How do postgraduate surgeons-in-training learn through workplace-based assessments?

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Statement of Originality

I, Arpan Tahim, confirm that the work presented in this thesis is my own. Where confirmation has been derived from other sources, I confirm that this has been indicated in the thesis.

Arpan Tahim
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Signature:

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“We are like dwarfs on the shoulders of giants, so that we can see more than they, and things at a
greater distance, not by virtue of any sharpness of sight on our part, or any physical distinction, but
because we are carried high and raised up by their giant size.”

- Bernard de Chartres
Abstract

Workplace-based assessments (WBAs) are a central part of the education and supervision of postgraduate surgeons-in-training in the UK. This thesis explores what these surgeons-in-training experience, and learn, as they take part in a WBA. Existing research has viewed the WBA as an instance of assessment of a learner’s practice, focusing predominantly on their standardised outcomes and users’ perceptions of them. There is little research using direct observation of the WBA in-situ, thus limiting our understanding of how they ‘get done’ and how they are incorporated into practical routines. Therefore, there is no empirical basis for predicting the learning potential of WBAs, for justifying their outcomes or for explaining user perceptions of them. This study explores this research gap.

Adopting a constructivist perspective, this research integrates ideas from sociocultural learning theory, workplace learning theories, and Goffman’s notion of social performance to better understand how surgeons-in-training learn through WBAs. I frame WBAs as social processes, woven into the fabric of everyday working practice. Data were generated through audiovisual recording and observation of clinical activities, the WBA proformas that learners completed, and interviews with each learner.

My data analysis drew out how learners actively construct WBA documents as self-presentations. Learners select, omit, and mould different learning narratives that have themselves been constructed through each learner’s interaction with their dynamic learning milieu, as they participate in WBAs according to a set of tacit principles. Findings illustrate the highly individual, personalised ways that WBAs unfold. While WBAs are officially a standardised tool for objective assessment of learner performances, this work shows that the WBA is a unique, highly subjective representation of a learner’s understanding of their working world.
Impact statement

This study provides key theoretical, methodological and practical contributions to WBA research and knowledge. The existing literature base is under-theorised and has focused on the WBA as an assessment instrument solely within a positivist paradigm. This research has generated new empirical data which expands the current narrow research perspective to analyse the WBA using a different, constructivist approach. It offers theoretical insights which have not previously been available to the surgical education community, shedding light on the WBA as a meaning-making process that is embedded within a learner’s routine. Attending to the meanings that learners attribute to their own individual WBA experiences has helped elucidate what, and how, surgeons-in-training learn from them.

A further impact of this study is its methodological contribution to the field of surgical education. This research harnesses an approach based upon naturalistic inquiry (using both video ethnography and multimodal social semiotics) to highlight the intricate relationship between a learner’s working practice and a WBA – how one becomes another. It introduces novel ways to represent the happenings of various clinical activities and to relate them to what learners document in pro formas. Using timelines, plots and detailed multimodal transcripts, along with conceptual models related to palettes and playbooks, it describes how WBAs come to be - interwoven with every day, real-world, normal situations. Such analysis has been lacking in WBA research to date but this study showcases how WBAs unfold within the complexity of the surgical workplace. In doing so, it demonstrates the potential of naturalistic inquiry to highlight, explore and more clearly understand how WBA policies are enacted as WBA practices in the real-world. In this way, it provides a possible framework for future researchers in the field of surgical education to better analyse other interactions within the surgical learning environment and more fully understand the complexity of the surgical workplace.
The research findings have implications for policy and practice within surgical training programmes. Understanding how learners engage with WBAs as practices embedded in daily life provides useful insights into firstly, how WBA policies have been interpreted, and secondly how those policies influence the everyday practice of the learners that are guided by them. By outlining the highly individual, personalised ways that WBAs unfold in the real-world (and how learners understand and present these experiences), this research argues against their role as a standardised tool to objectively assess a learner’s performance. Instead, this work proposes that the WBA is a unique representation of a learner’s understanding of their working world, their experiences and their contexts, at that particular time. This representation becomes fixed as it is reified in an institutionally-driven, written document. This research advises policy-makers and surgical educators that the subjective nature of the WBA needs not only to be recognised, but acknowledged as uncontrollable. In this way, rather than a weakness to be glossed over, the highly unique learning potential of each WBA as an episode of meaning-making can be harnessed as a key strength in the education of postgraduate surgeons-in-training.
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A day in the life of a surgical learner

Work was typically chaotic. At seven in the morning, I was in the surgical admissions lounge admitting the two patients on my elective list that day. The first patient needed the lymph nodes removed from her neck. I had met her several times before in clinic with the boss so it was a quick discussion. I hadn’t met the other patient before. He needed his parotid gland removed but thankfully the boss had gone through the procedure with him in clinic a few weeks ago. I answered the few questions he had, handed the notes back to the nurses and headed upstairs to the emergency theatre meeting. I was on-call that day too and knew that there was a fractured jaw that needed repairing. I was told by the duty anaesthetist that it was likely to get done at some point later in the day. “This is going to clash with my parotid,” I silently predicted as I headed up to the ward. On the way, I telephoned the boss to let him know all was in order.

The junior doctor who had been working overnight was already in the ward office with the other junior doctors. I quizzed them all about who was doing what that day.

“I’m on the wards today,” said one of them, to which I replied,
“So, they said they’ll send for this fracture sometime this afternoon and I will need your help in theatres.”
“Should be easy, right? It’s just a single fracture,” he said casually while loading the x-ray on the screen. The on-call consultant walked in, glanced briefly at the x-ray and sat down. The overnight doctor presented all the ward patients one by one. As he got to this patient, the consultant looked up at the screen again, and then at me.
“Is this his? It will be harder than you think. I’ve got clinic all day, but just let me know if you need me.”
I nodded.

After the ward round, I made my way, quickly, back to theatres where the first patient on the list was being wheeled in from the anaesthetic room. Perfect timing. My boss and I started scrubbing.
“Good cases these. You can do both of them.” he said. I had assumed this already, but it was nice to hear it on the day.
“Thanks, great.” I nodded. “There is one fracture on the emergency list though. Quite a tricky case, actually. But they are not sending until later.”
“Ok. Let’s see how it goes.”
The procedure went well and I knew it. As I was stitching the skin closed at the end of the operation, even the boss commented,

“That was pretty good.” He looked behind him at the clock. “And pretty slick. I mean, I don’t think you would have been able to do that a couple of months ago?”

“No, I agree. I can’t complain. I’m going to send you a WBA.”

“Ah, yes. The form. The gift that keeps on giving. I don’t think I’ve even signed the other ones you sent me yet.”

I finished closing, de-scrubbed and wrote up the op note before heading off with the boss to grab a quick coffee before the next case. We came up to the surgeon’s coffee room and started to discuss where to make my incision and how I would find the nerve. All things I knew in theory, but translating them into real life was always difficult. About 30 minutes later, I had just marked my incision on the next patient when the theatre co-ordinator peered around the theatre door.

“Your emergency patient is on the table,”

My apologies to my boss were met with an eye-roll as I de-scrubbed and wandered to the emergency theatre as he took over.

As expected, it was not easy to fix this jaw fracture. It was, in fact, very difficult and stressful – one that I also would not have been able to do by myself a couple of months ago. I gradually got the bone fragments aligned properly, the plate in the right place and screws in firmly. But the whole case had taken me far longer than expected. I walked back to the other theatre, a little frazzled, just as the boss was closing up. He looked up over his operating loupes.

“All done?”

“Yes, very fiddly though.”

He shrugged.

“That’s a shame. This would have been a great one for you to do.”

- Adapted from a diary entry I made about 12 months prior to embarking on this research journey
Introduction

This thesis examines an activity familiar to many healthcare professions: the workplace-based assessment or, as it is colloquially referred to, the WBA. There are different versions of WBAs that are used across medical education and there is also flexibility in how they can be conducted. They typically involve a clinical teacher, acting as an assessor, observing an episode of patient care that the learner carries out as part of their practice. The learner’s performance during this episode of patient care is numerically scored by the clinical teacher, using a pre-structured and standardised proforma on which the outcome of the assessment is documented. In addition, this proforma allows for a free-text record of any advice, feedback and guidance given to the learner by their clinical teacher. The completed proforma is then uploaded to the learner’s online learning portfolio, thus formalising the learning episode for future reference. Learners might refer back to these episodes during their regular supervisor’s meetings that occur during their placements or individually as informal self-reflections. In addition, the uploaded proformas are important for a learner’s progression through their training pathway because the outcomes of a learner’s WBAs are reviewed during their Annual Review of Competency Progression (ARCP) meetings.

Perhaps, more importantly, this thesis is also about postgraduate surgeons as learners, exploring the WBA from their point of view. It is about what learners experience (and learn) as they take part in what have become routine, expected, yet not fully embraced, forms of assessment which take place as part of their daily working practice. The vignette above provides an account of my own real-world experience of WBAs in practice. Instead of viewing the WBA as solely an assessment process, I propose that these WBAs are fundamentally social processes - social processes which are intertwined and woven into the fabric of everyday working practice.

To understand people learning in, and not from, the social world, requires an appreciation of the individual learner, as a whole person, in action and acting within
the settings of an activity (Niewolny and Wilson 2009). Learning in the social world becomes a process of meaning-making, where individuals are actively engaged in making sense of the situation at hand – for example the frame, objects and relationships of that situation – drawing on their history of similar situations and on available cultural resources (Zittoun and Brinkmann 2012). Through my research, I aim to analyse and understand the meanings learners attribute to their own individual clinical experiences and therefore what (and how) they ultimately learn from them.
Research questions

The approach that I allude to above, and will set out in detail in the coming chapters, differs from existing research in this field. Prior research has largely focused on the outcomes of WBAs (for example, how well a learner performs according to the scores on the WBA proforma) and user perception (such as, how participants feel about WBAs). There is little research which examines the process of the WBA in everyday working practice. This has limited the understanding of what actually happens during a WBA and how it shapes future learning. Therefore, there is no sound empirical and theoretical basis for explaining the outcomes and users’ perceptions of WBAs, or for predicting their learning potential. To this end, I set out to answer the following research question:

“How do postgraduate surgeons-in-training learn through workplace-based assessments?”

Breuker and Cerri (2012) propose that learning is a side effect of activities and experiences, regardless of the intention to learn (or not learn). Put another way, as described by Eraut (2007), learning, particularly in workplace situations, is often tacit, unarticulated or potentially unintended. That is not to say that this is negative or deleterious, but rather that there may be more complex links between what is intended that a learner should learn, and what they actually learn. In this way, my intention was not to audit whether or not WBAs are carried out correctly, but rather to understand how learners engage with and make meaning from (i.e. learn through) WBAs as workplace activities. To structure my exploration of the broad research question, I devised the following secondary questions:

1) How are WBAs embedded in everyday working practice?

2) What does a WBA look like in-situ and how is it currently conducted by surgeons-in-training and their assessors?
3) How do the real-time clinical events that learners take part in get transcribed into formal, written WBA documents?

4) Why do these documents get generated in these ways?

5) What meanings are made by the learner as they initiate and follow through with the WBA process?

I will now outline how I have approached and addressed these questions, before introducing some key terminology that I use through this thesis.
Thesis overview

Through the following chapters, I lay out my exploration of the research questions. In chapter 2, I interrogate and critique what has been written about the WBA, delineating how it has been explored in the setting of postgraduate surgical education. I explore the rationale for its introduction and integration into surgical education pathways in the UK, the intended purpose of its use and how this use has been evaluated to date. I argue that this body of work has shaped how the WBA has been studied by, presented to and conceptualised by the surgical education community. I propose that this WBA discourse does not reflect what is happening during these complex social interactions that occur in the real-world workplace, and therefore does not provide a robust explanation for what is happening to learners as they take part in them.

In chapter 3, I outline a set of theories that have helped me focus on these ‘assessments’ as part of a working practice, rather than as instances of assessment of a learner’s working practice. The collection of theories that I draw from include sociocultural and workplace learning theories, with an acknowledgement of the importance of the social performance that permeates through a learner’s working practice. These served as a theoretical framework which has allowed me to study the WBA in an alternative way. They provided different insights, which enabled me to better understand what happens to learners in these situations, how learners engage with WBAs, and therefore what learners learn from WBAs.

I outline the design of my study in chapter 4, justifying the reasoning and rationale for my methodological choices. I propose that the observational, video-ethnographic and interview approaches that I have adopted have allowed me to better understand the WBA, and the learner’s interaction with it, as a social exercise. These approaches have allowed me to plot, in real-time, how learners’ engagements during their clinical, lived experiences become reified in meaningful ways in the formalised WBA documentation that are created about those experiences.
I then discuss my empirical findings in chapters 5-9. In chapter 5, I look closely at, and draw insights from, the clinical experiences which learners generate their WBA documents about. I describe how clinical activities unfold for the learner, as they engage with their learning milieu. I examine how learner experiences emerge, overlap or fuse with their other working practices. I show how learners experience these activities in real-time, not as discrete events, but as messy micro-events. These happenings are *smudged*, with ill-defined edges, as learners move to-and-fro between activities that they later see as part, or not as part, of their WBA experience. In this way, I highlight the unstructured nature of working practice, in contrast to the retrospectively applied structure of the WBA document, which learners often superimpose on their clinical experiences.

In chapter 6, I use multimodal social semiotic theory to conceptualise the learner experiences that are later documented on WBA proformas. I describe how learners make sense of these experiences in real-time and propose that they do so by constructing personally meaningful learning narratives. These are manufactured in real-time, *in-situ*, by the learner, as they draw together, or build on, different micro-events and experiences that they personally relate together. These learning narratives become the storylines for WBA documents that learners subsequently create.

In chapter 7, I turn my attention to understanding the WBA document that learners create about their clinical experiences. I frame this document as an entity, separate in time, space and modality, from the clinical experiences that previous literature has assumed this document directly correlates to. I present the different ways that learners interact and engage with the WBA proforma. I argue that learners have to re-interpret their experiences in a way that allows them to make their entries on these proformas and I identify why they are re-interpreted in certain ways. I also propose how, in certain instances, in addition to storylines that learners carry forward from their clinical experiences, the nature of the WBA document itself leads learners to generate other narratives that they include in their proformas. In this way, it also shapes the way they frame their clinical experiences.
I then describe the ways that learners re-interpret their experiences as they create their WBA documents in chapter 8. Here, I introduce a metaphor relating to an artist's palette and suggest the completion of the WBA document is not an inert documentary process, but one of active construction. I propose that learners use different palettes (which I name bureaucratic and educative palettes) which influence the appearance of the completed WBA proforma. In this way, rather than directly reflecting the learner's clinical experience, the WBA document is a representation of the learner’s understanding of their working world at the time at which that document is created.

I expand on this further in my final empirical chapter, where I explore the WBA proformas as social spaces in which learners perform before various audiences. These performances represent an amalgamation of the meanings that learners have made throughout the process of participating in their WBAs and generating their WBA experiences. During the chapter, I delineate the WBA playbook, a set of tacit, social principles, to which learners adhere in order to present themselves, in a manner they see fit, through their WBA documents.

I conclude this thesis in chapter 10, where I draw together and summarise the assertions I have made from my empirical work. I put forward my claims on the trustworthiness of this research, paying close attention to the reflexive approach I have adopted throughout. Finally, I focus on the implications of my research findings for policy and practice in surgical, and broader, workplace learning and education.
Terminology

Below is an explanation of the commonly used terms and abbreviations as I have used them in this thesis:

**WBA**  Workplace-based assessment
- A key subject of this thesis. It represents the generic name for a collection of practices which involve an assessor observing an episode of patient care that the learner carries out as part of their practice. The learner’s performance during this clinical activity is numerically scored and recorded by the assessor using a pre-structured and standardised proforma on which the outcome of the assessment is documented. There are four types which are outlined in the thesis.
- During this thesis, I refer to the record created about the clinical activity as the proforma or WBA document.

**Learner**  The surgeons-in-training in this study
- All learners in this study were enrolled in a surgical specialty training programme and were required to complete WBAs as part of their portfolio for progression through their training pathway.
- In the workplace, and literature about surgical education, learners are often referred to as trainees. The terms are used interchangeably in this thesis.

