Integrated work based placements – shifting the paradigm
Sara Smith

University of Wolverhampton (UNITED KINGDOM)

Abstract

Purpose

The role of higher education institutions (HEIs) in enhancing capability development of the healthcare professionals workforce has resulted in work based learning becoming an essential component of awards linked to professional registration. This study explores how key stakeholders (academics, workplace tutors and students) on a programme leading to registration as a Biomedical Scientist (BMS) position themselves in their role and the subsequent impact of this upon delivery of pre-registration training and the development of professional capability.

Methodology

Constructivist grounded theory (CGT) methodology and a mixed-methods approach were drawn upon for the study.

Findings

Findings expose the challenges of a positivist focus and assumptions around workplace learning and professional development presenting a barrier to developing professional capability. In addressing this barrier two strategies of '*doing the portfolio'* and '*gaining BMS currency'* are adopted. The registration portfolio has become an objective reductionist measure of learning, reflecting the positivist typology of practice in this profession.

Practical Implications

To ensure that students are supported to develop not only technical skills but also professional capability there is a need for a paradigm shift from a positivist episteme to one that embraces both the positivist and socio-cultural paradigms, viewing them as complimentary and parallel.

Originality/ Value

The study provides a novel insight into how stakeholders interact with the pressures of internal and external influences and the impact this has upon behaviours and strategies adopted. The theoretical understanding proposed has a range of implications for practice and for the development of practitioner capability through pre-registration training and beyond.

Keywords: Capability, Employability, Workplace learning, Constructivist Grounded Theory, Practitioner Training

1   INTRODUCTION

To meet the challenges of contemporary society there has been a move in the United Kingdom (UK) to ensure that degrees are more applicable to the world of work (Heyler, 2011; Billet, 2015, p.16). The inclusion of work placements or work-based activities as an integral component of a degree programme is one response to addressing this (Brennan and Little, 2006). This integration of workplace learning into programmes of study has been

guided by key themes in government and professional body discourses on practitioner education and capability development (Dearing, 1997; Leitch, 2006; Darzi, 2008). There is a focus upon the development of students as practitioners able to function efficiently in the workplace (Webster-Wright, 2009). A growing number of all undergraduate awards now relate to professional and vocational studies with many, like the Biomedical Science degree which is the focus of this paper, being closely linked to professional requirements and standards (Brennan and Little, 2006; Basit *et al.*, 2015).

A review of literature on the role of work based learning reveals that it is not just about learning to do a job.It is also about personal development and the acquisition of knowledge and skills that transcend settings or roles (Brennan and Little, 2006; Orr and Yun, 2011)). Such an assertion suggests that work based learning enhances the employability of the student. Employers desire a graduate who can quickly adapt to the workplace culture, use their abilities and skills to support the development of the workplace and use higher-level skills to facilitate innovative teamwork (Harvey *et al.*, 1997; Heyler, 2011). In other words, to develop a capable practitioner. The concept of capability emerged in the mid-1980s as the need for a more competitive workforce, able to adapt to rapid changes, was acknowledged (Hase and Davis, 1999). The term is now found 'scattered' within policies, integrated into job profiles and careers information especially for those careers linked to the health care professions. Health Education England (HEE) was established following publication of '*Liberating the NHS: Developing the Healthcare Workforce, From Design to Delivery* (DOH, 2012) outlining a new system for planning and commissioning education and training. Developing the healthcare workforce by building capacity and capability is a key role of this group.

Capability draws on the work of Schön, (2001) and his concept of 'professional artistry', preparing students to apply their knowledge in unfamiliar settings. It involves individuals bringing together their knowledge and skills, including personal attributes, to effectively respond to and tackle a range of circumstances, both known and unknown (Carryer *et al.*, 2007). A capable individual is one who not only has the required knowledge and skills for the role but also has the confidence to apply these in varied and challenging situations, whilst continuing to develop their specialist skills and knowledge (Stephenson, 1998). The ability of individuals to adopt this approach to practice is essential for complex and rapidly changing environments such as the healthcare setting**.** The challenge for those involved in professional education is to be able to move beyond considerations of knowledge and competence to deliver programmes that support the development and assessment of capability and so enable practitioner development.

Theories of practitioner learning that are dominant in the literature are constructivist and sociocultural theories (*Evans et al., 2006*). There is the assertion that learning is situated in everyday social contexts and that learning involves changes in participation in communities, rather than the individual acquisition of abstract concepts separate from interaction and experience (Lave and Wenger, 1991; Engeström, 1996). Many workplaces have the potential to offer a rich learning environment supported through the individual's participation in everyday practice (Billet, 2001;Orr and Yun, 2011). A workplace culture that is ready for work based learning and a team that are supportive of a learning culture have been identified as essential for supporting capability development (Williams, 2010). However, there are barriers to realising this potential and ensuring the effectiveness of workplace learning (Billet, 1996). A range of studies highlight time as a common barrier to supporting students and to facilitating their learning in the workplace (Ellstrom, 2001; Flannagan *et al.*, 2000) In addition, the need for considerable financial resourcing plus support and development for those delivering activities is essential (Spouse, 2001). It is critical in awards linked to professional registration to have a common definition and identity between stakeholders with collaborative networks supporting delivery of the curriculum (Tynjala, 2008; Fullerton *et al.*, 2013). The absence of such networks has been found to act as a major barrier to supporting student learning due to the lack of both a clear focus and of negotiated goals (Lloyd et al., 2014).

