the final years (mean=3.0) possibly reflecting the writing mode students switch into and the desire to have publications because there is sufficient work upon which to base publications.

The rank position of relationships is also different with it being second highest for academics but second lowest for students. This may again be a reflection of the time students have been studying (43% for less than one year) versus the academics 80% of whom have been supervising for more than 5 years. The perception of the importance of the relationship is likely to be very different between these groups although may well change over the research journey time. The data for this survey shows that for the students who have been studying for less than one year the importance of the relationship is high (mean=4.17), for students between 1 and 2 years lower (mean=2.83) but rises again for students with more than 2 years (mean=3.67). Whilst the numbers are again small this general trend is intuitively understandable.

## 7. Implications and further work

The results show that the rating of importance given to administrative requirements is low by students and supervisors. This supports the argument that the adherence to defined quality practices is better achieved through avoiding reliance on these stakeholders to undertake actions from their own priority set. Achievement perhaps best results where compliance occurs in the background to activities that are high in rated importance. This conclusion has importance in the design and development of administrative support systems and more strongly supports the highly integrated administrative support system

over the 'Islands of IT' solutions. If administrative requirements can be embedded in the background of the support system for completion of the research project (for the supervisor and student) and in the background for the achievement of the student's skills development and personal career planning objectives (primarily for the student) then win-win outcomes can be achieved for all three stakeholder groups.

The primary objective of this overall research project is to develop a better understanding of the researcher development journey and, in particular, to enhance engagement by all with the skills development agenda and, simultaneously reducing the student and supervisor time and effort that needs to go to the less value adding administrative activities. Results of the study have already been used in the Skillsforge system development team to inform thinking about how engagement with the administrative processes can be enhanced and specific developments to this end are scheduled into the development programme.

This study has been undertaken within a single academic department in one UK University. The next stage is to use the findings of this study to inform a broader, multi-institutional and multi-disciplinary study that can explore the broader contextual issues around support of the researcher journey and reassess the above priority sets with a statistically larger sample.

## **8. Conclusions**

This paper presents the findings of a study into what students, supervisors and research administrators consider the important aspects of the PhD researcher journey. The study is set in a National context of a focus on a formalized, structured skills development framework but a very unstructured administrative process. The paper reviews the skills development scene and the common perspectives on the PhD journey and the general types of available administrative systems before presenting the findings of the survey. The results show that, in the studied Department, students and supervisors both agree that helping the student gain a PhD is number one importance and the desire to see the student as a professional researcher at the end of the process is highly rated by both. The placement of attending training courses and having regular meetings with their supervisor are seen as important components of this development. For the academics attending training courses was rated lower. Both groups consider it important that research is carried out safely and ethically, with this being the most important, on average, for academics. Research outputs were rated lowest for students but considerably higher by the supervisors, however this may be being influenced by the year of study of the sampled students. The low rating of the importance of administrative needs may be a result of the adoption of the integrated system, which manages much of the administration in the sampled department.

This study has revealed a number of areas where additional questions could usefully be asked. In the wider, multi-institutional survey that is about to be started additional questions will be asked about the current administrative processes to enable a comparative analysis of different practices to be compared. This will not only give information about perceptions but also inform how integrated support systems should be configured to best support the student researcher journey.

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