**Assessor**  The learner’s assessor during the WBA
- This is the senior colleague with whom a learner interacts during the clinical activity that is later recorded as a WBA. In this study - in the real-world workplace - assessors were found to have multi-functional and simultaneous roles, whereby they were also the learner’s clinical supervisor/teacher and were the surgical specialist responsible for the patient’s care.
- In the workplace, and literature about surgical education, assessors/clinical supervisors are often referred to as trainers or clinical teachers. The terms are used interchangeably in this thesis.
Annual Review of Competency Progression
- This represents a key summative review, equating to an annual appraisal process for specialty trainees to ensure that they have achieved appropriate milestones (including a portfolio containing appropriate numbers of WBAs) and are progressing suitably through the specialty training programme.

Specialty trainee + year
- The training title given to the learner by their Deanery (which is the regional organisation responsible for the supervision of postgraduate surgical training the UK). This term is an abbreviation of the role of the learner (i.e. they are a Specialty Trainee) and the year of surgical training they are in (denoted by the x). Core surgical trainees range from ST1-2. After this they become specialty trainees (which are the subject of this research). Specialty trainees range from ST3 to ST8.

Certificate of Completion of Training
- This is awarded to surgeons-in-training once they have completed their specialty training programmes and indicates they have no longer in training.

Intercollegiate Surgical Curriculum Programme
- The web-based platform that houses the General Medical Council approved curriculum for UK surgical training. It also enables trainees to record their achievements as they progress through their training in its online portfolio.

General Medical Council
- The regulatory body for medical professionals in the UK.

Oral and Maxillofacial Surgery
- The particular surgical specialty that I have chosen to pursue and often used as an example in this thesis.
Chapter 2
The WBA in surgical education

Introduction

In this chapter, I explain what a WBA is and outline its place in the surgical training pathway. I examine and critique the policy literature, theoretical literature, and empirical literature to show how WBAs have been conceptualised, explored, and presented to, and by, the medical education community. Typically, researchers have adopted positivist perspectives, where WBAs have been used to try to measure learner competence. Therefore, WBAs have been framed as objective windows onto a surgical learner’s habitual practice, confusingly serving both a summative and a formative purpose. I conclude this chapter by problematising such conceptualisations, and arguing they may be too simplistic to understand what learners take away from these exercises. I propose that a different approach to studying a learner’s interaction with the WBA, one based on constructivist principles, may provide clearer insights.
The WBA within postgraduate surgical education in the UK

In any given year, there are approximately 4,500 surgeons-in-training in the UK (Royal College of Surgeons 2018). Their education pathway typically includes a medical undergraduate degree, followed by a two-year generic Foundation Programme. At this point, a junior doctor with an interest in a surgical career applies through a national recruitment scheme for entry into a two-year Core Surgical Training programme. Those who are successful spend these two years rotating through different surgical placements in several specialties on a four to six monthly basis. During this period, surgical learners finalise their choice of surgical specialty and compete for a place on that specialty training programme. These specialty training programmes (denoted by the term Higher Surgical Training in figure 2.1) are five or six years long and upon successful completion, learners are awarded their Certificate for Completion of Training (CCT).

![Diagram of the surgical training pathway](image)

**Figure 2.1**: The surgical training pathway (Fitzgerald et al. 2012)

This study explores an aspect of learning that occurs during the period of specialist training (in figure 2.1 this is referred to as Higher Surgical Training). Here, having developed core skills through their Foundation Programme and Core Surgical Training, these postgraduate surgeons-in-training learn the specialist skills to
practice in their chosen surgical specialty. It is to this group of surgeons-in-training that the term *learner* applies in this study.

Within a specialty training programme, learners typically rotate though different hospitals on a 6-12 monthly basis within a local region, working with, and learning from, different clinical teachers and supervisors within their chosen surgical specialty. During this period, they maintain a learning portfolio which is housed on the Intercollegiate Surgical Curriculum Programme (ISCP) online platform (see www.iscp.ac.uk). This learning portfolio has numerous elements, in addition to WBAs, that demonstrate progress and development during the training programme, as shown in figure 2.2.

<table>
<thead>
<tr>
<th>Attendance at departmental meetings</th>
<th>Case-based discussions</th>
<th>Conferences attended</th>
<th>Courses attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct observations of procedural skills</td>
<td>Clinical audit</td>
<td>Learning agreements</td>
<td>Mini-clinical evaluation exercises</td>
</tr>
<tr>
<td>Multi-source feedback</td>
<td>Patient feedback</td>
<td>Personal development plans</td>
<td>Positions of responsibility</td>
</tr>
<tr>
<td>Presentations given</td>
<td>Procedure-based assessments</td>
<td>Projects conducted</td>
<td>Publications</td>
</tr>
<tr>
<td>Research conducted</td>
<td>Self-reflections</td>
<td>Surgical operative logbook</td>
<td>Teaching given</td>
</tr>
</tbody>
</table>

Figure 2.2: Components of a surgical learner's online learning portfolio (WBAs are highlighted)

A learner's progress through their training programme is summatively assessed and recorded during formal Annual Review of Competence Progression (ARCP) meetings, which serve a similar function to annual workplace appraisals. An important marker for progress through these meetings is the appropriate completion
of a pre-determined quota of WBAs. Although overall requirements differ between region and specialties, as an example, a specialty trainee in Oral and Maxillofacial Surgery (OMFS) is currently expected to complete 40 WBAs each year. This equates to roughly one WBA event every week, which represents a significant component of the learning portfolio.

A WBA involves a clinical activity that the learner participates in. Some are activities that a learner performs and which are observed by an assessor. Some are clinical discussions with an assessor. The different types of WBAs are shown in figure 2.3.

<table>
<thead>
<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini-clinical evaluation exercise</td>
<td>mini-CEX</td>
<td>Observed assessment of a learner’s clinical skills e.g. history taking, examination or information giving. These tend to reflect non-operative learner-patient interactions.</td>
</tr>
<tr>
<td>Case-based discussion</td>
<td>CbD</td>
<td>Formal discussion related to the care of a patient with a focus on knowledge and attitude. These reflect the inter-professional discussions that occur in the clinical workplace.</td>
</tr>
<tr>
<td>Direct observations of procedural skills</td>
<td>DOPS</td>
<td>Observation of a practical skill conducted by a learner. This refers to the conduct of relatively simple interventions.</td>
</tr>
<tr>
<td>Procedure-based assessment</td>
<td>PBA</td>
<td>Direct observation of a procedure or operation. This refers to the conduct of more advanced procedures, which typically take place in the operating room.</td>
</tr>
</tbody>
</table>

Figure 2.3: A summary of the types of WBA (adapted from Shalhoub et al. 2014)

In all these types of WBAs, the assessor makes judgements and gives feedback to the learner about their performance. Both judgements and feedback are structured through standardised, online proformas (Norcini and Burch 2007), which are populated, uploaded onto, and then stored in the learner’s ISCP learning portfolio. I have summarised the steps within a WBA in figure 2.4.
The multi-source feedback activity, which I have also highlighted as a WBA in figure 2.2, is carried out differently to all other WBAs and therefore is not part of this research. The other four types of WBAs that I detail in figure 2.3 follow the format that I explained earlier. However, they focus on different elements of a learner’s surgical practice. Some are used to assess procedural skills, some focus on clinical skills (such as a learner’s ability to examine a patient), while some are based on inter-professional discussion. In this way, WBAs are not all the same. The differences are important to be aware of because the current WBA literature sometimes groups WBAs together, while at other times isolates individual types of WBAs. The heterogeneity of WBAs is also important to acknowledge because WBA users themselves appear to differentially value the different types of WBAs, particularly in surgery (Phillips, Madhavan et al. 2015).

The four types of WBAs that I considered in this study (as detailed in figure 2.3) share a similarly designed WBA proforma (an example of which is shown in Appendix A), made up of several distinct sections. The key sections for this study are related to i) written feedback, ii) domain-specific checklists and iii) a global outcome.

i) written feedback

There are free-text spaces in the proforma where users are invited to document feedback related to learner performance during the observed clinical activity. A guiding structure invites users to input comments under topics related to general feedback, strengths, development needs and recommended actions. Learners also
have the opportunity to note their own reflections on their experience, which they can choose to leave hidden from their assessors. It should be noted that despite the explicit request for written feedback, it is possible to submit, validate and upload the proforma without entering comments into these free-text spaces.

ii) domain-specific checklist
Domain-specific checklists break the clinical performance down into standardised components. The checklist varies depending on the type of WBA. Case-based discussions (CbDs) and direct observation of procedural skill (DOPS) assessments contain ten components while in some procedure-based assessments (PBAs) there are over 45 components. After each of these components, there is space in which the user is invited, but again, not mandated, to enter free-text comments.

iii) global outcome
The global outcome, also called the global rating/summary or performance level, is often the quoted outcome of a WBA - a numerical value between one and four, which denotes how well a learner performed during the observed activity. The options are selected from a drop-down menu. Lower scores indicate increasing guidance and support were required, while higher scores mean the activity was performed more competently with less guidance or intervention by supervising colleagues.

In this section, I have introduced the wider educational context within which a learner encounters a WBA. I have acknowledged the differences between the types of WBA that a learner undertakes and described the format of the proformas which are used to document these WBA events. I will now build on this overview by presenting my examination and critique of the policy, theory and empirical literature that have shaped the current understanding of the WBA by the surgical education community.
WBA policy and practice

Historical backdrop

A WBA refers to the assessment of a day-to-day practice undertaken in the working environment of a postgraduate surgical learner (Postgraduate Medical Education and Training Board Workplace Based Assessment Subcommittee 2005). In surgery, these day-to-day practices are diverse. They range from interactions with patients, families, or colleagues in wards or clinics, through to the execution of precise technical skills in the procedural or operative setting. Throughout history, surgeons have been educated through an apprenticeship (Kerr and O'Leary 1999), an example of which is provided by James Paget's autobiographical account of his formative years (Paget 1901). In the apprenticeship model, the diverse range of surgical practices described above, along with other educational processes such as progress monitoring or feedback, were largely managed informally or may have even gone unrecognised (Hurreiz 2019).

Over the last 30 years, postgraduate medical education has undergone a profound transformation. There has been a change in emphasis from the experiential learning of the traditional model of apprenticeship towards a competency-based, time-limited approach (Iobst et al. 2010). Contemporary competency-based models of education now require learners to demonstrate competency in the workplace – namely that they have the knowledge, skills and attitudes required for independent practice as a specialist within their chosen field (Burg 1982). This means that the previously undefined and nebulous educational activities, practices and processes now need to be made explicit. Furthermore, the successful outcome of these educational activities needs to be continually measured and assessed (Frank et al. 2010, Holmboe et al. 2010).
There were controversies that surrounded the shift to competency-based medical education. These were highlighted in accounts from the early 1990s, exampled by this view put forward by Hyland (1993):

“This attempt to specify exactly what is to be achieved and measured is, of course, nothing more than reconstituted behaviourism and, indeed, the origins of competence-based education are clearly to be found in this tradition. Constructed out of a ‘fusion of behavioural objectives and accountability’, the movement provided a new ideology with irresistible appeal to those seeking accountability and input-output efficiency in the new economic realism of the 1980s.” (p58)

More recent authors appear to agree with Hyland as they caution against simply measuring what is easily measurable (Boulet and Durning 2019). However, for me, Hyland’s quote also illustrates how the shift towards competency-based medical education was situated within a broader, complicated set of socio-political, cultural and economic contexts – for example, the rising prominence of the neoliberal orientation in the late 20th Century (Garnham 2017). Intertwined with this increasing dominance of market forces came changes in societal perceptions about professionalism (for example in medicine, law and teaching, see Burger 1993, Connell 2013, Mayes et al. 2016), and a culture more focused on accountability, transparency and value-for-money (Taylor 2014, Besley 2019).

Calman (2007) outlined how these wider, global contexts influenced and interlinked with elements within the UK medical education system in the late 20th and early 21st century to create an environment in which the shift to an approach based on competency development was probably inevitable. He suggested national, structural changes within the UK’s National Health Service (which is where surgical education for the postgraduate surgical learner in the UK largely takes place) disrupted the traditional learner-supervisor dyadic training patterns (Albanese et al. 2008). As an example, there was a shift from inpatient to outpatient based services. Although this led to clinical and cost benefits by reducing the time spent by the patient in hospital,
the changes reduced the time that patients were present as learning and teaching resources (Debas et al. 2005, Gopakumar et al. 2010).

In the early 21st century, some felt that legal restraints on working times for junior doctors limited the number of hours learners could be present in the workplace (Anwar et al. 2005). This in turn required hospital trusts to implement shift-based rota systems, leading to restricted ‘face-time’ with supervisors, difficulties in obtaining feedback and diminished opportunities for learning (Bates et al. 2007). The accompanying evolution of public and political interest in, and interrogation of, the performance of doctors then emphasised a need for targets, hospital ratings and publication of outcomes (Mason and Street 2006, The King’s Fund 2010). The medical profession was urged to show accountability for itself (Patel 2016). For example, learners were encouraged to hold their training bodies to account for the education they were providing, which was not necessarily the case in the less formal apprenticeship models that existed twenty years earlier (Heining et al. 2020).

Calman (2007) also argued that the domain of medical education itself was professionalising. The volume of educational research, and the respectability of that research, was increasing. Educational innovations using standardised assessment mechanisms (for example the Objective Structured Clinical Examination (OSCE) (Zayyan 2011)) had been successfully integrated into undergraduate examinations, while simulation, clinical skills labs and problem-based learning were all becoming widespread in the medical education community (Bradley 2006, Neville 2009).

These contexts provided the backdrop against which a large-scale, top-down overhaul occurred in the early 2000s to put in place the system in which surgical learners currently practise. Championing this change were a powerful set of national bodies, including the General Medical Council (GMC) – the independent regulator for doctors in the UK, the Academy of Medical Royal Colleges - the coordinating body for the UK and Ireland’s 23 medical Royal Colleges and Faculties, and the Department of Health (Donaldson 2002, GMC 2010).
The rise of the WBA

In the latter part of the 2000s, WBAs were rapidly promoted as tools to identify ‘areas for improvement that are based on supportable evidence’ (Postgraduate Medical Education and Training Board 2009, p6). They were fashioned as a cornerstone of postgraduate, competency-based medical education in all medical specialties in the UK. In this way, WBAs became (and remain) heavily entangled with postgraduate curricula, as demonstrated through explicit references in the Gold Guide (2020). This important document is the current postgraduate specialty training reference manual. It states a requirement to:

“deliver a coherent approach that supports the trainee in developing their competences/capabilities in a sustainable way through a combination of workplace-based assessment, both formative and summative. This approach is designed programmatically so that the clinical and professional performance of trainees in everyday practice is assessed.” (p55)

The WBA’s inclusion in this policy maintains a relentless emphasis on the ceremonious measurement and assessment of a learner’s day-to-day practice using WBAs in both for- and of-learning capacities.

Although judgements have always been made of learners in the surgical workplace, defining and formally capturing these judgements started with the launch of the ISCP website in 2007. This website housed the newly formed surgical curriculum and monitored the learner’s progress as they covered that curriculum. It represented a significant change in surgical education (McKee 2008), symbolising a shift in focus away from the length of time a learner spent in training. Instead, the focus moved towards the aforementioned competency-based curriculum, where a learner’s progression depended on their demonstration of appropriate competence. This, however, required demonstrable evidence of workplace competence and appropriate behaviours/attitudes. Traditional, formal and prestigious postgraduate surgical examinations would not be able to capture this evidence and therefore, importantly,
WBAs were proposed as the alternative through which learner competence in clinical practice could be captured (Postgraduate Medical Education and Training Board Workplace Based Assessment Subcommittee 2005).

The ISCP guidance (2018) on the use of these assessments explicitly states that WBAs should be carried out as part of the normal immediate feedback process during training. It propounds how any one individual assessment would \textit{not be seen as a pass or fail event}. Rather it should be seen as a \textit{process of learning} throughout each placement. The guidance emphasises that trainees should regard it as a professional issue to maintain an accurate record of all WBAs in the electronic learning portfolio. Because WBAs are \textit{assessments for learning}, trainees should not discount the ones that they regard as unsatisfactory. Instead, they should repeat assessments as often as required to show progress. Finally, guidance states that assessors are required to validate the assessments they have carried out.