1.1 Context to the study

For Biomedical Scientists (BMSs), work based learning occurs in a pathology laboratory. Students produce a portfolio of evidence to document their achievement against professional standards set by the registration body, the Health and Care Professions Council (HCPC, 2014). This forms the basis for pre-registration training. Successful professional registration is via achievement of an accredited undergraduate award in biomedical science and verification of a student's work placement ensuring that they have achieved against each of the Standards of Proficiency (IBMS, 2016). Registration permits the individual to practice as a Biomedical Scientist. However, concern has been voiced by employers during meetings in the region of the UK where this study was undertaken, that many students were not meeting their requirements for a qualified BMS. They felt that on successful completion of the award, newly qualified individuals struggled to apply themselves in the laboratory.

This paper presents the findings of a study in one region of the UK investigating why a gap exists between required and perceived outcomes in practitioner capability in the current undergraduate Biomedical Science award. It addresses three broad research questions:

1. *What are the main factors that stakeholders perceive as barriers or opportunities in the current programme? (students, training officers, laboratory managers and academics)*

2. *How are approaches adopted for curriculum delivery influenced by these factors?*

3. *What is the impact of these approaches adopted by stakeholders on the development of practitioner capability?*

2 METHODOLOGY

The study focuses upon the experiences of stakeholders of the BMS programme who are the students on the award, the academics delivering the teaching at the university and the training officers and laboratory managers delivering the work based curriculum. It seeks to understand pre-registration training for biomedical scientists from the viewpoint of those within it. It requires a methodological approach that allows both meaning and understanding of complex human experiences to be revealed, whilst also addressing the influence of organisational structures and relationships on the construction of communities of practice and learning environments. Grounded theory and phenomenological research have both been used by others to study social situations and the experiences of individuals. They both start with distinct instances of human experiences and slowly unpick these. However, phenomenological analysis is descriptive and the aim is to provide a descriptive understanding and 'true to life' conceptualisation of the experience (Holstein and Gubrium,

2005, p.485). In contrast, grounded theory assumes that meaning must be constructed, and the researcher moves from initial descriptive analysis to higher level abstractions. This is supported by the development of theoretical categories that allow explanatory models to be constructed (Charmaz, 2005, p.509). It takes a 'reflexive stance on modes of knowing and representing studied life' and does not assume that data 'simply await discovery in an external world' (Charmaz, 2005, p.509). Using a GT approach allows the researcher to see beyond the empirical process and develop a deeper understanding and so a picture of 'the whole'. Unlike phenomenology, it enables the researcher to move beyond the experiences of individuals to develop a deeper understanding of multiple interactions and their influence upon social situations.

A constructivist grounded theory approach (CGT) (Charmaz, 2014) **WAS** used to elicit both meaning and understanding of the complex experiences of individuals and groups involved in programmes incorporating integrated work placements and leading to professional registration. The approach allows the voices of the participants to guide each stage of the study to enable the research question to be addressed. Adopting **A** 'how' and 'why' approach of CGT provides understanding not just of what occurs in practice but also to understand why specific positions are assumed by individuals or groups and how these impact upon current practice of delivering the curriculum and supporting learning. **CGTM PROVIDES AN OPPORTUNITY TO ANALYSE, INTERPRET   AND FURTHER INTERPRET DATA GATHERED. HOWEVER, ONE LIMITATION OF SUCH AN APPROACH LIES IN WHETHER THERE IS GENERALISABILITY OF FINDINGS. ACKNOWLEDGING THIS IS AN IMPORTANT CONSIDERATION WHEN ADOPTING THIS APPROACH. THE DEVELOPMENT OF A SUBSTANTIVE THEORY IN CGT DOES NOT CLAIM AN OBJECTIVE TRUTH: IT IS AN INTERPRETATIVE PORTRAYAL CONSTRUCTED THROUGH OUR INTERACTIONS WITH THOSE WHO HAVE CONTRIBUTED TO IT (CHARMAZ, 2014, P.17).METHODS**

Data gathering was undertaken in two stages. The first stage involved the review of professional body publications and minutes from regional training meetings to identify key conversations in the field of BMS relating to pre-registration training and its current delivery. Coding of the documents was used to identify similarities and difference in agendas and perceptions around the delivery and requirement of the BMS curriculum. A questionnaire was then developed directed by the key findings from document review. This was distributed to each of the stakeholder groups (students, academics, training officers and laboratory managers) with pre-labelled return envelopes to allow anonymity of returned questionnaires . Reponses were summarised and interpreted to identify key concepts within the data. A

summary of the questionnaire responses was also used as an 'ice-breaker' to stimulate discussion in the next stage of data gathering outlined below. In total 75 questionnaire responses were received. These included individuals from each of the stakeholder groups with responses from practitioners from 6 of the local 10 NHS Trusts surveyed. Since the fundamental role of this step of data gathering was to identify developing categories to inform further empirical data gathering for analysis, evaluating the response rate to the questionnaire was not of value to this enquiry

The second stage of the enquiry started with the use of focus groups and then individual interviews to investigate further the key concepts identified in stage one. The aim of this stage was to advance emerging ideas from initial data gathering, allowing a deeper investigation and interpretation of how these are manifest within behaviours of individuals and communities of practice towards pre-registration training. Purposive sampling was adopted initially, identifying a suitable selection of individuals to meet the enquiry aims (Morse, 2012, p.237). Choice of participants for each subsequent focus group and individual interviews was guided by the abductive approach of CGT. An abductive approach involves the researcher analysing data, identifying concepts and new ideas and then using further data gathering to 'check' these new concepts (Bryant and Charmaz, 2012, p.46). Possible explanations for the observed data are considered and hypotheses are formed to be confirmed or refuted until the most plausible explanation of the data is arrived at. Theoretical sampling allows the researcher to collect relevant data to elaborate and refine categories in emerging theory (Charmaz, 2014, p.192). Although it is a variation of purposive sampling it attempts to discover categories and their elements in order to detect and explain interrelationships between them. This approach requires sampling until no new properties emerge from the data gathered Individual interviews provided the final stage of data gathering with participants chosen theoretical sampling (Charmaz, 2014, p.192). This approach allowed an in-depth look at specific areas or concepts, enabling further exploration and a greater understanding of the current situation.

Five focus groups and twelve interviews were conducted in total. Each was recorded to allow transcription of conversations. Participants were provided with a copy of their transcript for review and to comment upon allowing participant validation (Silverman, 2014, p.93). Ethical approval was obtained for the study.

3   DATA ANALYSIS

Coding, which is the process of asking analytical questions of the data, was applied to develop a greater understanding of the data and to direct subsequent data gathering to gain a more in-depth appreciation of the area being studied. Codes were produced as short

labels and action codes (Charmaz, 2000) to provide greater insight into 'what individuals are doing'. Focused coding, which involves the condensing of codes, allowed synthesising and conceptualising of the data from each of the methods of data gathering described above and the development of categories. The process of constant comparative analysis enabled codes to be compared to codes, codes to categories and categories to categories facilitating an inductive approach to data analysis and interpretation. Memo writing was used to support examination of codes and understanding of the relationships between categories. Finally, theoretical codes were developed to allow the emergence of a theoretical framework for the overall grounded theory.

Stage One

Initial coding was used to identify developing categories, with key words or statements highlighted to help define implicit meanings and actions. Figure 1 provides an example of such coding to demonstrate how categories were developed.

Coding of excerpts from *The Biomedical Scientist*	Developing categories
..much could emerge from the review and have major implications for the pathology community as a whole…these include payment by results, the implementation of practice-based commissioning.. (Newland, 2008, p.22)	Workforce and capacity for training
…..laboratory managers in UK pathology departments are making clear and deliberate choices to employ graduates from co-terminus/integrated applied biomedical science programmes (Pitt and Cunningham, 2010, p.276)	Degree fit for purpose
Success will depend on appropriately trained trainers supported by sufficient protected time to deliver training…not an excuse to starve training of the support it requires as to do so would be to jeopardise the future workforce skills base, which ultimately would be to the detriment of patient care (May, 2011, p.2).	Training and support for training officers Capacity for training
..competence could be assessed in several different ways. For example, photographs, case studies, certificates of attendance, reflective learning sheets….written assignments (Martin,2009, p959).	Registration portfolio Training for the portfolio

Figure 1. Excerpts of coding from *The Biomedical Scientist*

Four developing categories were emergent from the document analysis and these were reinforced by the questionnaire responses; *Training portfolio, Workforce and capacity for*

training, Support/Training for trainers and Degree fit for purpose. The fundamental role of this stage of data gathering was to inform further empirical data gathering. Questionnaire responses highlighted time, staffing levels and the portfolio as perceived barriers hindering delivery of the current programme. A summary of responses was used initially as an 'ice-breaker' tool to stimulate discussion in the focus groups. Although a questionnaire is not usually a method of data collection adopted for CGT, in this study its role and the presentation of quantitative data to groups of scientists as a 'tool' for stimulating discussion was seen as epistemologically appropriate.

Stage Two

Codes were produced initially through line-by-line coding of transcripts from focus groups and interviews. *In vivo* coding, which makes use of words or short phrases from the data, provided an excellent insight into individuals perceptions of situations and roles (Böhm, 2004, p. 271). It allowed stakeholders' interpretations to be captured, giving rise to terms such as '*tick-box*', '*the lab comes first*' and '*fitting the training in*'. Early coding identified *lack of time for training*, *lack of recognition of role* and *approaches to training* as demonstrated in the excerpts below (fig 2).