The phrases \textit{‘process of learning,’ ‘not be seen as a pass or fail event,’} and \textit{‘assessment for learning’} are frequently used in the ISCP guidance and seem to support a formative use for WBAs. In this way, they align with the views put forward by Beard (the Education Tutor at the Royal College of Surgeons of England at the time) - that WBAs provide “\textit{trainees with constructive (formative) feedback},” and help supervisors “\textit{chart a trainee’s progress during a placement}” (Beard and Bussey 2007, p158). Similarly, there was an acknowledgement in the ISCP (2018) guidance that the WBA contributes to a collection of evidence on competence (‘\textit{any one individual assessment is not seen as a pass or fail event}’). This mirrors an extract from a different policy document, issued by the Postgraduate Medical Education and Training Board in 2007:

\begin{quote}
\textit{“the individual workplace-based assessments contribute to the whole judgment and (learners) would not be ‘hung out to dry’ over one less than satisfactory assessment event.”}\textit{ (p22)}
\end{quote}
There are however significant implications of not, or inappropriately, completing these exercises. Beard and Bussey (2007) explained that the series of WBAs a learner completed would be used “to inform the specialty trainee assessment process as to whether a trainee has successfully completed a level of training” (p158). The message is in keeping with the guidance put forward in the Gold Guide document (2020), which confirms that the “failure to demonstrate achievement of competencies as set out in the GMC-approved curriculum” (p70) could potentiate a delay in progression through the education pathway.

The GMC-approved curricula that the above quote from the Gold Guide refers to are housed on the ISCP website. They are specialty-specific, explicit and detailed syllabi, prescribing the knowledge, clinical skills, technical skills, professional skills and behaviours expected at each level of training. WBAs feature in all of the surgical curricula, and guidance on their use triangulates with the policy extracts shown above. Quoting the current OMFS curriculum (OMFS Surgical Curriculum 2018, p172) as an example, (although wording/emphasis is identical or similar in the other specialty curricula) the purpose of the WBA is:

- to provide short loop feedback between a supervisor and the learner,
- to facilitate the provision of formative guidance,
- to encompass the assessment of skills, knowledge, behaviour and attitudes during day-to-day surgical practice,
- inform educational supervisor’s summative assessment at the completion of the placement and,
- to contribute towards a body of evidence held in the trainee’s learning portfolio and be made available for the learner’s annual review.

This list starts with a focus on the formative nature of these exercises – each facilitating or stimulating formative guidance and feedback between learner and assessor/supervisor. However, as the list progresses, the rhetoric shifts towards the summative purpose of the WBA, both within particular placements – to decide whether learners have performed appropriately, and perhaps most significantly for
the learner, to contribute towards evidence at a learner’s annual review – echoing the statements in the Gold Guide (2020).

In summary, WBAs were introduced as part of a large-scale, conceptual shift in medical education towards measuring learner competency in daily practice. Surgical education policy, as part of the wider medical education community, places great emphasis on the use of WBAs to provide a window onto learner competency, as an event to facilitate the provision of feedback and to improve future performance. Policies commonly stress that these WBAs have a formative benefit for the learner. However, they also make explicit the use of WBAs in a (potentially high-stakes) summative capacity. This dual-functionality, which I explore in the next section, has been confusing and controversial for the surgical community (Ali 2013).
Formative and summative tensions

One of the broad functions of an assessment is to distinguish between those who are competent and those who are not (Schuwirth and van der Vleuten 2011). This information can then be used in summative and formative capacities, terms which delineate the function of the assessment. Summative assessments are decision-making, usually institutional, and often for the benefit of regulatory or other accountable stakeholders, to identify whether learners have reached an appropriate standard of practice. They are not typically designed for the benefit of guiding learners, but to ensure learners meet a set of standards (Harlen and James 1997). Formative assessment on the other hand supports the learner, and aims to, as examples, stimulate improvement, provide reassurance, encourage deep understanding, and identify and remediate weaknesses (Wood 2014).

There are a number of complementary terms which often appear together in discussions about formative and summative assessment. The terms assessment-of-learning and assessment-for-learning refer to the purpose of the assessment as oppose to its function. Assessment-for-learning tends to be associated with formative assessments, while those of-learning are associated with summative assessment (Prashanti and Ramnarayan 2019). Assessment can also be divided into the consequence of the outcome, where the risk of failure can have significant implications (high-stakes assessment) or where failure has deliberately minimal implications or is even inconsequential (low-stakes assessment) (Anglim et al. 2018). Again, formative assessment tends to be associated with lower stakes. These terms (formative, for-learning and low-stakes assessment vs summative, of-learning and high-stakes) are highly associated and are often used interchangeably.

The formative function of the WBA, as a low-stakes, assessment-for-learning has been heavily stressed since its original introduction as an educational adjunct in the 1990s (Norcini et al. 1995). One major strength of the WBA was the potential for providing educative feedback about the learner’s habitual workplace practice from multiple assessors. It remains the perception of WBA users that these assessments
can offer valuable insights into habitual day-to-day practices of a surgeon-in-training (Aryal et al. 2020), but its joint use, or perhaps mis-use, as both an assessment of- and for-learning (Beard 2011) is the source of much controversy in the surgical education community (Shalhoub et al. 2014).

Tension arises because the freedom and informality that are often thought of as conducive for learning may not provide the rigour for the objective, accurate, high-stakes and defensible judgements that are required in an assessment-of-learning (Barrett et al. 2016). WBA users have repeatedly reported insufficient time to carry out these assessments (Phillips, Madhavan et al. 2015), difficulties with access to appropriate senior staff to act as assessors (Bindal et al. 2011) and a lack of awareness from the staff who do act as assessors (Barrett et al. 2017). As such, since their introduction, there have been repeated calls for more advice on appropriate use (Bookless et al. 2015, Phillips et al. 2016) and for evidence of validity and reliability if they are to be used in summative capacities (Pereira and Dean 2013, Shalhoub et al. 2017).

One solution proposed by the wider medical education field has been to modify the focus of these assessments. Terminology has been shifted in many settings from a workplace-based assessment, to a supervised learning event (SLE). The removal of the word assessment aims to change the mind-set of both learners and teachers, to one of formative learning experiences rather than testing (GMC 2011). SLEs have been used in conjunction with, or instead of, WBAs in the UK Foundation Programme and a number of specialty programmes such Obstetrics & Gynaecology and Paediatrics (Parry-Smith et al. 2014, Rees et al. 2014, Li 2016). Although calls were made in surgery to adopt such a stance (Ali 2013, Allum 2014), such a shift has not yet been made by the surgical education community, perhaps highlighting an ongoing conceptualisation of these exercises as assessments-of-learning, rather than for-learning.

Importantly, the underlying interactions of a WBA or a SLE - the encounter between a learner and a patient, overseen by an assessor - remains the same regardless of
any change in name. Without fundamental changes in approaches to, and understanding of, workplace learning events by its grassroots users, there remains ongoing scope for potential mis-use and manipulation of whichever exercise is employed. For example, in a recent survey of paediatric specialty trainees who use SLEs in Wales, learners reported assessors lacked time to complete SLEs constructively, accessing them during clinics was difficult and that misinterpretation of SLEs as summative tools remain key concerns (Thomson and Vallabhaneni 2019). While SLEs aim to maintain formative values, they remain reliant on the underlying attitudes of their users towards the real-life interactions to dictate their overall usefulness.

One of the problems associated with competency-based medical education, and in particular the WBA approach to assessment (either for- or of-learning), is that it inadvertently compartmentalises and fragments learning into discrete events that are removed from the totality of patient care (Academy of Medical Royal Colleges 2017). As an alternative to WBAs, a measurement of how much a learner can be trusted to safely carry out a clinical activity has been proposed as an alternative solution more congruent with workplace practices (Ten Cate et al. 2016). This notion of entrustment makes use of a supervisor’s daily consideration of whether to delegate a professional activity to a learner (for example a procedure, examination or patient discussion). In other words, can a learner be trusted to carry out the task appropriately and if not, with what level of supervision can they be trusted to perform (Ten Cate 2005).

This alternative mechanism for making judgements about a learner’s habitual practice has focused on entrustable professional activities (EPAs), rather than attainment of competencies. EPAs are thought to harness a different thought process – linking education and patient care by delineating activities that a learner is allowed to perform into manageable units of practice that can be observed, assessed and documented (Ten Cate et al. 2020). Early studies using “independence scores” have suggested promise, albeit in controlled laboratory conditions outside of the workplace. To illustrate, MacEwan et al’s (2016) study took place in a simulated
environment using a benchtop model where learners repaired a forearm fracture. Two raters, blinded to learner grade and identity, were asked to score the video-recorded procedure performed by different 21 participants on a 1 to 5 scoring scale (a score of 1 meant the supervisor had to perform the procedure while a score of 5 meant the supervisor trusted the learner to complete the procedure with no input from them). A similar study by Kramp (2015) also used an independence scale in a procedural assessment of video recorded laparoscopic cholecystectomy procedures by novice, intermediate and competent learners. Both studies reported good inter-rater reliability and suggested such a scale could discriminate between learners with different training levels/experience.

How the surgical community engages with, incorporates and operationalises entrustment into its workplace assessment frameworks is yet to be seen. All these assessment activities function in-situ, taking place in real working time. They are not inert, but inevitably influence what work is and how work happens. Working practice will also influence the shape of WBA practice. As with SLEs, rather than the wording, name or purpose of the workplace assessment concepts, it is the underlying attitude of their users, and its integration with working practice, that remains the key hurdle. It is easy to see how an EPA system, just as SLEs have been, is open to the pitfalls of time, access and engagement if the context into which it is imported is not fully appreciated.

However, rather than the debate about whether or not a WBA is, or should be regarded as a summative or formative assessment, in this research, I would like to step away from this previously well-explored argument. Instead, I see it as one example of the range of contextual factors which could influence the way in which learners perceive, interpret and therefore engage with the exercises. Furthermore, the degree and balance with which learners perceive their WBAs as summative and/or formative assessments, and the importance they place on that balance might vary from one time to another, from one case to the next or from learner to learner.
The shortcomings of current theoretical perspectives on the WBA

The policies and practices I have discussed above imply that an assessor should use a WBA proforma to objectively measure a particular performance by a particular learner on a particular occasion. The product of the WBA is a score which purports to accurately and communicably describe the learner’s true level of performance and which, in turn, implies their true underlying competence. In this section, I challenge whether this reflects what is happening during a WBA by critiquing its current theoretical underpinnings. These theories have drawn mainly from a psychometric discourse, sited within the positivist paradigm. The following sections have been included to problematise current thinking and research about surgical learning and WBAs, which I argue have left WBAs under-theorised.

Competence through doing

Schuwirth and Van der Vleuten (2010) define an assessment as “any purported and formal action to obtain information about the competence and performance of a candidate.” Such a definition conveys several important messages about its nature. The use of the word purported gives the notion of intent, while a formal action is one that is in some way institutionally recognised, discrete and sanctioned by some official body. By action, the definition implies a process of doing something. The final two key important terms of the definition are competence and performance.

Epstein (2007) defines competence as “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice for the benefit of the individuals and community being served.” The Gold Guide (2020) summarises it as “having acquired the knowledge and skills necessary to perform those tasks that reflect the scope of professional practices.” This is related, but different, to a competency which can be described as
a learnable, durable, generalised ability to execute a specific task that is part of the full range of tasks that constitute the medical profession (Ten Cate 2017).

The Gold Guide (2020) defines performance as “denoting what someone is actually doing in a real-life situation.” According to Rethans (2002), it represents the manifestation - an outward presentation – of the product of competence combined with the influences of factors related to the learner (for example their health and relationships with those also involved) and factors related to the system (such as physical environment, facilities or time).

The policies that I discussed earlier position WBAs as windows on to what a learner is doing, i.e. an attempt to measure habitual practice by in-situ direct observation. Miller’s pyramid of competence (figure 2.5) is often cited as the theoretical justification for the use of performance-based assessments, such as WBAs:

![Miller's original pyramid of competence](image)

Figure 2.5: Miller's original pyramid of competence (Miller 1990)

Miller’s original description appeared in an invitational review about the value of simulated patients in medical education. He described four hierarchical levels at which competence could be demonstrated (Witheridge et al. 2019). At the lowest level is the assessment of the learner’s knowledge of “what is required in order to carry out professional functions effectively” (Miller 1990, p63). The next level represents an application of that knowledge, through for example, interpretation of
factual information. The penultimate level is reached when learners demonstrate how to do something. The apex represents an attempt to establish whether they are able to function independently - to do as a clinician does in a given clinical situation.

Miller’s pyramid was put forward as the theoretical basis for workplace-based methods of assessment from their inception (Norcini et al. 1995). Norcini (2003) wrote “work based methods of assessment target this highest level of the pyramid in their normal practice.” Since then, the pyramid has been widely cited in medical assessment literature, largely incorporating Norcini’s proposal that WBAs assess what a learner does in real practice, albeit modified to represent contemporary learning environments and assessment methods. A modern version has been described by Ramani and Leinster (2008), shown in figure 2.6.

![Figure 2.6: A contemporary adaptation of Miller's pyramid (Ramani and Leinster 2008)](image)

WBAs certainly aim to situate learning and assessment in the realm of habitual workplace practice. Nevertheless, WBAs inevitably draw out and separate certain activities from everyday practice through, for example, advanced planning, structured observation and documentation of feedback. This makes these activities different from non-WBA events. So, WBAs cannot straightforwardly be assumed to represent what a learner actually does in practice. For example, learners have reported that they consciously behave differently during directly observed
performances compared with when they are not under observation (LaDonna et al. 2017). That is not to say that observed performances are not useful or even authentic, but to apply this to WBAs, it is perhaps more realistic to see learners as “doing” a WBA rather than just “doing” the clinical activity that the WBA purports to assess.

In this way, I argue that the WBA’s position on Miller’s pyramid has been misconceptualised. It is important not to assume that WBA practice is directly transferable to non-WBA practice. In other words, rather than an assessment of what a learner does, it remains an event where a learner is showing their assessor what they would do – and as such, the medical education community may have over-estimated its position in Miller’s hierarchy. Building on this further, I propose that the WBA should be investigated, not as an assessment of a learner’s practice, but rather as part of that learner’s practice – ideas that I elaborate on in chapter 3.
Learning curves

In the same way that WBAs have been purported as windows onto what a learner does, they have also been portrayed as objective windows onto how a learner is doing. Or, in other words, onto a learner’s position on a learning curve (figure 2.7). Learning curves have been used in surgical education to describe the relationship between learning effort and learning outcome (Valsamis et al. 2018). They have focused predominantly on procedural ability, but have also been discussed in terms of gaining wider competencies in other specialties (Mathew et al. 2018).

![Learning curve diagram](image)

Figure 2.7: A learning curve in surgical practice (adapted from Hopper et al. 2007)

A represents a learner’s starting point, based on their prior experience and background, which leads to a variable level of initial performance. B shows an increase in performance, which usually begins rapidly, before slowing as the degree of improvement attained for a given learning effort reduces as skills are refined. C represents an acceptable standard, a level above which, in the case of WBAs, a learner is deemed competent. D represents ongoing improvement with learning effort despite being deemed competent. E represents a plateau where learning efforts stimulate minimal further improvement in outcome.

Learning curves have been used in surgical educational research to argue against the traditional importance placed on carrying out a pre-determined number of procedures to be eligible for completing the training programme (De Siqueira and Gough 2016). Studies, for example, have plotted learner performance levels awarded during sequential WBAs against either time or number of cases (Brown et al. 2017, Hopkins et al. 2019). Findings revealed significant variation from learner-to-learner, with discrepancies between indicative operative numbers required by the
training programme and the point at which competence is deemed to be achieved (for example, the attainment of a certain number of performance level 4 scores in a WBA (Abdelrahman et al. 2016)). In this way, WBA outcomes have been proposed as windows onto a learner’s own position on a procedural learning curve. Along such lines, Wilson et al. (2010) looked at three specialty trainees in one urology department performing paediatric groin surgery. Each procedure performed by the learners during a 4-month rotation was scored using a DOPS proforma. The study reported the gradual increase in their DOPS scores from between 2 and 3 (where 2 was unsatisfactory) at the first case attempted in the rotation, to between 5 and 6 (where 6 is well above expectations) at the final case of their rotation.