Transcript excerpts	Initial coding
TO1:*[training of students] I think it can be used very much as a* tick box exercise *and a case of just* signing it off. *It depends how you approach it and* how much time *you have. And this is purely up to individual disciplines, and training officers*	Tick-box approach Signing-off actions Time
TO2: *I feel that the role should be* properly recognised. *As a training officer you are also expected to work within the lab and the training seems to be* 'if you can fit it in'. *I appreciate that training is very much at the bench as you are doing tasks but I don't think we are giving it as much as we could quality wise. This is possible reflected in the* capability of the 'end product' – *the person who you have just trained.*	Training role not recognised Training as an add-on Fitting training into time frame

Figure 2. Example of initial coding from training officer (TO) and laboratory manager focus groups

During focused coding, data was synthesized from the focus groups and interviews, as well as returning to, and reviewing the documents coded in stage one. This allowed patterns to

emerge within the data as well as gaps indicating the need for further data gathering. Categories were created and amended through being immersed within the data and undertaking continual memo writing. Figure 3 provides an example of a memo entry. The need for additional insight into approaches adopted for training in the workplace was identified to elicit further the concept of separation and this directed further empirical data gathering.

Student:

I haven't started my portfolio yet. The training officer says we don't really have time yet – we are too busy doing the day-to-day work in the lab.

Training officer:

I don't really have time to do the portfolio training with them we are so busy and understaffed. It would mean having to take them away from the work they are doing in the lab and we don't have anyone to cover them.

What do they see the role of the portfolio as? Why is it separated?
Student is separated from the lab?.
Portfolio is separated from working in the lab?
Working in the lab is separated from practicing as a BMS?
Assessing portfolio – not the student?

Figure 3. Memo Extract

The use of diagraming and clustering (Rico, 2000, p.17) was fundamental in the understanding and organising of codes to provide theoretical direction to the study. Codes were clustered to identify processes and then clustered to provide resultant actions leading to the development of categories. The process of constant comparative analysis and abductive reasoning was undertaken until they stopped providing any further insights into the theoretical categories. At this stage theoretical sufficiency was considered to have been achieved (Charmaz, 2014, p. 213). Three theoretical categories were developed through this iterative process: *Role Conflict, Expectations and Ownership*. An example of clustering to provide the theoretical categories is outlined in figure 4.
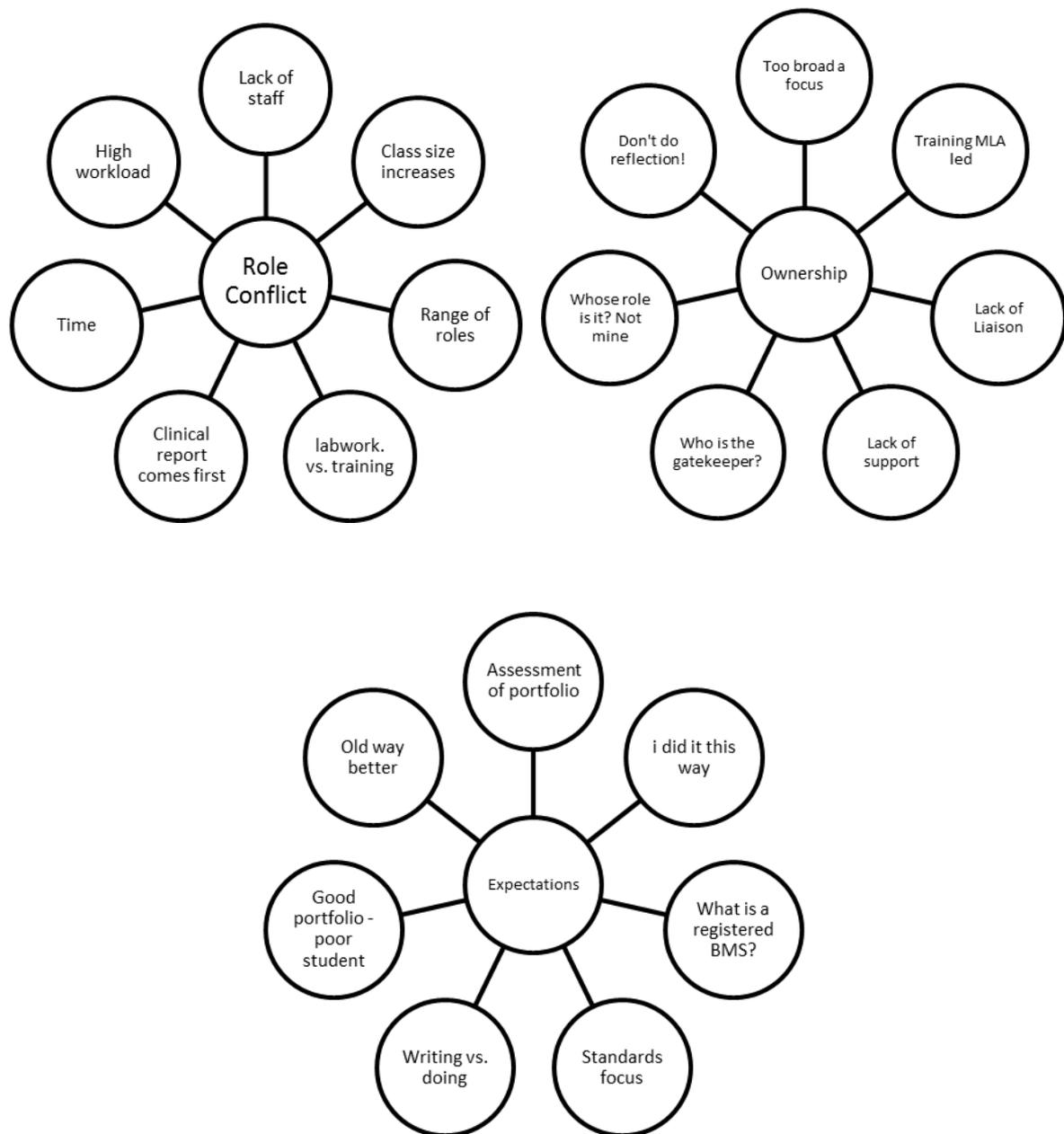
Figure 4. Example of clustering of focused coding to support identification of the theoretical categories of Role Conflict, Expectations and Ownership

4   FINDINGS AND DISCUSSION

Conceptualisation of the interactions and intersections of these three theoretical categories enabled the theorising of the studied experience of the current programme from the perspectives of participants representing the stakeholder groups.

The theoretical category of *role conflict* recognises the challenges faced by each stakeholder group in performing their different roles, recognising the daily struggles of individuals as they adopt 'different hats' in these roles. Each stakeholder group acknowledged the constant

challenge of undertaking competing roles. Students suggested that they had three conflicting roles. Firstly, undertaking work in the laboratory as a member of the laboratory community. Secondly, being a trainee who needed to be taught and learn new tasks to undertake this role. Thirdly, having to undertake specific exercises to allow completion of their training portfolio. Their perceptions of role conflict reflected those held by training officers and laboratory managers. The clinical role of ensuring patient samples were processed in a timely manner always took precedence over other roles for training officers and laboratory managers. Additional roles were defined as training the student to work in the laboratory but also, they saw training to complete the portfolio as a separate and additional role. For academics, the issue of delivering a wide range of requirements to ever increasing class sizes was perceived as resulting in role conflict. They felt that there was little time to provide individual support to students and that they ended up focusing upon measurable outcomes and the acquisition of facts by the students.

Expectations, articulates the views held by participants as stakeholders, around their own expectations of the programme, their roles and the roles of others. It embraces their perceptions of the expected outcomes of the programme and roles within the programme leading to the adoption of specific approaches to support learning and teaching. Expectations differed between the stakeholder groups and within them. Those academics and practitioners who had been within their profession longer had higher expectations of the skills and knowledge that a new graduate should demonstrate. Many laboratory managers wanted an 'oven ready and self-basting' practitioner (Aitkins, 1999); an individual who requires limited induction or support from the employer to enable them to perform their role. This expectation appears to be a result of both an *I did it that way so it should still be the same* attitude coupled with a lack of time to support induction and training for new members of staff due to the increased burden of the clinical workload.

The final theoretical category, *ownership*, emerges as a consequence of *role conflict* and *expectations*. It defines who has 'custody' of the outcomes of the programme and so entry onto the professional register. A lack of ownership of the role of 'gatekeeper' to the professions was demonstrated by both the academic stakeholders as well as work based stakeholders. Practice-based knowledge and the knowledge developed during academic studies are delivered independently of each other requiring the student to 'make the connections'.

Drawing upon the voices of the participants of the study enabled the construction of these three categories and allowed the initial broad research questions to be addressed as discussed below.

Research Question One: What are the main factors that stakeholders perceive as barriers or opportunities in the current programme?

The study identified barriers to supporting and facilitating learning previously acknowledged by other studies. These were time and the need to address the professional and regulatory requirements of programmes (Billet, 1996; Ellstrom, 2001; Flannagan *et al.*, 2000) Academics complained that '*people seem to forget just how big the degree is*' raising concerns around the amount of material they are expected to cover. They saw this as compounded by ever-increasing class sizes. In the workplace, an increased workload and multiple and conflicting roles '*even the training officers aren't dedicated…. just doing it in their spare time'* was identified as creating a barrier of time by a laboratory manager. This mirrors the findings of Lloyd *et al.* (2014) who found that the clinical workload of qualified nurses was prohibitive to supporting trainees. Additionally, the lack of acknowledgement and training for the role of trainer was identified, with a focus upon career development within the discipline area of biomedical science rather than the developmental needs of the 'teacher'. Inappropriate training and preparation for mentors has previously been highlighted as a major barrier to supporting students to apply their knowledge appropriately and develop capability (Duffy *et al.*, 2000; Henderson and Eaton, 2013)