I have conceptualised this use of WBA outcomes in current research in figure 2.8. Here, in an imagined series of six WBAs (represented by the grey boxes), a learner’s performance in the same type of clinical activity (for example, a particular procedure) is objectively and sequentially measured in relation to the total number of opportunities that learner has to perform that activity. An individual learner’s learning curve can be plotted, with potential for different feedback and guidance offered through a WBA to influence the future direction of that curve.

![Figure 2.8: WBA outcomes as windows onto learning curves](image)

Rather than the findings of the existing studies that investigate WBAs in surgical education, it is the manner, itself, in which WBAs have been presented within them
that is more pertinent to this thesis. I argue that the way WBAs are presented in current studies assumes their value in providing structured, objective insight into learner performance compared with the simplistic measure of caseload. There have been concerns that viewing WBAs as objective windows onto a learner’s position on a learning curve under-theorises, or even mis-theorises, the learning that arises through them (Govearts and van der Vleuten 2013). These faulty conceptualisations over-simplify and artificially tidy the inherently dynamic, non-linear, improvised and unpredictable learning that occurs in these potentially complex, heterogeneous learning experiences in authentic workplace settings (Swanwick 2005). This calls into question the validity of the predictive assumptions that relate assessment, performance and competence within the WBA. Instead, it has been proposed that interpretivist approaches are better aligned to capture, explore and understand how learners learn through these experiences (Govaerts and van der Vleuten 2013).
Empirical research into WBAs

There is a considerable body of empirical research that has interrogated WBAs since their introduction into surgical education pathways. Researchers have adopted different approaches to investigate and understand WBAs as they are used in current practice. I have organised these approaches into;

i) those that examine the product of the WBA – the completed WBA proforma (which largely take the form of large-scale quantitative database analyses or through analysis of narrative comments made in the proformas),

ii) those that report controlled WBA experiments,

iii) those that examine the views and opinions of WBA users (where self-reported outcomes and WBA user perceptions tend to be the focus of study).

I now present this literature in order to make explicit its shortcomings and to provide the context for why a different approach is required to provide a fuller account of learning through WBAs.
Research studying WBA proformas

WBA database studies
Upon completion of a WBA, learners upload their completed proformas to the ISCP platform as part of their online portfolio. As such, the ISCP website houses a large database of collated WBA outcomes for multiple learners, which has been interrogated by researchers. For example, Fishpool et al. (2014) analysed 1356 completed assessments of otolaryngology trainees in Wales over a six-year period. They described an increasing frequency of WBA completion over the study period, raising from 1.5/month in 2009 to 3.76/month in 2013. Furthermore, they noted that WBA completion through the year was not uniform, but completion rates spiked each year just prior to the ARCP meetings. The authors suggested that supervisors “need to be aware of this natural behaviour in their trainees.” Shalhoub et al. (2015) similarly described an increase in WBA uptake nationally across all specialties between 2011 and 2013, in a quantitative analysis of over 750000 WBAs.

These large-scale descriptive analyses of WBA uptake have been supplemented by other studies which provide quantitative insights into WBA outcomes. Looking specifically at the DOPS assessment tool, Mathew et al. (2014) evaluated over 40000 completed proforma scores from 5000 trainees. They found that more senior level trainees achieved incrementally higher mean performance scores compared with lower level trainees, while overall mean performance scores were lower for procedures rated as advanced, and higher for those rated as basic. Awad et al. looked at over 6400 WBAs (PBAs, DOPS, mini-CEX and CbDs) conducted for otolaryngology trainees showing that the recorded scores positively correlated with training seniority. They also found that the PBAs and CbDs displayed validity and reliability across all levels of training grade, whereas the mini-CEXs and DOPS were not able to differentiate between higher grades of learners, but were effective at doing so for less experienced learners (Awad et al. 2014; 2015a; 2015b; 2015c).

Other researchers have explored how WBAs are used to evaluate learner performance in specific procedures. For example, Siau et al. (2019) analysed 3616
DOPS scores that were submitted by 468 trainees related to a particular diagnostic procedure over an 18-month period. The study identified trainee ability, assessor stringency, assessor-trainee relationship and case-to-case differences as sources of rating variation. They also found that the number of procedures learners had previously carried out, both assessed and otherwise, was associated with overall procedural competence.

Analyses of narrative comments made on WBA forms
Studies like those I have just presented illustrate how numerical scores have been valued as a key outcome of individual WBAs. The way the online proforma is presented to the user, the free-text spaces in which narrative comments can be made are encountered first, prior to the domain-specific checklist and global outcome scores. Yet, despite the prominence given to them within the documents and the explicit direction and encouragement for users to provide them, some research has revealed a reluctance for users to engage with narrative-based comments in WBAs. For example, 30% of assessors found ways to avoid supplying narrative comments in learner evaluations (Sebok-Syer et al. 2017). This reluctance to engage is mirrored in a relative paucity of research on these written comments.

A study by Burnand et al. (2014) which did analyse the comments made in the proformas, graded the documented written feedback in 328 DOPS assessments. They found, in keeping with Sebok-Syers findings above, 41% of proformas contained no written feedback, while only 8% received “top-rated” feedback. The authors put forward time pressures, unfamiliarity with the process and lack of engagement as possible explanations for their findings (Burnand et al. 2014).

Another study by Bussey and Griffiths (2017) similarly thematically analysed 929 written phrases recorded on learners’ completed proformas and found a propensity for administrative comments, where documentation appeared to be regarded as a bureaucratic exercise. However, the approaches adopted by both these studies perhaps also highlight one of the shortcomings of research in this field, where
potentially rich qualitative data is analysed using quantitative means, which restricts
the insights that can be gained from it.

What these studies do imply, however, is that narrative comments may have
potential to enhance the insights into performance, insights that are not
demonstrable through numerical scores alone (Wilby et al. 2019, Young et al. 2019).
Narrative comments have shed light, not only on the assessment tool, but also on
the practices that generate that assessment outcome. For example, Ginsberg (2013)
found there was a strong correlation between the type of narrative comments made
on these documents and the numerical scores that were awarded. However, readers
of these proformas relied on a shared understanding of a hidden code. In other
words, the interpretation of narrative comments on proformas required a reading
between the lines (Ginsburg et al. 2015). Sebok-Syer’s work (2017) supports the
notion of a hidden code which allows readers to infer relationships between narrative
comments and numerical scores. A further study by Ginsberg (2017) noted that
learners, as well as assessors, were aware of the hidden code in assessment
language. Learners used this knowledge to decode and interpret narrative comments
made by their assessors accordingly.

Although I have separated out what I have called WBA database studies and those
studies that analyse narrative comments, what these studies have in common is that
they take the product of the WBA process – namely the completed proforma – as
their raw data. This data, as mentioned, is stored on the ISCP database, extracted
and then analysed – detached entirely from the human interactions and learner
performances that led to the creation of the documents. Complete proformas are
taken as proxies for the real-world practices that they are capturing and serve as the
basis for further interpretations by the researcher. They therefore lack the inherent
contextualised basis required to understand what actually happens during a WBA
and how it shapes a learner’s future practice.
WBA experiments

Other researchers have designed various experiments, which have run either in the workplace or in simulated environments, to further understand aspects of the WBA. I liken these to scientific experiments that aim to discover some underlying truth. In one such study, Marriott et al. (2011) investigated 749 PBAs, carried out by 81 different learners in three teaching hospitals. As learners carried out a chosen procedure, they were directly observed by their usual clinical supervisor. The learner’s performance was also observed by one or more independent assessors from the research team. Feedback was given by the supervisor to the learner “in the usual way” (p452), implying a direct verbal interaction between learner and assessor after the procedure - a process which was also observed by an independent assessor. PBA proformas were then completed by the clinical supervisor and the independent assessors directly after the procedure. They reported i) a positive relationship between WBA scores and other measures of surgical training and experience and, ii) a correlation between global scores and domain-specific scores.

In Marriott’s study, clinical supervisors provided similar ratings to independent assessors. However, it should be noted that in the study, the independent assessors were present in real-time. They were able to observe both the learner’s performance itself and the learner-supervisor post-procedural debrief. I would argue that this may have led to an alignment of supervisor and independent assessor scores. Other evidence, generated within controlled environments further adds to this argument. For example, Sarkar (2010) video recorded laparoscopic cholecystectomy procedures as performed by both senior and junior grade learners. Video recordings were blindly assessed by two experienced surgeons using the PBA tool in an office environment at some point after the event. Although the study reported good inter-rater reliability, assessors were not able to discriminate between junior and senior level trainees based on solely video evidence (which focused only on the operative field). The authors account for this by suggesting an increase in supervisor input for junior level learners (for example through spoken commands, explicit direction or
implicit guiding) led to the appearance of a higher quality of task-specific skill in a purely video-based analysis.

Williams et al. (2012) have also carried out a study using retrospective analysis of audiovisual recordings of WBAs. Seven different expert raters were asked to independently and blindly review the recordings of learners at different levels of seniority performing different surgical procedures. Raters then evaluated learner performances using a WBA scoring tool. In addition, learners were also scored by the supervising surgeon at the time. Here, the supervising surgeon scored learners differently \textit{in-situ} (most often higher) than independent expert raters in office environments. The authors proposed practical reasons for this (such as the supervising surgeon’s need to multitask during the procedure or their perception of features in the performance that were not seen in the video) as well as social factors (such as their awareness of the learner’s background and the potential impact of having to defend the given rating to the learner). As with Marriott’s (2011) study, these findings suggest that being present at the time of the procedure plays a role in how these performances are measured and subsequently presented.

The findings from these WBA experiments support how the WBA can be re-framed as a social and interpretive event. Therefore, the positivist assumptions that underlie these WBA experiments may not hold true when trying to understand an individual WBA as a complicated social situation. I suggest that more naturalistic modes of inquiry may be required. So far, each of the approaches to WBA research I have outlined (databases studies, numerical comments and experiments) have analysed and compared the product of the WBA – i.e. what appears on the completed WBA proforma. The final set of studies rely on subjective views of users, and provide different kinds of insights into WBAs. These rely on WBA users’ self-reported practice and their own perceptions of these exercises, although these were often explored jointly in individual studies.
User perceptions

Questionnaire-based studies in surgical education have asked WBA users – learners and assessors - to look back at their own WBA experiences and describe their perceptions, such as the WBA’s apparent usefulness or their satisfaction with them. Findings are diverse. Pereira and Dean (2009; 2013) reported an overall dissatisfaction amongst learners and assessors with WBAs in a quantitatively analysed questionnaire of around 800 responses. They wrote that WBAs “have rapidly become entrenched in postgraduate training in the UK, spreading a plague of box ticking exercises that continue to increase year on year.” (Pereira and Dean 2013, p65). Other studies, however, reported that learners found WBAs useful and acceptable (Joshi et al. 2017). For Pereira and Dean, that view represented a cultural shift, where “newer generation(s) of trainees never knew anything better.” (Pereira and Dean 2013, p65). Such changes in user perceptions over time are acknowledged in other studies (Hawkins et al. 2014), and illustrate the dynamic conversation that has occurred in the surgical education community with regards to the value of the WBA in surgical learning and culture.

User perceptions, opinions and views of WBAs are highly varied. A qualitative study using interview and focus groups reported that stakeholders saw and valued the potential benefits WBAs could bring to the learning process (Nair et al. 2015). However, other studies have revealed confusion over how users perceive the WBA’s purpose (e.g. summative vs formative, evaluation of procedure-specific or general ability) and process (e.g. the meanings and implications of given scores) (Roushdi and Tennent 2015, Gaunt et al. 2016). Both assessors and learners have reported WBAs are useful as an educational tool for learners (Phillips, Madhavan et al. 2015, Phillips et al. 2016), although another survey has reported only 53% of learners felt they were valuable (Hunter 2015).

A potential strength of the WBA is to provide the opportunity for the learner to receive feedback from their assessor. Gaunt et al. (2017) found that seeking feedback was one driver for surgical learners to complete WBAs. Furthermore,
learners balanced the anticipated benefits and costs of getting that feedback before initiating the WBAs. Learner motivation for seeking feedback again varied depending on whether they felt a WBA represented an opportunity to learn (where learners might seek to improve their traits, skills and abilities) or an assessment of learning (where learners might seek to enhance the way they are viewed, for example by seeking positive feedback after a mediocre performance) (Gaunt et al. 2018). Importantly, the influence of WBAs on practice behaviour in learners implied that WBAs are not simply objective windows, but also have the potential to change and alter practice as they occur.

These studies that have adopted a user perception approach to WBAs have provided useful insights, building on findings from the studies that have used databases or that have staged WBA experiments. Nevertheless, there remains very little research that examines the WBA as a real-world happening and therefore, very little insight and understanding of what happens during these learning situations, *in-situ*, on an individual, day-to-day, basis. The translation from real-world activity to formal document is largely taken for granted. Research methods have shared a reliance on either documentation (i.e. completed proformas) or on individuals reporting their interpretation of events and behaviours *post hoc*, rather than any attempts at direct observations or interpreting the event as an intricate, real-time, social phenomenon. As such there is a disconnect between data gathered and the real-life learning situations.

WBA interactions, which involve real-life encounters between a learner and a patient they are treating, which is in turn observed by an assessor, are naturally complex. Because there is a very limited understanding of what actually happens during them, it is difficult to provide an empirical basis for explaining either the scores or the user’s perceptions identified in studies above. The WBA proformas prompt assessors to consider a limited set of pre-defined dimensions. Other, more or different dimensions may well be considered during the WBA, without being recorded, yet these dimensions may be highly valued by learners. In other words, the proforma, and therefore these studies, may not accurately reflect what is being discussed during
WBAs. It therefore follows that there is limited scope for then understanding what use learners make of these specific experiences going forward. WBAs had been introduced to aid learning so it is crucial to understand both their process and content, which in turn will allow greater insight into what learners make of them in their overall education. This study will look to address these important aspects of WBA as a learning tool in surgery.
Summary

In this chapter, I have described the context within which WBAs are conducted as part of surgical education, the existing research exploring their use, and the methodological shortcomings of that research. I have argued that the WBA has largely been designed, proposed, portrayed, and documented as an objective window onto a learner’s habitual abilities. The WBA strives to be inert - a volume-less, invisible device - through which judgement-makers can capture what a learner *is actually doing* in real practice, without in itself affecting what it is the learner *is actually doing*. While studies about WBAs have identified a number of shortcomings, research is under-theorised and has followed a largely positivist discourse.

Conceptually, findings have tended to conclude that problems arise because the WBA is not accurately capturing what the learner “*is actually doing*” because it is not yet robust enough. As such, research outcomes have aimed to make the assessment tool more inert, i.e. reducing the noise and potential for error, in an effort to further limit its distortion of real, true practice. For example, studies have stipulated increasing the number of assessments performed to improve inter-rater reliability, creating procedure or specialty-specific tools to improve validity or improving assessor training programmes to improve scoring accuracy, all of which work to limit errors in measurement of the learner’s real-world performance.

However, the sustained and pervasive conceptualisation of these exercises as assessments has perhaps led to research deliberately distancing itself from (or even consciously hiding away) the messy real-world practices which the WBA had been proposed to be a window onto. In the next chapter, I will look to situate WBA practice more tightly in the workplace, exploring the pertinent literature related to workplace learning and assessment and how it relates to the development of surgeons-in-training.
Chapter 3
The WBA in working practice

Introduction

In the previous chapter, I explained the policies and rationale behind the introduction of the WBA into surgical education. I examined the theory and empirical literature through which its use in surgical education has been explored and show-cased. This literature has highlighted strengths and limitations of the WBA and offered some insights to refine its place in surgical education. However, I assert that as a body of research, it is patchy, under-theorised and lacks a social-cultural grounding. Therefore, it has been difficult to establish whether these exercises have had a significant educational impact (Miller and Archer 2010).