The training officers and academics in the study were very committed to the programme and demonstrated a keen interest in supporting improvements, but limited 'transactional dialogue' (Brookfield,1986, p.20) was evident. Transactional dialogue ensures that each group understands each other's workplace culture and dominant language with a sharing of viewpoints and interpretations to develop a real partnership. Recognition of the tutor, and support for tutors to perform that role, is essential for supporting programmes with integrated work based learning (Pitts *et al.*, 2001; Austin and Braidman, 2008; Bridges et al., 2011; Fullerton, Thompson and Johnson, 2013). The failure to establish this in the current programme has resulted in participants not 'buying-in' to the role of stakeholder, clearly evidenced in the academic group by '*why should we be expected to teach them that – it's something that once they are in practice they get'*. This presents a major unacknowledged barrier since a lack of ownership, interaction and collaboration hinders programme delivery. Issues around this were highlighted by an academic talking about training officers, '*I think we rarely see them and I think it is healthy to have interaction and feedback around the course'*.

A CGT approach enabled the complexity within this current situation to be revealed and interpreted further. Abductive questioning identified that within the academic group, delivery of subject knowledge takes precedence and is valued over supporting professional practice. This was clearly articulated by one academic who stated '*academics just need to know the*

academic requirements and subject but not the application of them. That is where the lab comes in'. Although lack of time was initially attributed to this approach, the positioning of academics within the positivist paradigm compounds the situation reflecting the technical rationality model defined by Schön (2002, p.48). There is a focus upon a positivist epistemology of practice where basic and applied science comes first. Additionally, training officers and laboratory managers' comments highlighted how they perceived the role of the workplace as ensuring students could perform specific tasks, '*it's a hands-on job, not producing reports and doing exams'* again reflecting alignment to a technical rationality model demonstrating a positivist perception of learning within the workplace too. One student commented that:

> *They watch you practise and they say if it is good or how you can improve and once you reach a certain standard [in the technique you are performing] they will leave you.. they don't really ask me questions.*

This highlights the task orientated perception of training for practice. One training manager discussed their use of 'training packs' that '*we use for all staff so that they are equally useful for training a band 8 [manager grade] as they are for MLAs [laboratory assistants] and trainees'.* A 'package based' approach leads to development of what is best defined as procedural knowledge; developing skills for specific jobs rather than a focus on the overall learning experience and the expected depth and breadth of knowledge required to practice at an individual's particular level of responsibility. De-motivation of individuals and a limited focus upon professional development results from such an approach with acquisition of minimum standards being the main goal of training (Leung, 2002). It would not be contested that knowledge is an essential ingredient of learning to practice but the simple mastering of individual skills and knowledge has been shown to be of limited influence in improving professional development (Eraut, 2000). A transmission based approach to learning ignores the community of practice in which the student is working with learning situated in individuals rather than as a social practice (Bleakley, 2006; Owen, 2014).

Many layers of complexity exist around the integration of professional qualifications into degree programmes. Constructing a deeper understanding of the barriers enabled the second question to be addressed.

Research Question Two: How are approaches adopted for curriculum delivery influenced by these factors?

Understanding of the barrier of the scientific paradigm and the adoption of a positivist epistemology of practice to deliver the curriculum is central to interpreting the approaches adopted by participants in each stakeholder group. The adoption of a positivist approach to learning provides a major but unacknowledged barrier since it has resulted in separation of

learning from practice, neglecting other influences, and focuses merely upon acquisition of facts or attainment of isolated competencies. This positioning within a 'patriarchal, positivist paradigm' favours a 'passive pedagogy' (Tedesco-Schneck, 2013, p.59) which ignores the socio-cultural aspects of learning. Knowing is separated from doing, evidenced by '*the academic component refers to what we are teaching them to meet our academic needs*' as stated by one academic suggesting a distinct separation of academic and professional requirements and forms of knowledge. Learning in the laboratory has become decontextualized and separated from '*doing the day-to-day work*', with teaching '*practical competence*' and the adoption of a '*tick-sheet*' to verify training discussed by work based trainers. The concept of being does not exist since working in the laboratory is '*black and white not touchy feely*' as declared by a laboratory manager suggesting that working and learning within the laboratory is free from emotion. This approach to learning in the workplace which views competencies as measurable, behavioural outcomes was further illustrated by the description of '*off-the-shelf*' training programmes used by many laboratories. It reflects the 3Rs approach to training defined by Bathmaker and Stoker (1995, p.55) where the students' involvement in practice is limited, ignoring the social context and cultural tools that shape the way in which a person acts of interacts with their environment (Wersch, 1994). Tedesco-Schneck (2013, p59) suggests that this approach to training is driven by a subconscious need to align with the 'esteemed positivist paradigm of medicine'. The isolation and assessment of tasks to enable transparency and increased accountability provides evidence of this positioning in the BMS programme.

It became clear that reflective practice is not valued by stakeholders in the workplace evidenced by '*I don't know what they are supposed to do*' from a training officer discussing reflective practice, the suggestion that scientists '*do not do reflection*' by a laboratory manager and '*it's not needed all that much*' suggested by a student. The approach reveals an epistemic view of knowledge based upon a technicist construction focusing upon facts and training rather than learning. Since tutors cannot directly observe and measure behaviours such as emotions and thoughts, these are not seen as valid topics and not addressed when viewing learning through a positivist lens. Adoption of a positivist approach has been acknowledged as a feature of traditional curriculums by Fraser and Greenhalgh (2001).

Although the debate in the literature on workplace learning has moved away from the narrow, instrumentalist approach of developing skills and behaviours (Lave and Wenger, 1991; Engeström, 1996; Guile and Griffiths, 2001) findings identify that a behaviourist ideology is still dominant in the BMS programme studied, with the curriculum itself still positioned within a traditional approach which does not support capability development.

Furthermore, this positioning of both workplace and academic tutors has enabled the registration training portfolio to become an objective measure of training, decontextualized from everyday work, clearly evidenced by comments from each of the stakeholder groups describing how assessment is based upon '*evidence in the portfolio*' rather than the students' '*performance in the laboratory*'. Although studies suggest that a variety of professions advocate the use of a portfolio approach to support professional practice (Buckley et al., 2009: Byrne et al., 2009) many studies also warn of the problems faced when the portfolio is employed inappropriately (Paulson et al., 1991; Lam, 2016). The '*writing of bits of evidence*' collected as artefacts to simply demonstrate completion of each assessment and 'signing-off' of each individual area based upon '*whether they have answered some questions that they have been set*' was a recurring theme within conversations with both training officers and students demonstrating this positioning. Such a perception and approach to implementing 'training' has been shown to take the 'artistry' involved in being a practitioner (Schön, 1987, p13) away from practice and relegates the practitioner to a follower of instructions only.

Importantly, the lack of integration of learning into the workplace which allows 'training' to be stand alone to address the portfolio, combined with a failure to ensure that the stakeholders perform their roles, was found to result in relegation of training to a range of staff grades including 'support grades'. Since time is perceived as a major barrier to training evidenced by comments such as '*the work that goes through the laboratory is always going to take priority over training*' a trade-off between 'productive work' and time for learning occurs. This reflects Ellstrom's (2001) findings that the returns for the workplace from 'learning' are less certain and remote than the rewards from 'production' which in turn increases the emphasis on 'production' (Ellstrom, 2001, p.432). Those training officers and laboratory managers who have worked in the profession for longer, with a greater responsibility for managing the workload, had a strong 'production' focus and perceived training as a hindrance for the day-to-day running of the laboratory on the principle that '*patient samples have always got to come first*'. This approach to training stands in stark contrast to training officer and laboratory managers' expectation of outcome of the programme which is to produce students who can work autonomously and unsupervised, able to '*juggle several balls all at one time*', stated as a requirement by one laboratory manager. It highlights an expectation that students should arrive 'oven ready and self-basted' (Aitkins,1999). In addressing the final research question it became obvious that adoption of an approach that does not address the socio-cultural aspects of learning or the requirement for reflection, impacts greatly on the development of practitioner capability and the BMS student resulting in this disconnect between what is delivered and what is expected.

Research Question Three: What is the impact of these approaches adopted by the stakeholders on the development of practitioner capability?

In addressing the final research question two important strategies adopted within the progamme emerged; '*doing the portfolio*' and '*gaining BMS currency*'. '*Doing the portfolio*' represents undertaking the '*separated tasks*' often '*as quickly as possible*' as discussed by one student, and having each competency statement signed off to provide an objective record that training has been completed. '*Gaining BMS currency*' embraces skills and knowledge required to work in a laboratory setting in addition to the skills that are highly valued by employers such as being able to '*juggle several balls at one time*' and possess the confidence to apply their learning in new situations. Crucially, in attempting to address both the acknowledged and unacknowledged barriers identified, '*doing the portfolio*' has become emblematic of BMS pre-registration learning since it removes anomalies, uncertainties and disparities. The practice of the individual student and their progress during the award '*gaining BMS currency*' which represents what is needed to be a capable practitioner has become lost. Both sides of the coin are required for it to be valid currency and this emphasises the interdependence of structural, cultural and pedagogic influences on practitioner growth. The development of capability through a transformative process where an individual applies existing competencies successfully to new and uncertain circumstances (Fuller and Unwin, 2003) is notably absent from the current approach due to its focus upon separated and isolated competences. Barriers have led to adoption of approaches which focus upon competence rather than capability and the evidence from stakeholder discussions identifies that development of capability is not supported by the current approaches in either the workplace or academic setting. The approach falls short of supporting capability since it encourages a focus upon completion of tasks rather than understanding what constitutes good practice and gathering evidence to validate this. The acquisition of specific skills and abilities is an essential component of learning within the laboratory setting since many tasks may be repetitive and there is a need to perform them in specific way. However, the limitations of adopting an acquisition approach alone, which leads to '*a paper exercise*' which the student '*plough(s) though as quickly as possible*' were clearly acknowledged by a laboratory manager who identified that a student could have an excellent portfolio leading to registration but did not necessarily demonstrate capability for practice. It is probably not in a learners' interest to adopt just an acquisition approach to supporting their learning. Instead, pedagogical approaches which support the appropriate use of both acquisition of specific skills by the individual as well as learning as continuous participation in practice are needed (Mann, 2011). The development of autonomy and the ability to make choices are essential skills for the capable practitioner but can only be