Research thus far has largely framed the WBA through a positivist lens, where it has been studied at arm’s length in an effort to maintain the objectivity associated with the tenets of this research paradigm. Even WBA researchers employing inductive or interpretive methodologies (using for example interviews, focus groups or other qualitative modes of inquiry) predominantly fashioned findings to identify what was wrong, and outcomes have advised how can it be fixed to ensure things were done the correct way (Crossley and Jolly 2012, Saedon et al. 2012, Massie and Ali 2016).

I want to understand the WBA, not as a window onto the learner’s habitual practice, but as part of that working practice. In this way, borrowing the acquisition and participatory metaphors put forward by Sfard (1998), rather than a tool to evaluate an acquired knowledge, I see the WBA as something that learners participate in, something they orchestrate and something embedded within their daily routines. I want to understand the WBA from the learner’s point of view, in particular how they encounter it through their working practice and how it leads them to construct meaning from the world around them.
To understand the WBA in this way, I have rejected the largely positivist theoretical perspectives that have previously been used to study it. These have tended to frame the WBA as an objective window onto a learner’s abilities or as some faithful measure of a learner’s true competence. Instead, I suggest that a different approach is required to better understand what I see as socially complex situations.

To this end, I have taken a different, socio-culturally grounded perspective on a learner’s engagement with, and learning through, a WBA. In this chapter, I present three key theories which, nestled within a constructivist outlook, have helped me develop my perspective on WBA practices. The theories that have contributed to my understanding are workplace learning theory, sociocultural learning theory, and Goffman’s work on the presentation of self – all of which have allowed me to better explore how a learner engages with, and ultimately how they learn from, WBAs.

Workplace learning theory, namely the theory that explores learning in, from and through work, represents a key foundation from which to begin to understand the processes around WBAs. This theory is relevant because by definition, WBAs relate to workplace activities, and using it allows me to analyse the learner, and the WBAs they engage with, in the context of the workplace. Through this chapter, I draw out three important elements from the literature relating to workplace learning theory which have been fundamental in shaping my own perspectives on the research subject – the learning milieu, the learning narrative and the learning trajectory.

In addition to taking place in workplace contexts, in this chapter, I argue that WBAs are also complex social interactions that take place within communities of surgical practice. As such, sociocultural learning theories – which broadly support the notion that what is learnt, and how it is learnt, are strongly linked to the social and cultural contexts in which it is learnt – further enriched my theoretical perspective. In this chapter, I discuss the elements of these theories which informed and influenced my own developing perspective on WBAs and the theoretical framework I developed.
The final key theory which has profoundly influenced my perspective on surgical learners and their WBA practices is based upon a dramaturgical metaphor for social interaction put forward by Erving Goffman in his book titled “The presentation of self in everyday life” (1959). Here, Goffman sees social interaction as an act between a performer and their audience. He proposes that individuals are actors who, when engaged particular social interactions, present versions of themselves to the various audiences they perform before. In this chapter, I apply Goffman’s metaphor to firstly reinforce how the WBA is a social practice. Secondly, I use it to argue that there is more than one performance taking place within the WBA – a real-world, perhaps more traditional, performance where a learner is presenting a version of themselves to their assessor, but also another social performance taking place between the author of the WBA proforma and its reader.

To begin this chapter, I will explain what drew me towards constructivism as an overarching approach. I will then expand upon each of the theories mentioned above, detail how they contributed to my research perspective, and explain how they helped me create a theoretical framework in which to carry out my research.
A constructivist perspective on the WBA

Constructivism proposes that learners build knowledge and meaning from an interaction between their own ideas, current experiences and their past experiences (Piaget 1968). Learners play an active role in constructing their own meanings from the world around them (Illing 2010). Knowledge and meanings are not fixed, and neither do they exist independently outside of the learner waiting to be acquired. In other words, the outside world or the objects within it, have no intrinsic meaning. Instead, the learner engages, either individually or as guided by others, in constructing their own personal meanings of them (Rob and Rob 2018). Importantly, these meanings are not simply constructed de novo. Rather, new knowledge, skills or attitudes are constantly interpreted through, linked to and built onto that learner’s existing knowledge and experience, through what Piaget describes as processes of ‘accommodation’ or ‘assimilation’ (Sadideen and Kneebone 2012). Dennick, in his reflections on recently adopted constructivist approaches used in understanding and researching medical education, aptly notes Ausubel’s (1968) assertion that “the most important factor influencing learning is what the learner already knows” (Dennick 2016, p200). In this way, two learners will construct personal meanings differently from similar experiences.

Furthermore, each learner, as an agentic being, has an autonomous capacity for intent, such that their consciousness is not only directed purposefully towards an object but also shapes the meaning attributed to that object (Crotty 2003). As such, learners ascribe different, personal meanings to objects, and therefore can be thought to construct their own personal knowledge. In so doing, constructivist theory fashions individuals as meaning-makers and constructors of knowledge. How that knowledge is constructed is also influenced by the outside world as a situating environment. This environment provides the social, cultural and historical contexts which influence, to varying degrees, any meanings (i.e. learning) that are constructed by learners as they interact with that environment (Wertsch 1985).
Cope et al. provide an example of how constructivist principles have been applied in surgical education as they sought to understand how surgical trainees learn to interpret visual cues in surgical procedures they were learning to perform (Cope, Bezemer et al. 2015). Using an ethnographic approach, they identified sequences of interaction between a learner (who was performing the procedure) and their supervisor (who was present, assisting and actively providing instruction and guidance where required). They analysed how both learner and supervisor co-operatively explored their area of focus within the operative field to identify structures or pathology, thus building a meaningful view of the operative field in front of them together. The learner-supervisor dyad co-constructed this view through both guided and authentic processes. Guided co-construction was described as a mechanism by which an experienced supervisor helped the learner reconstruct the surgical view to enable a learner to see what the supervisor was seeing. However, in situations where neither learner or supervisor appeared certain of what they were seeing, they embarked on a joint enterprise of authentic co-construction. In such circumstances, they explored, deliberated and collaboratively pieced together (or constructed) the surgical view. In both guided and authentic co-construction, learners were co-constructing their understanding of what they were experiencing with their supervisor. This notion that learners constructed their own meanings from their surgical experiences became a focal part of my research as I will outline in the next sections.
Multimodal meaning-making in surgical learners

The findings above add to a valuable corpus of work, developed by Bezemer and Kress over the last 10 years. That research has made use of video ethnographic techniques and multimodal social semiotic theory to explore multimodal learning, communication and meaning-making in the context of surgical education (for example Bezemer, Cope et al. (2011) and Bezemer et al. (2019). Multimodal social semiotics harnesses constructivist principles and sees learning as meaning-making, linked closely to communication and social practice (Kress 2010). It suggests “that all meanings that people make are taken as one kind of evidence of learning” (Bezemer et al. 2012, p129) and looks to understand the production, interpretation, circulation and implications of those meanings (Jewitt 2016).

Bezemer and Kress (2016) see learners as social agents who are able to attach meaning to anything that they perceive. They engage with external prompts based on their own interests and attention. These prompts are variable but, importantly, they are open for learners to interpret. Of particular relevance to the learner-assessor interactions that characterise the nature of surgical practice in this study, individuals (for example, supervisors or assessors) communicate by generating signs. A sign might be anything which communicates the sign-maker’s meaning, whether intended or not. The sign is interpreted by a receiver of that sign (for example, an engaged learner), and the receiver attaches some meaning to it. What meaning is attached is socially and culturally determined, but this process of interpretation is where learning in multimodal social semiotics takes place. Learners might also then demonstrate their new understanding, through the creation of their own signs (-of-learning), which incorporate the new meanings that learners have constructed from their interpretation of the earlier signs.

Signs are made material through various modes that are available to a sign-maker. Modes, in multimodal social semiotic theory, refer to distinct socially and culturally shaped resources to communicate meaning (Kress and van Leeuwen 2001). Individual modes (such as speech or gesture) offer different modal affordances, i.e.
what meanings can be conveyed through them. As a result, the choice of mode will have an effect on what can be communicated and learnt. Signs that are made from any mode therefore only provide a partial account of a sign-makers intended (or unintended) meaning, open for the interpretation of the sign receiver. Intra-operatively, for example, a learner may interpret their supervisor’s actions differently depending on whether that supervisor attempts to convey their intended meaning through speech, or gesture, or both.

The vibrant interactions that occur in surgical workplace learning lead to a constant making and remaking of signs, created dynamically and multimodally, using a range of semiotic resources available to the sign-maker at the time. Multiple modes might be used together, complementing each other in some coherent way, each contributing to how that sign might be interpreted by others. For example, a supervisor might attempt to ‘call’ for urgent action by looking up, raising his hand, and shouting “wait”, thereby employing the modes of posture, gesture and speech. Modes also represent the avenue through which the learner might understand the sign-maker’s intended (or unintended) meaning, and each mode contributes to how the learner makes sense of that particular interaction. Relevant examples of modes in this study might be speech, gesture, writing, image or touch (Bezemer 2014, Bezemer and Kress 2014, Bezemer and Kress 2016, Korkiakangas et al. 2016).

Modes exist within a socio-cultural context. By this, I mean that their use and interpretation is socially and culturally shaped. Bezemer et al. (2012) illustrate this by explaining how surgeons and surgical learners felt a lump on a patient’s abdomen differently due to differences in each individual’s intention and role. The surgeon elicited information to help him diagnose the lump and perform a procedure, while the learner was simply learning how to feel a lump. Both surgeon’s and learner’s understanding of the world changed as a result of the action and interactions they engaged in, but changed differently, because, as Bezemer et al. explained, they had “different access to the socially and culturally shaped resources that count as legitimate” (p135). In other words, modal use in sign-making is highly contextual.
The impact of constructivist ideas on this research

These constructivist ideas inspired a different way of seeing the WBA and its associated empirical and policy literature. For example, I began to see WBA proformas as texts which, when completed (in whatever manner that was) fixed what was recorded as fact. What was written in them, validated by assessors and uploaded into the learner’s portfolio, was then stored alongside other documented facts. I saw parallels between the way in which these particular facts were created from transient real-world experiences and how researchers had explored the social construction of other more traditional scientific facts.

Nelson (1994) explored a contentious debate centred around two competing experimental physics theories in the 1980’s, one which came to be regarded as fact while the other was rejected. He explained how, rather than a purely objective exercise, analysis of contemporary accounts suggested that social influences, personal choices and scientific community expectations led researchers at the time to construct a particular world-view with facts and corresponding theory that researchers claimed as true. He argued that, in a different social scenario “the cold hard experimental data – the facts – would be those described by some alternative theory. Physicists would have constructed a world-view with facts and a corresponding theory different from the facts and theory actually accepted.” (p545)

I therefore set out to understand how and why learners come to construct and present their workplace experiences in the ways that they do, to develop a deeper understanding of what they learn. For this study, I found several constructivist theories were particularly relevant to how learners engage with, and construct meaning from, their WBA experiences. These include workplace learning theory, sociocultural learning theory and social performance. Each of these have directly informed different aspects of my thinking around WBAs, providing useful in-roads to better understand how and why learners do what they do. Each have added to my own framework through which I observe and comment on WBA practice. As a collective set of theories, they have led me to reconsider the WBA and its various
different components - how the learner enacts them, relates them together and what those relationships mean. I now discuss each of these in turn, as applied to the learner and the WBA.
Workplace learning

Workplace learning, (namely learning in, from and through work (Boud 1998)) as opposed to formal study in an educational institution (or *schooling* (Billett 2016)), is highly relevant to surgeons-in-training (Giles 2010). Whether through traditional apprenticeship training models or contemporary competency-based education models, the clinical workplace has long been regarded as the fundamental environment to facilitate the learner’s development of the knowledge, skills or attributes that are important for surgeons to learn (Billett 2016). Billett (2010) also describes how learning in the workplace is shaped by the learner’s response to everyday workplace happenings. This continuous, incremental, moment-by-moment learning (or micro-genetic development, as put forward by Vygotsky (Marginson and Dang 2017)) occurs as individuals learn through their experience of these happenings, often arising without an explicit conscious awareness (Billett 2004). What and how they learn is dependent upon what they already know, can do and value, which are legacies of earlier experiences and learning (in Vygotskian terms, ontogenetic development (Marginson and Dang 2017)). They have what Boud and Walker (1991) describe as a “*personal foundation of experience*” (p13), which in turn frames the way in which they experience the contemporary world, “*influencing the intellectual and emotional content of the experience*” (p13) and therefore the meanings (and learning) that are attributed to it.

A surgical learner’s developing knowledge can be thought of as *codified* or *personal* (Eraut 2000). Codified knowledge is publicly espoused and explicit in nature, subject to quality control by professional debate and given status by incorporation into educational programmes and courses. Personal knowledge represents the individual-centred counterpart to codified knowledge, namely what learners bring to a situation that enables them to think, interact and perform, without necessarily being linked to or derived from a codified body of knowledge (Eraut 2010). However, both the codified knowledge of a professional practice (as articulated for example in textbooks) and the personally constructed embodiment of that knowledge within the
learner are both the products of historical, cultural and situational requirements (Durning and Artino 2011).

In this way, knowledge, and the construction of that knowledge (i.e. learning) is highly situated – it exists within the context where the knowledge applies (Goller and Billett 2014). In this study, the context is the workplace. What individuals see, learn, and do, is situated in their role as a member of a community (Lave and Wenger 1991). The clinical workplace, as a place of learning, offers the learner certain affordances. It grants them exposure to authentic physical and social environments, and genuine surgical workplace activities/interactions (Billett 2001a; 2001b).

Teunissen and Wilkinson (2010) propose that learners involved in real-world situations consciously and unconsciously use information that they perceive to be relevant to make sense of what is happening and to help them adjust their behaviour. In doing so, they transform that situation into a personal experience (Teunissen and Wilkinson 2010). Therefore, a learner’s experience is something internal and personal to them, generated as a function of how a learner interacts with situations in which they find themselves (Teunissen 2015). While this personal experience might not be observable by a researcher, how learners respond to particular situations – through actions, speech, etc, can offer insights into what they are experiencing. Multimodal social semiotics offers a useful framework here, where many modes are acknowledged as contributing to signs-of-learning. These signs-of-learning become an important avenue for researchers to more fully understand a learner’s own personal experience in a far more diverse manner than the linguistic-based methods that have been prominent in much of the qualitative research about surgical education to date (Ajayi 2008).

Billett (2017) emphasises the agentic nature of the learner, where their active engagement with workplace occurrences facilitates effective learning (Billett 2001b). This engagement arises from everyday acting through, and thinking about, work. Such thinking also involves learners making some form of personal judgement about the worth of what they have experienced whilst working. As it is the learner who is
acting through, thinking about and judging the value of their work experiences, learning can be thought of as personally mediated. This positions learners as meaning-makers. As constructors of their own knowledge, they have a fundamental role in their own learning in authentic workplace settings. Three related ideas became important as I sought to theorise how learners might learn in the workplace – the learning milieu, the learning narrative and the learning trajectory.
The learning milieu

The workplace (and all that is associated with it) serves as the environment of learning. This environment that the surgical learner finds themselves in is encapsulated by the notion of a learning milieu (Boud and Walker 1991) – a socio-psychological and material environment, made up of a network of cultural, social, institutional and psychological variables, each of which interact to produce a unique entanglement of circumstances, pressures, customs, opinions and working styles which permeate through the instruction, supervision and learning that occurs.

Physical locations (such as wards, clinics, office spaces or coffee rooms) are facets of the learning milieu which represent different spatial and social environments for learning. The operating theatre, for example, offers certain affordances that are not offered elsewhere. Here, the opportunity and license for a learner to visualise, feel and handle (with or without surgical instruments) internal tissues and pathology allows them to construct their knowledge in alignment with surgical practice (Prentice 2007, Zemel and Koschmann 2014). Similarly, other physical spaces offer different constructive affordances, as highlighted by Mol (2002). She explained how a pathology resident's understanding of atherosclerosis in a diseased vessel wall was inherently linked to its appearance under a microscope in a pathology laboratory.

However, physical location is one of many factors that make up a learning milieu. A different example is institutional requirements, for example the need to perform a certain number or type of WBAs. Historical values also influence the learning context, for example, the surgical community’s longstanding tendency to value large numbers of procedures logged in a surgical logbook (Lonergan et al. 2011). Culturally, the surgical profession has a number of implicit and explicit practices, standards or biases exampled by strict rules about infection control in operating theatres (Broom and Broom 2018) or unconscious cultural biases related to gender (Stewart et al. 2020). Socially, teachers/supervisors and other individuals also engaged in the clinical task which the learner is carrying out will also have their own
immediate goals, expectations and personal characteristics (Eraut 2004). All these elements may contribute to the learner’s learning milieu.

Adding complexity, Boud and Walker (1991) describe the learning milieu, not as a static backdrop, but rather as a constantly changing, dynamic interaction and dense interplay of all factors, including those mentioned above. Workplace tasks, surroundings and personnel all inter-relate, and rather than a linearly organised diary of activities, they flow from one to another, merging and emerging from the context of the milieu. Similarly, the real-world events, and therefore the learning experience generated through a learner’s participation in them, are by their nature unpredictable and unstandardized (Hager 2013). This authenticity is largely considered a strength of situated learning and assessment. This means, however, that any attempt to control for this unpredictability (such as during a WBA), may become artificially prescriptive and detract from their authenticity. For example, a study of ambulance workplace assessments found a predetermined aim to demonstrate and display techniques, tasks and decisions could not always be met through the erratic nature of real-life medical emergencies (Hoy-Mack 2005).

Learners play active roles in constructing meaning from their interaction with their learning milieu and their engagement with the milieu is also not static. Just as the milieu around them constantly changes, the learners own transformation is continuous as well. Each engagement with the milieu generates new experiences and therefore new (albeit with varying levels of significance) understanding for the learner (Yardley et al. 2012). As the learner changes, the interaction with the milieu changes, so no two learning situations will be alike. In a similar way, learner’s thoughts, opinions and reflections on a particular experience will also change with time, influenced by changes in the learner themselves and in the surrounding milieu.
Learning narratives

The learning milieu represents the context in which learners find themselves – and a learner’s interaction with their learning milieu generates their experiences. However, the concept does not fully account for how learner might make sense of those experiences.

Goodson et al. (2010) proposes that individuals make sense of their lives through the narratives – the stories – that make their lives explicit. Clark and Rossiter (2008) suggest that learners are constantly attempting to make sense of the world around them and to relate it somehow to what they already know. To do this, they work to make new experiences coherent with their old experiences through, as examples, thoughts, speech, writing or imagery. By making their learning experiences cohesive, learners are creating learning narratives. They make links between, string together, or make distinct from other narratives, the different elements of their experience(s) forming some unique, personally meaningful pattern of events over some period of time (Bruner 1991).

Although learning narratives might help learners to define, frame, understand and communicate an experience, they are not solely documentary. The construction of the narrative itself, through the perpetual linking together of on-going actions, experiences and conversations is part of the learning (Clark 2010). Learning might also be an unconscious by-product of that narrative’s construction (Goodson et al. 2010). In other words, meanings made from experiences (i.e. learning) are constructed through, mediated by, as well as presented through, the narrative created about those experiences.

In generating a learning narrative about some personal experience, learners cluster, relate and re-present their interactions with their learning milieu. In this way, the creation of the learning narrative itself is a sense-making act, aligning with the constructivist notion that the learner is a meaning-maker and constructor of their own knowledge (Clark 2010). The way that learners piece together their experience into
particular narratives influences what they are learning and demonstrates what and how they have made sense of their interactions with the learning milieu around them. Furthermore, when individuals select, organise and connect events in a sequence that they deem meaningful, they are also influenced by the audience to whom they may be narrating (Riessman 2008). In this way, learning narratives become socially and culturally sensitive. They are focused or forged in particular ways that lead to the meanings developed through them being socially and culturally determined (Devine et al. 2014).

While multimodal social semiotic theory has explored, in considerable depth, the learning potential within particular instances of everyday communication, introducing the notion of a developing learning narrative emphasises a temporal component. Here, learners themselves coalesce different instances of multimodal communication and learning that they are part of, and feel were relatable, into a cohesive story. It places the learner as central to their own construction of knowledge and learning, as they are the creators of their own narratives, based on their interactions with their own individual learning milieu.
Learning trajectories

As learners encounter and engage with different situations, these situations become new personalised experiences (Teunissen 2015). Learners consciously and unconsciously relate their experiences to construct meaningful personal narratives and generate understanding from the activities they take part in (Teunissen et al. 2007). In this way, learners also construct learning trajectories (Eraut 2004). Trajectories describe how learners develop over time through different roles, jobs, situations and contexts to create new practices for themselves (McKee and Eraut 2012). Unlike a learning curve, the concept of a learning trajectory is not one that assumes a specific proficiency-defined goal. Neither does it aim to apply objectivity to learner performance. Instead, trajectories are conceived as leading towards the learners imagined future, in this case, as a surgeon, whatever or however that may evolve. The focus is on the learner’s personal growth, rather than an objective assessment of their proficiency (Tasker 2018). Just as learning is dependent on what is already known, a learning trajectory is shaped by both the individual learner’s previous trajectory profile and by the learning environment in which learning is occurring (Sharu 2012). Eraut (2011) suggested that professional performances act as windows onto a number of different trajectories that interact during those performances.

Learning trajectory research has traditionally studied themes that develop over extended periods of time, for example in professional identity (Bebeau and Monson 2012), lifelong learning (Brink 2017), language learning (Tasker 2018) and mathematics (Weber et al. 2015). However, some researchers have applied the concept to the more contained environments of, for example, the clinical workplace (Brydges et al. 2020) where they have provided insights into the growth that occurs within learners in those workplaces (Sharu 2012). In the following diagrams, I illustrate a preliminary application of the concept of the learning trajectory to the WBA.
A learner might start at point A (figure 3.1) and then engage in some way with their learning milieu to generate experiences through which they construct new meanings and knowledge for themselves, i.e. they learn. Over time (depicted on the imaginary x-axis) this begins to generate a learning trajectory. Importantly, the trajectory has no pre-determined or ideal direction. It is established by the learner in real-time, shaped as explained earlier by the learner’s previous trajectory profile and by the current experience they are generating.

![Figure 3.1: The learner's learning trajectory (starting at point A)](image)

It should be noted that in these diagrams, arrows simply depict a direction of the pathway – I do not intend upwards arrows to imply improvement. Figure 3.2 gives an example of a learner’s “naïve” learning trajectory, a hypothetical representation of learning that occurs prior to the learner engaging with any particular activities of note.

![Figure 3.2: A "naïve" learning trajectory](image)

However, as I have explained above, when at the workplace, a learner engages with authentic tasks and situations, therefore generating workplace learning experiences that change the future direction of that learner’s trajectory. I show the effect of engagement in such a clinical activity (represented by the circle) on the learner’s learning trajectory in figure 3.3. The possible new direction of the trajectory is shown.
by the straight dotted line, but the degree of directional change would vary, depending on the learner, prior trajectory and on the learning milieu.

Figure 3.3: The effect of any clinical activity on a learning trajectory

Importantly, a WBA is a different and particular type of workplace activity. As a result, learners will experience it differently because they will act differently through it, think differently about it and make different judgements about its worth (Billett 2001), when compared with a different clinical activity. This difference is shown through the use of the square (rather than the circle) depicting a learner’s engagement with a WBA in figure 3.4.

Figure 3.4: The effect of a WBA on a learning trajectory
The learner’s engagement with a WBA will therefore influence the change in the learner’s learning trajectory differently when compared to another clinical activity. The notion that the WBA itself might impact upon the learning trajectory of a particular learner emphasises how these activities are not only exercises that record a learner’s performance. They are also, as becomes clearer through my empirical work, intertwined with - perhaps inseparable from - the activities that give rise to them.

In this section, I have considered workplace learning theory, from a constructivist perspective, drawing out the concepts of the learning milieu, narrative and trajectory. (Boud and Walker 1991, Eraut 2004, Billett 2016). Workplace learning theories provided a foundation for a theoretical framework that situated WBAs firmly in the workplace itself, and provided a relevant entry point for me to better understand how a learner might learn through engaging with these workplace practices. However, WBAs, as explained earlier, are complex social interactions that take place within communities of surgical practice. As such, social-cultural learning theories offered an avenue to further develop my theoretical framework for this research study.
Applying a sociocultural learning lens to WBAs

Sociocultural learning theory encompasses a number of theories that view learning as a social process that plays out as individuals participate in social and cultural practices within communities and settings (Lave and Wenger 1991). Learning, whether formal (i.e. what is deliberately taught) or informal (such as tacit cues that a learner notices about cultures and behaviour) (Eraut 2000), occurs through the learner's active participation in the contexts and cultures of which they are part. Broadly, sociocultural learning theories emphasise that the learning process and its outcome (for example performance during clinical components of a WBA and the subsequently produced document) are determined by social, organisational, historical, cultural and other contextual factors (Govaerts and van der Vleuten 2013).

One of the advantages of sociocultural learning theory is its willingness to not only acknowledge, but also embrace, the complexity of the everyday, clinical workplace and the learning that might occur within it (Kahlke et al. 2019). Cultural-historical activity theory, for example, has provided a framework for analysing the authentic, but complex, interactions between individuals and their environment by using an activity system as its basic unit of analysis (Engeström et al. 1999, Engeström and Pyörälä 2021). In such an activity system, a learner might be seen as a subject – the person engaged with the activity. Other components of the system would be the object (the purpose of the activity), the tools, rules, community and the division of labour, all of which are involved in the outcome of the activity (Larsen et al. 2019). By analysing the different connections and relationships between these different social, technological and physical components of an activity system, or the relationship between different activity systems, the theory offers a framework to identify tensions, gaps or contradictions within those systems (Yardley et al. 2013). Activity theory has been used by researchers in medical education to explore a number of culturally complex phenomena, for example problem-based learning (Frambach et al. 2014), faculty engagement (Elmberger et al. 2019) and team-working (Lingard et al. 2012).
Although cultural-historical activity theory offered a practical, methodological and analytic framework through which to approach the complex phenomenon of learning through WBAs, I ultimately chose not to use it because I felt that its focus on the activity system would take me away from the key premise of this research, which, as mentioned earlier, centred the learner as meaning-maker. That being said, its potential to help disentangle the complexities of surgical workplace learning has offered valuable insights to help me reconceptualise the WBA as a sociocultural interaction.

Actor-network theory is another sociocultural learning theory which focuses less on the individual, but more on the social and cultural network they form with other human and non-human actors (Bleakley 2012). Importantly, the theory sees both human and non-human actors as having the capacity to authorise, afford or encourage certain practices and activities (Latour 2005). Actor-network theories have been applied to situations in medical education where humans and objects inter-relate such OSCE checklists (Bearman and Ajjawi 2018) or the impacts of the introduction of various technologies within curricula (Tummons et al. 2018, MacLeod et al. 2019). In a similar way, I saw WBAs as complex clinical interactions, which involved humans (learners and assessors in face-to-face real-time interactions) and non-human actors (for example the structured, online proforma which was used to document the workplace happenings). This socio-material focus (Goldszmidt 2017) of actor-network theory led me to carefully consider the non-human actors involved with workplace learning in surgery.
Sociocultural learning theory in surgery

Social and cultural contexts for learning in surgery both shape and are shaped by immaterial tools (such as a shared spoken and gestural language) and material tools (such as surgical instruments, computers or WBA pro formas) (Goldszmidt 2017, Kahlke et al. 2019). The interrelation between sociocultural contexts and immaterial/material tools is illustrated in Prentice’s (2007) account of two interactions between a supervising surgeon and a learner who performs a procedure on a patient’s wrist under her direct supervision. In the first interaction, related to immaterial tools, the supervisor quizzes the learner about the anatomy of the wrist while they wait for a patient in theatre. Prentice’s comment that physicians regularly quiz residents intimates this is part of an existing culture within surgical education. Such quizzing inherently includes social components – the supervisor asks the question, and the resident answers, with a degree of informality, compared with for example a viva or a test. Prentice also stresses more nuanced implications – the learner is forced to verbalise their thoughts, using appropriate cultural language (such as accurate anatomical and clinical terminology). In this example, in response to an answer she deems only partially correct, the supervisor responds with mild sarcasm, implicitly suggesting that although the learner’s answer is correct, it is not adequate. Here, language, as an immaterial tool, provides the learner with unstated social cues – firstly about the supervisor’s higher position in the surgical hierarchy, and secondly that “details matter in this world and he should do better.” (p547) The example illustrates how surgical culture influences both the use of language (as an immaterial tool) and the tacit lessons that the resident learns through its use.

The other of Prentice’s examples of interaction relates to material tools. With a patient anaesthetised and positioned on the operating table, Prentice describes how the supervisor marks the key landmarks and draws the incision line on the patient’s wrist with a sterile pen. Prentice argued that drawing makes the supervisor’s knowledge explicit – setting out an exact path to be cut along and making clear the areas to be aware of. It also plays a social role, creating common ground between
the learner and supervisor as a material marker of their difference in knowledge, but also a scaffold to bridge that knowledge difference.

Prentice’s two examples draw attention to the importance of social and cultural contexts for learning in surgery. They helped me to think differently about the WBA. In particular, I began to consider how the sociocultural context of assessment in surgical education might influence how learning occurred through WBAs. I outline these considerations in the following section.
Surgical assessment as a context for WBAs

Watling and Lingard (2012) suggest that a learner’s perception of an assessment is relevant to how they engage with it, which in turn alters how they participate in and learn through it. Perceptions of the WBA might, therefore, be informed and shaped by how learners encounter other forms of assessments that they engage with during their education.

Surgical learners encounter assessments in many guises through their medical education (and before). These guises include written tests, examinations of clinical abilities or skills (for example using simulated models, actors or real patients in OSCE-like assessment formats) or oral examinations (such as vivas or case presentations). Learners will have experienced the WBA in various forms as they have progressed through their educational pathways. Some learners may also have found themselves in the position of being an assessor for a more junior colleague, providing them with different perspectives on assessment experiences.

In cultural terms, the WBA as an assessment is very different to, for example, the Fellowship examination of the Royal College of Surgeons (FRCS). As an example of an archetypal, summative assessment, all learners must pass the FRCS to be eligible to complete their training programme. Learners hold the exam in high regard due to its historical stature, importance in professional identity, and its consistent foregrounding throughout their training. The deeply prestigious exam, whose remit spans the breadth of the learner’s professional practice, has been woven into the fabric of surgical education since the 19th century, albeit refined at various stages into its current form (Stevens 2003). As a high-stakes assessment, it has significant career-altering implications (Harry and Bethelmy 2007). Preparing for and sitting the written part, followed by, if successful, a practical and oral part three months later, is highly stressful and impacts heavily on learners’ wider lives (McCarthy 2008, Appleton and Kalaiselvan 2017). It is also expensive to sit, costing a successful candidate around £2000 (Joint Committee on Intercollegiate Examinations 2020).
Learners also work closely with supervisors and senior colleagues, who have both passed and value this assessment event (Marston 2011). They will have all seen other learners pass the exam and progress in their careers, and may well have seen the repercussions of other learners who were unsuccessful. Such factors would likely contribute to a surgical learner’s perception of the examination as a significant event.

The exam is also physically separated from a learner’s workplace. In other words, learners encounter these assessments outside of their clinical and professional contexts. Instead clinical contexts might be i) described in and inferred from the various texts and still images that make up the question scenarios, ii) simulated through the use of actors, or iii) transferred from the clinical environment to the assessment as real patients with real and relevant pathologies that volunteer to be examined as part of the exam. The advantages and disadvantages of these assessment methods are not part of this thesis, but from a sociocultural learning point of view, what is important to note is that the removal of these experiences from the workplace makes them distinct from real world practice and emphasises, for the learner, their specialness. They are by their nature, different from every day, routine (but importantly, real) practice. Understanding these contexts in which learners encounter this assessment may support why learners value the exam, as a distinct, prestigious, important and accepted event. Furthermore, it may also serve as a baseline against which learners (and assessors) might make judgements about other assessments they encounter (Harrison et al. 2017).