developed through an appropriate approach to training (Tikly and Barrett, 2011, p.7). A lack of an appropriate pedagogical approach means that critical decisions and reflective practice are not addressed (Mitchell, 1989, p.63) and the learner is not supported to make the required connections between theory and practice. This was clearly evidenced by one student discussing tasks they had learnt and '*whether or not I could apply them to work in a range of situations is another thing'*. Although disciplinary skills are an essential requirement for entry into the profession and for completion of the everyday workload learning is about more than this. Individuals need to know how the pieces are connected to understand the interactions and relations between all the 'pieces that make up practice' (Fraser and Greenhalgh, 2001). Lester (1999, p.46) argues that practitioners need to move 'beyond map-reading and become active experimenters and constructors of their own practice and the theory on which it is based'; becoming a 'map-maker'. This allows the development of personal identity (Billet and Somerville, 2004) and confidence which are essential skills for the capable practitioner. Through reflection the student can develop situational understanding and intelligent practice (Elliot, 1998, p.124). Like Thompson and Pascal (2012) a common response from practitioners during focus groups and interviews was that '*it comes down to the fact that we don't' have the time to spend on these trainees'*. To address this, reflection itself has been turned into a procedural process with reflective statements being '*descriptions of what they did in the laboratory'* suggesting the consequence of reflection is achievement of set competences (Boud and Walker, 1988). The 'learning cycle' has been adopted but with alignment to a behaviourist learning outcome demonstrating this lack of acceptance of the role of reflective practice and the limited value placed upon this '*touchy feely'* concept. A student highlighted the emphasis placed upon skill development and the portfolio in the academic setting which leads to '*a lack of focus on you as a person and what you are going to go into*' identifying that the emotional and social needs of practitioner development are not being addressed.

5   CONCLUSION

'*Doing the portfolio'* emerges as a way of describing and conceptualising the stakeholders positioning within the current programme. It allows stakeholders to adopt a positivist stance to both learning and training and a way of addressing role conflict, expectations and ownership. '*Doing the portfolio'* provides stakeholders with a strategy of distancing themselves from both delivery and assessment of professional practice and a theoretical explanation as to how the programme is delivered. The integration of a professional qualification into a programme driven by a positivist approach to problem solving and application to practice has resulted in adoption of methods of teaching that reflect the typology of practice. The portfolio is seen as completion of a process with an end result; the

portfolio is the end product just as a 'result' is the end product of processing a sample through the laboratory. Training has become unambiguously packaged into the portfolio which allows it to be treated as an objective, and the only serious measure of practice. It enables structure and readily reflects the adoption of the professional body standards as a competence framework enabling assessment of individual tasks. '*Gaining BMS currency*' introduces ambiguity and individual differences. There is a need to acknowledge the social aspects of learning and that learning is context dependent. Adopting this strategy would require a paradigm shift for stakeholders from their positioning in the scientific paradigm, stepping out of their comfort zone and acknowledging the role of socio-cultural interactions and subjectivity in developing professional practice.

In providing an abstract theoretical understanding of the studied experience this study provides an insight into how stakeholders interact with the pressures of both internal and external influences and the impact this has upon behaviours and strategies adopted. The theoretical understanding proposed by this study has a range of implications for practice and importantly for the development of practitioner capability through pre-registration training and beyond. Within a framework where HEIs have an increasing role in supporting professional learning for the workplace, the findings of this study highlight the challenges encountered delivering on this directive. They offer the potential to develop practices that acknowledge and embrace stakeholder positioning, and the challenges it provides, moving away from the current 'one-size-fits-all' approach which assumes that integration of a placement leading to professional registration into an award will result in everyone 'knowing' and 'delivering' on what is needed. By making visible the barriers that exist in areas dominated by both technical and mechanistic practice and influenced by external performance indicators the findings provide direction for future programme development both in the field of BMS and substantive areas. The development of a substantive theory in CGT does not claim an objective truth: it is an interpretative portrayal constructed through our interactions with those who have contributed to it (Charmaz, 2014, p.17). The substantive theory developed through this enquiry relates to one region within the NHS but could easily be adopted for further investigation with similar stakeholders from other regions to allow a wider insight into the concepts identified. Findings may also be of value to those supporting professional practice within other fields and encourage them to reflect upon skills and pedagogies in their own programmes.

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