Against this reference point, I compare how a learner encounters a WBA. Some studies report a negative perception of WBAs by their users (Aryal et al. 2020). As outlined earlier, the WBA came to prominence at, and is therefore often associated with, a time when surgical identity was shifting in a manner not fully supported by the surgical fraternity (Pereira and Dean 2009). Traditions such as long working hours or tightly bound trainer-trainee dyads were disrupted, surgical practice appeared to be becoming fragmented into competencies, and explicit progress monitoring through multifaceted portfolios were rapidly being introduced. The WBA was not respected by supervisors, who disliked the increase in administrative burden and lack of clarity
about its role (Hawkins et al. 2014, Shalhoub et al. 2014). There was a sense of redundancy – where documentation was required about educational activities that “happened anyway” (Massie and Ali 2016, Barrett et al. 2017). The resulting lack of engagement of those in a supervisory position might partly account for the opinions that then developed in those being supervised.

The inherent (but intended) association of the WBA to the routine and regular workplace, where the learner performs every day, purposefully aims to make the WBA itself both routine and regular. But this intention to assess learners in authentic workplace situations also makes the WBA ordinary and mundane to the learner, as might its continual and deliberate acknowledgement by stakeholders to be a low-stakes event (Watling and Ginsburg 2019). There is no significant cost element to these assessments – there is a fee required for the learners to pay to register on the ISCP website, but it is not directly linked to each WBA assessment. The situated unremarkableness and low stakes nature of the WBA are often referred to as strengths, but they also emphasise the WBA’s un-specialness. It is in stark contrast to the specialness that learners attribute to the fellowship exam discussed above.

Using the contrasting examples of assessments described above, I argue that perceptions of the WBA as an assessment, when compared with other more traditional assessments delimit the seriousness with which learners might engage with, and therefore learn from WBA processes and outcomes. What is learnt from a WBA is inextricably linked to the learning milieu (which is made up of cultural, physical, social, spatial or organisational factors) in which that WBA takes place. WBAs become part of working practice, rather than an assessment of working practice. They are not superimposed onto workplace practice, but are embedded within it, and as such in themselves have become part of the fabric of the workplace – authentic workplace tasks. What and how a learner learns is a product of the learner’s engagement in these authentic, non-standardised and unpredictable tasks of healthcare practices and is shaped by their unique set of experiences and the meaning that they and co-participants (e.g. assessors) attach to such experiences (Billett 2016).
Using both workplace learning and sociocultural learning theories together, I have re-conceptualised learning from WBAs as inherently collaborative and socially situated, culturally informed and stimulated by a learner’s agentic engagement with the workplace learning milieu. In particular, the sociocultural lens framed WBAs as social events, which must be analysed in context, within the dynamic cultures, communities, and organisations of which they are part. These have provided me with a wider, generalised backdrop to understand a surgical learner’s engagement with WBAs in the workplace. To add to my theoretical framework, I draw from Goffman’s dramaturgical metaphor, which helps me conceptualise these WBA events as specific moments of social interaction. This helped me to understand the WBA as it unfolded for the learner in real-time, as a unique, authentic, real-time performance.
The performance in WBAs

Goffman portrays individuals – the learners in this study - as actors who, when engaged in social interactions, present versions of themselves to the various audiences they perform before. These performances refer to “all the activity of an individual which occurs during a period marked by his continuous presence before a particular set of observers” (Goffman 1959, p32). As they play their role, Goffman suggests that the learner is implicitly asking their audience to take seriously the impression that they have fostered and to believe in the character they are playing. Similarly, the audience also submits themselves to co-operate – they allow themselves to believe in the social performance. In this way, the learner’s self is not independent and fixed, but constructed in through a social negotiation, involving audiences and settings.

Applying Goffman’s notions of presentation of self to WBA performance

This dramaturgical analogy has been widely employed as a framework through which to interpret the social world, both in the wider healthcare setting (Rolfe et al. 2020) and specifically in relation to medical education (Monrouxe et al. 2009). In some instances, the dramaturgical analogy is explicit. For example, the OSCE has been portrayed as a ‘social drama,’ where learners are asked to literally act the part of the doctor, and interact with an actor who simulates a patient, with an audience of assessors who observe, consider and critique (Hodges 2003).

In everyday working practice, learners also play versions of themselves, presenting a professional self as they deem appropriate. Surgical residents for example articulate the importance of displaying confidence and certainty, and develop strategies to show themselves as such (Patel et al. 2018). Through these self-presentations, learners give dramatic realisation to their awareness of where, what and for whom they are performing. These performances represent their sense of their role in what is going on in the working world around them, i.e. their meaning-making process.
When undertaking real-time clinical activities under direct observation, learners perform differently compared to periods in which they are unsupervised. For example, surgical residents described they consciously altered the way they present themselves when under direct observation, moving from ‘usual practice’ to ‘textbook’ practice in front of observers (LaDonna et al. 2017). In the knowledge that what they are performing is part of an assessment, they may modify their behaviour differently still (Rea et al. 2020). In such a situation, the front that the learner presents before their assessor is what Goffman describes as a front stage performance (Goffman 1959, p110).

Problematically, and as shown in the previous chapter, WBAs have been positioned as a psychometric measurement of a learner’s performance during a clinical activity. The assumption, rooted within a positivist paradigm, is that there is some single truth awaiting discovery. Here, this underlying truth is a learner’s underlying competence, which manifests through a performance, and is measured through an objective assessment of that performance. However, a learner’s performance (namely, the act of demonstrating a real-life action, from which competence will then be inferred) in the highly complex social setting of a WBA, following Goffman, is socially constructed and determined by the learner’s and assessor’s perception of, and interaction with, each other and the characteristics of the task at hand. Therefore, an assessment of performance in the work setting can never be objective. Instead, it will always be conceptualised and constructed according to the perspective and values of an individual assessor, which is influenced by their own unique experience and the social structure/context of the assessment task. It is through this lens that feedback, scaffolding and guidance are provided for a learner to develop. This makes the WBA a socially situated interpretive act, reflecting the experience, meanings, intentions and interpretations of the individuals involved in the assessment process (Shay 2004).

Although the use of standardised rating scales in the WBA aims to homogenise these judgements (Regehr et al. 1998), taking a social view of WBAs may help explain some of the difficulties encountered by the surgical education community in
objectifying learner performances. For example, consistency between assessors has often been lacking (Cook and Beckman 2009, Bodgener et al. 2017) but efforts to counter the effects of rater biases and thus improve inter-rater reliability has resulted in highly detached marking schemes or checklists. This has in turn led to competencies being reduced to highly prescriptive statements that do not actually reflect the *in-situ* activity and are disconnected from real tasks (Schuwirth and Ash 2013). Similarly, tasks are experienced differently by each learner in their learning milieu, and so are not standardisable or interchangeable, but unique, with their own contributions to learning. It should also be acknowledged that workplace assessment structures and processes, if not conducted sensibly, may lead to unforeseen consequences, such as fostering unhelpful approaches to learning. Examples from the surgical field are pertinent here, with Gaunt (2017) finding that WBAs were often undertaken strategically as part of “a *game*.”

Another shortcoming of prior WBA research is its framing of the learner’s performance during the clinical activity as the front-stage performance (Goffman 1959). Within such a frame, I argue that the aim of a WBA proforma would be to function like a thin layer of shrink wrap - laid over, but not interfering with, the performance. It attempts to capture that performance, preserving its shape and appearance and importantly storing it for someone to re-visit, even when the performance whose shape it has preserved has long since ended. When the audience inspect this remnant of the performance, it should be as if they are looking at the learner’s performance in the clinical activity itself.

In such a conceptualisation, the deficits of a WBA would be that the wrapping around a real-world activity is inefficient – a wrapper of uneven thickness might mean assessors see the performance differently (inter-rater reliability – (Lee et al. 2017) or a wrapper that is not transparent enough means an assessor doesn’t see a true picture (validity – (Phillips and Jones 2015)). Therefore, any improvements that have been proposed have tended to centre around trying to make that film thinner or clearer, thus giving a truer representation of “*what learning happened*.”
I argue that this aim – to ensure the wrapper is undetectable while capturing fully that learner’s performance – is misguided. This is because the WBA is not isolated to a single discrete, purely face-to-face social performance. It is rather a process that requires these clinical performances to be translated into written form onto a standardised proforma to then be uploaded into virtual portfolios. As such, live performances require a re-presentation in a different space, at a different time and for different audiences. Now, there is different performance, where the façade, props and settings that were key to the previous clinical performance have changed.
Although Goffman’s original work was based on face-to-face interactions, researchers have more recently extrapolated his theories to explore interaction through more contemporary means of communication (Miller 1995). Of particular relevance to this study is a body of work that explores self-presentation through digital, online and virtual platforms. Here, rather than performances in synchronous situations, learner presentations occur as asynchronous exhibitions (Hogan 2010). Such research has explored self-presentation through blogging (Azariah 2016), gaming (Bullingham and Vasconcelos 2013), social networking sites (Zhao et al. 2013, O’Leary and Murphy 2019) and professional networking platforms (Van Dijck 2013).

In these studies, the setting – the stage – for performances/exhibitions is highly variable and provide users considerable, albeit limited, freedom with which to present themselves. In contrast, a WBA represents a relatively fixed stage. The ISCP website provides rigid templates to be populated. Learners have some flexibility however, as they make decisions, for example, about what type of assessment to record their experience under or what name to give to particular procedures. Similarly, learners present themselves through the words they write, where those words are written and how they describe the events – all of which would demonstrate their individualised personal fronts.

In this way, through the WBA proforma, learners create a visible front – a dramatic realisation of the transient, no longer visible, real-world activity. My thinking here is informed by the work of Latour and Woolgar (1979). In their ethnographic study investigating the construction of scientific facts in laboratories, they describe inscription devices (p51) as an “item of apparatus which can transform a substance (eg a bioassay) into a figure (such as a graph) which is directly usable by one of the members of the office.” They talk of the output of these inscription devices being used as a starting point for further discussions and elaborations, a point at which the messiness that laboratory workers encountered prior to this can be “bracketed off,”
(Latour and Woolgar 1979) or as Law (2004) phrased it, “the process of producing (it) melts into the background.” (p20)

I saw similarities between what Latour and Woolgar called inscription devices and the WBA proforma. The WBA proforma acts as an instrument to transform the personal, contextual, ephemeral experiences of the learner into a materially realised, impersonal and standardised text – a document - a permanent and fixed record for comparison with other compatible texts. The resultant text serves to function as a scientific tool, neatly bracketing off the real-world on which it is based. The production of a standard format document aims to facilitate comparison, either for a particular learner over time, or across other learners, just as Latour and Woolgar’s inscription devices produced figures that enable laboratory scientists to compare the outcomes of their experiments. Sometimes, the proforma is devoid of traces of the learner as an individual as the personal traces are exorcised entirely when checklists are ticked or the numerical outcomes (1,2,3 etc) are awarded. Sometimes, remnants of the learner do persist, in part at least, where the WBA proforma allows for free-text comments and reflections.

The WBA proforma, as an inscription device, becomes the learner’s materially and neatly realised presentation of their learning experience, generated through their engagement with their workplace milieu. In other words, these proformas serve to make permanent the temporary/transient modalities of sight or touch, the doing of the operation or having the clinical conversations, that might otherwise be lost to record. In this way, as the only tangible representation the clinical activity, the performance within the proforma takes its place frontstage, leaving the clinical world on which this proforma is based, to take the backstage role that Goffman speaks of, separated by time and space.

This all suggests there is more than one performance nestled within the WBA. The standardised WBA proforma is not a transparent film through which an audience perceives a real-world happening, as if the film is not even there. It is not an inert wrapper. Instead, just as the learners real-world learning is constructed through
social, cultural and situational influences, so too is the completion of this proforma which is meant to record that episode. The WBA can be thought of as a process, a series of meaning-making steps, which are each shaped, help shape and are part of that learner’s working practice and have their own particular learning narratives within it.
Summary

In chapter 2, I explained how the WBA has been conceptualised and explored in the literature as an exercise that has been superimposed on the workplace as an assessment of what a learner knows or can do. The research around it has therefore largely tried to understand and improve it as an assessment tool. In this chapter, I have situated the WBA in the learner’s workplace, not as an objective window onto habitual practice, but rather as part of that learner’s habitual practice. I have highlighted i) the importance of the learner as an autonomous meaning-maker and ii) the influence of the social, cultural and historical contexts in which learning is situated. I have drawn from constructivist principles to explore and expand my thinking about the WBA. I have delineated a number of distinct, but overlapping, theories that have directly informed different aspects of my thinking around WBAs, in particular workplace learning theory, socio-cultural learning theory and dramaturgical performance. These theories share their focus on looking at the routine to understand key embedded assumptions and have helped me describe the principles that underpin a learner’s use of the WBA. They helped me frame the WBA from the learner’s point of view, as a complicated element within a complex learning milieu. In the next chapter, I show how I mobilise these theories to study the learning that occurs through the WBA. I outline my research protocol along with the practical, methodological and ethical considerations behind its design.
Chapter 4
Methods and methodology

Introduction

In the previous chapter, I outlined the theoretical framework that I am using to explore WBAs and the learning that arises through a learner’s engagement with them. I argued that my approach, underpinned by constructivist principles, would allow me to better understand both the learner’s use of WBAs and the learning that arises from their use as part of everyday practice, compared with the largely positivist approaches adopted by previous research. WBAs play an important role in a learner’s workplace development and progression through their training programme so understanding their use and impact on learning is vital for surgical educators. In this chapter, I will discuss the methodological rationale, theoretical underpinnings and ethical considerations behind the design, implementation and analysis of my empirical work. In particular, the principles of naturalistic inquiry both complemented and enhanced the theoretical framework developed and presented earlier.

In summary, learners were voluntarily recruited into this study. They identified upcoming clinical activities that were potential opportunities for them to undertake WBAs with their chosen assessors. During these WBAs, my data were generated, \textit{in-situ}, through audiovisual recording and non-participant observation (with field notes) of the clinical activity, with a particular focus on how learners engaged with the task, their surroundings and the people around them. This was important because my aim was to understand the WBA from a learner’s perspective. Learners also shared with me their WBA proforma which was completed about the clinical activity. These completed proformas were the official representation and documentation of their performance during the task at hand. Further data were generated through two post-WBA interviews with each participating learner – the first
conducted soon after the WBA encounter and the second six weeks after the encounter.

The dataset that I generated therefore consisted of my own subjective observations during the research process, the audiovisual record of clinical activities, written field notes, the learner’s WBA documents and interview transcripts. These were analysed to investigate the content, process and subsequent meanings made by the learner as they engaged with the WBA as part of their workplace practice.
Naturalistic Inquiry

To study the learning that occurs through the use of the WBA as a meaning-making process for the learner, I adopted a methodological approach based upon naturalistic inquiry (Lincoln and Guba 1984). Given that my research sought to harness observation, description and interpretation of the actions and experiences of specific people and groups (in this case, surgical learners) in societal and cultural contexts (in this case, a large teaching hospital in London) (Salkind 2010), I assert that naturalistic inquiry was both a suitable and useful methodological approach.

Naturalistic inquiry contrasts significantly from the rationalistic approaches that have been employed (with limited success) in previous WBA research. Lincoln and Guba (1984) describe some key axioms that account for the differences between naturalistic and rationalistic approaches, which in turn support my use of naturalistic inquiry as a methodological framework in this research study. Firstly, they propose that, unlike the positivist assumption of a single, tangible reality, naturalistic inquiry supports multiple constructed realities that can only be studied and understood holistically – they can’t be fragmented, independently studied and then re-assembled. The notion that learners in this study might be constructing their own realities was in keeping with the constructivist underpinnings of my own theoretical framework. Furthermore, a naturalistic standpoint allowed me to study the WBA as a holistic process. Studying components of that process in isolation – for example only analysing the WBA document or the clinical episode - would be to incorrectly fragment this process and limit the understanding drawn from it.

Another key feature of naturalistic inquiry is the inseparable relationship between the researcher and the object of the research. As a researcher who was entering the clinical environment to study learners in their workplace, I realise that I could not be invisible or inert. I expand on this further below, but my presence and this research would have some effect on the object of my research. I would be knotted to the subject of my research, both influencing and being influenced by what was being researched. Importantly drawing from a naturalistic approach enables me not only to
acknowledge my own subjective experiences, but also to leverage these as an overall strength by allowing for the creation of rich, evocative descriptions and interpretations of the social phenomena I observe. Furthermore, in keeping with the importance I have placed on the social, cultural and physical contexts in which learning takes place, naturalistic inquiry stresses that research findings are neither time nor context free. I accept this might defy generalisability, but by presenting rich and detailed descriptions I leave the reader to determine the extent of transferability to other related situations.

Naturalistic inquiry has provided valuable insights into medical education previously (Bussigel and Filling 1985, McInnes et al. 2017). I found it advantageous in my research because it offered me an opportunity to study the phenomena of WBA in its relevant context, providing a richness that I did not find in my exploration of the existing literature. This approach enabled me to understand how learners and assessors interacted with the WBA as a process, as it occurred, over time in the real-world clinical environment. Previous studies have investigated WBAs in staged or simulated environments. They have analysed WBA documents as truthful representations of some underlying level of performance without taking into consideration the nature of that performance itself. However, a naturalistic method of inquiry allowed me to develop a sensitivity to the WBA process that these previously published studies simply could not justifiably do. For these reasons, I decided upon a naturalistic inquiry approach as a suitable methodological framework to study learning through a WBA and to address my research questions.
My focus on the learner

WBAs take place within a complex context. Contributing to that context are the individual participants, for example, the learners, assessors, patients or other healthcare professionals present at the time that WBAs are carried out, and also (more broadly) the real-world and virtual organisations in which they take place, as well as the wider communities of medical education. Each of these would provide their own meaningful and important perspectives on the WBA process and the learning that takes place through it, thereby constructing, as Lincoln and Guba (1984) suggest, their own version of WBA reality.

In this study, I chose to focus on the learner’s perspective. This is partly due to my own personal motivations, as a surgical learner myself, to understand how these ‘assessments’ impact upon surgical learners. There are also practical benefits to limiting my area of focus to a single perspective, thereby ensuring the quantity of meaningful data remains manageable and analysable. But also, and more importantly, at the heart of this research is the exploration of the learner’s journey – how they learn through their participation in WBAs and the processes around it. Therefore, while I accept there are multiple perspectives, which are each important in their own right, in this study, what became central was that it was the learner’s meaning-making that I was unpicking and understanding, and everything else would be interpreted through that lens.

It is important to acknowledge that the learner’s perspective is not the only perspective that develops during the WBA process and neither do their views develop in isolation. However, the data in this study was generated and analysed to gather insights by maintaining the learner’s perspective as central. As an example, rather than elucidating a particular assessor’s opinion of a WBA situation or what they valued in written documents, I was interested to explore how learner’s framed that assessor’s actions and perspectives, and how that influenced the WBA processes they were engaged with.
Positioning

As a surgical learner myself, I am familiar with the customs and practices of the clinical environment, and therefore have a certain degree of shared experience with my study participants. I have a general awareness for how the procedures might unfold – for example, when learner and assessor would be scrubbing up, what was sterile in the operating theatre, or where it was acceptable to stand and what position I could safely adopt to focus on whatever I wanted to record. Being comfortable in this research space, coupled with my implicit understanding of the ‘rules’ of the operating theatre (as an example of a research space where this study took place), helped me to anticipate key moments to observe and therefore generate rich data. In this way, my position as an insider-researcher was beneficial in my data generation. However, I was also aware that my own surgical knowledge and WBA experience could generate unconscious biases which might have led me to focus on interactions and events that I understood already and was familiar with, and that this might be reflected in the data that was generated.

I also realise, as mentioned earlier that as an observer, I would be altering the research environment. My presence in the research field would influence and be influenced by what it was that I was observing and researching. My own individual role as a trained surgical observer would be altering what unfolded in a particular way. I recognise that I could not achieve a ‘fly-on-the-way’ perspective and accept that this was a methodological consequence of being an insider-researcher.

Nevertheless, I was aware that I also carried with me an ‘outsider’ perspective and although I was familiar with surgical practices and customs, I was present at that time as a researcher. I was not actively participating in the procedures I was observing or the discussions I listened to. I was not performing in my usual role as a surgeon. In many cases, I was observing, either directly, or through the camera lens, surgeons or procedures that I had little or no previous experience of. In this way, I made my familiar environment strange. I de-familiarised the events that I was
recording (Gunn 1984), as I tried to find new ways of looking at them, understanding them and making meaning from them myself.
The study sample

In this study, I wanted to understand how surgical learners engaged with and learnt from WBA events. I used a purposive sampling technique to recruit a group of research participants who represented different learners in various different specialities and with differing levels of seniority within their specialist training programmes. In this way, I used my judgement to generate an information-rich sample to provide a range of learner experiences and perspectives consistent with the aims of my study (Robinson 2014, Robson and McCartan 2016).

Recruitment

My recruitment strategy was restricted, for practical purposes, to a single institution – a large teaching hospital. Within this institution, there were approximately 30 surgical learners distributed across a range of different surgical departments. Eligible learners were approached initially via email, where they were provided with a brief outline of the study and invited to reply if they were interested in learning more about the study. Those that did were given a full explanation of the study, its purpose and what their participation would involve. Further arrangements for observations were only made if learners volunteered to participate in the study once they had considered this information.

Previously published research has reported a wide range of uptake rates for qualitative research studies amongst clinicians, ranging from 20% (Jagsi and Surender 2004) to 42% (Kitto et al. 2011). Extrapolating this, I anticipated 6-12 individuals within a group of learners this size might volunteer to take part in this study. In keeping with the iterative nature of qualitative research, I recruited learners into the study on a rolling basis. This allowed me to begin analysis on data generated from learners recruited early in my study, to help guide and inform my recruitment, data generation and subsequent analysis in the learners who were recruited later. The timeline for my data generation is mapped in Appendix B.
Arranging observations

Naturalistic inquiry seeks to describe, understand or interpret daily life experiences and structures, as they occur in native settings, with no manipulation on the part of the inquirer and void of a priori outcomes (Lincoln and Guba 1984). Therefore, I chose not to ask learners and assessors to stage a WBA for the purpose of this study, nor did I specify to them the type of WBA or location where it should be conducted. Attempts to purposefully steer the research in this specific way would be, as Lincoln and Guba suggest, unnatural and distort what is of interest, thereby limiting the usefulness of any study of it. Attempts to ask a learner to deviate from their daily practices would be analogous to imposing experimental controls on these naturally occurring events and would have pulled the research towards the positivist paradigm. I have argued already that such approaches would have oversimplified what is happening during such complex social interactions.

Instead, I set out to find opportunities where these events occurred naturally. So, upon volunteering, learners identified potential upcoming clinical activities which they might engage with as WBAs. In this way, learners maintained control of their own WBA opportunities. My dataset was, therefore, limited by, and situated around, what learners themselves chose to undertake as WBAs and also were willing for me to observe. But rather than a limitation, I thought of this as a strength, where I saw the decisions made by learners about whether or not to initiate a WBA as part of the learning milieu that existed for them at that particular time. As an example, previous research has shown that surgical learners strongly identify the operating theatre as a key site of learning (Marwan et al. 2020). Similarly, learners in this study all identified the operating theatre as the place where they would like to volunteer their WBA for the study. Indeed, during the study period, I observed 14 clinical activities that learners identified as potential opportunities for undertaking a WBA. All-except-one were procedures performed within the operating theatre, while the other was a discussion that related to an operative procedure.
While clinical activities took place within an operating theatre, to understand them from a sociocultural standpoint, I drew from ethnographic principles where “observation of some social event, the events which precede it and follow it, and explanations of its meaning by participants… before, during and after its occurrence… gives us more information about the event under study” (Becker and Geer 1957, p28). The data in this study - generated through 50 hours of observations and related field-notes - extended beyond the clinical activities that were the subject of WBAs. To illustrate, on the chosen day of observation, I met with each learner earlier in the day (for example, in the admissions lounge of the hospital), where I began by observing how they prepared for those procedures beforehand. Among others, I observed the learner’s interactions with the patient pre-operatively, their preparation of the operating theatre with the theatre staff and the informal discussions they had with other people in the theatre coffee room beforehand.

It was important that I recognised that despite my efforts to study workplace practice in its natural setting, unchanged and uninfluenced by me as a researcher, my presence in the research field was not inert (Robson and McCartan 2016). Indeed, one of Lincoln and Guba’s (1984) axioms of naturalistic inquiry proposes that the researcher and their research subject are intrinsically intertwined – one does not exist without the other. One of the ways this became apparent to me was through my realisation that, while I was not a full participant in the clinical activities that I was observing, I was altering the natural course of (at least some) events. To provide an explicit example - to obtain fully informed consent from all parties who may be observed during this research, each learner would introduce me to their patient on the morning of the observation. Once each learner had completed their own clinical administrative tasks, I would explain to the patient what the study involved and ask for their written consent to be part of it. Similar conversations took place in the operating theatres, when I explained the study and sought consent from the wider operating theatre team on the day of the observation. Such conversations would not have taken place had I not been carrying out this research, so therefore my presence and this research altered the natural flow of events during the day.
In addition, my presence as an observer, albeit with limited participation, will have impacted on the behaviour of my study participants. This potential source of disruption to a participant’s observed behaviour is often acknowledged as the Hawthorne effect. This phenomenon describes how research participants purposefully modify an aspect of their behaviour in response to their awareness of being observed, usually in some way perceived by them to be positive (Payne and Payne 2004). It has been described as a potential, albeit complex, source of bias (McCambridge et al. 2014) so I considered how such an effect might influence my research participants in the context of this study.

Direct observation is commonplace in surgical education. Surgeons-in-training regularly work under the supervision of more experienced colleagues in their daily practice (Fallon et al. 1993). They are also observed by junior colleagues who assist them, as well as theatre staff or allied health professionals who they work with. Adding to this, the WBA itself consists of an assessor directly observing how a learner interacts with (speaks to, examines, or performs on as examples) a particular patient. In this way, this research project constitutes an observation of these pre-existing, observatory arrangements. Importantly, studies have shown that the effect of observer presence on participant behaviour can be mitigated against, provided it is acknowledged, recognised and accounted for (Goodwin et al. 2017).

While some researchers have questioned whether the Hawthorne effect exists (O’Sullivan et al. 2004, Levitt and List 2011), others have claimed to have harnessed its behaviour-changing potential (Hui et al. 2014). Researchers have also suggested that the term Hawthorne effect is overly specific, and therefore does not appropriately encompass the complex changes to participant behaviour as they participate in social research studies (Paterson 1994). The alternative term ‘participant reactivity’ has been proposed to be more reflective of how participants react to, and interact with, the research process to alter their behaviours when observed (Paradis and Sutkin 2017).
Taking into account these considerations, I felt that a learner’s experience of their WBA may not be confined only to the period of direct observation. Instead, their WBA experience may have begun beforehand when, for example, they may have selected or identified WBA opportunities differently because of their participation in the study. Similarly, a learner’s WBA experience also extends beyond the clinical activities that I observed. For example, learners may or may not have reflected on their experiences differently during the time between their clinical activity and when the WBA proforma was completed based on their participation in the study. Likewise, their participation in the study may have influenced what content was written in the proforma. These periods are relevant to the study but did not occur during the periods of observation. I saw them very much as part of that learner’s experience of a particular WBA, and any of them, as examples, may have been influenced by the research project acting as lens through which their practice was being examined. By acknowledging ‘participant reactivity’ and incorporating it into my study design and analysis, I aimed to balance my intention to generate data through processes of naturalistic inquiry with the potential impact of my presence in the field as a researcher.
From observations to WBAs

Learners in this study remained in control of if, and how, their clinical experiences were documented as WBAs. They were under no obligation to write up their experiences as WBAs if they did not want to, for whatever the reason. Learners were also at liberty to record their experience as any of the four WBA types that were available to them, depending on their own individual, real-world decisions and practices. Resultantly, several of the experiences that I observed did not actually ‘become’ WBAs. Learners decided that they did not wish to use these particular experiences as WBAs and present them as part of their learning portfolio. Importantly, their decisions here to capture or not capture their experiences as WBAs were not related to this study, but were decisions that they made themselves and were part of the working practice that I was attempting to study. Indeed, including these decisions that learners made about their WBA activities during the study represented one of the strengths of a naturalistic study design. These decisions about choosing which clinical activities became written documents were explored with learners in the interviews, and became a valuable avenue to develop my insights during later analysis. There were 14 clinical activities that I observed and captured within 19 hours of audiovisual material. Of those 14 clinical activities, the learners chose to formally document ten of their experiences as WBAs. The other four activities that I observed remained an important part of the study, and key insights were developed by exploring why these experiences were not taken forward as WBAs.

Surgical learners and their supervisors have tended to place more value upon procedural WBAs (i.e. procedure-based assessments (PBAs) and direct observation of procedural skills (DOPS) assessments), along with the conversations that arise through case-based discussion (CbDs) (Phillips, Madhavan et al. 2015), compared with other types of WBAs. This is also reflected in this study. Of the ten experiences that surgical learners chose to document as WBAs, nine took place inside the operating theatre. These all related to the experience of performing surgical procedures and were captured as PBAs or DOPS. The other WBA in the study
related to a clinical discussion, carried out in a hospital canteen, that focused around a procedure that the surgical team (learner and assessor) were about to perform.

For each of these ten experiences, learners shared with me their completed WBA proforma once they had completed it. How and when they completed it was left up to the learner. Once each learner had completed their WBA document and forwarded it to me, they took part in the first of two interviews with me. I labelled the first of these a debriefing interview, followed by a further follow up interview six weeks later. Each lasted on average 30 minutes. This resulted in 12 interview transcripts for further analysis.

By viewing the WBA as a process, and generating data at different stages of that process, I created sets of multiple data-sources for each WBA. To summarise, these included audiovisual footage, field notes, a completed WBA proforma and two post-WBA interviews. My sample size, as outlined above, was largely influenced by other ethnographically informed studies in the medical field. For example, in her video-ethnographic research study, Cope et al. drew conclusions about learners’ interpretation of visual cues in the operating theatre from approximately 12 hours of audio-visually recorded surgical operations (Cope, Bezemer et al. 2015), while Carroll (2008) used eight hours of video data as the basis for their video-reflexivity study in an intensive care unit. Semi-structured interview studies looking at various aspects of surgical education have reported saturation after around 15 interviews (Cope, Mavroveli et al. 2015, Hardré et al. 2016). As a result, I felt my final study sample of six participants, leading to ten complete WBA datasets was a realistic target sample within the research period and suitable for data generation and analysis. I summarise my study sample in figure 4.1
<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Specialty</th>
<th>Training level</th>
<th>Gender</th>
<th>Type of WBA conducted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jatin</td>
<td>OMFS</td>
<td>ST4</td>
<td>M</td>
<td>DOPS, PBA</td>
</tr>
<tr>
<td>Luke</td>
<td>Orthopaedics</td>
<td>ST3</td>
<td>M</td>
<td>DOPS</td>
</tr>
<tr>
<td>Omar</td>
<td>OMFS</td>
<td>ST6</td>
<td>M</td>
<td>PBA</td>
</tr>
<tr>
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<td>OMFS</td>
<td>ST5</td>
<td>F</td>
<td>CbD, PBA</td>
</tr>
<tr>
<td>Sam</td>
<td>Otolaryngology</td>
<td>ST5</td>
<td>M</td>
<td>PBA, PBA</td>
</tr>
<tr>
<td>Vinay</td>
<td>Orthopaedics</td>
<td>ST6</td>
<td>M</td>
<td>PBA, PBA</td>
</tr>
</tbody>
</table>

Figure 4.1: A summary of my study sample
Data generation

Data in this study was generated through three main sources. Each afforded me different, but complementary, naturalistic insights into learners’ working practices around WBAs. These insights were generated by visibilising the clinical learning experiences through audiovisual recordings and observation, through the learner’s completed WBA proforma and the post-WBA interview transcripts.

Video data

Video-based research has been used to “illuminate the contours of… contemporary clinical work” (Iedema et al. 2006, p164). Video footage helps to foreground the moment-to-moment habituations and practical knowledge of participants and assist researchers to examine the tangled realities of everyday practices (Iedema et al. 2006). Iedema et al. (2019) propose that it makes accessible the otherwise forgotten and taken-for-granted events that are normally regarded as unremarkable. Iedema et al. explain how visibilising this work makes explicit what might otherwise be tacit, but also to enables access to a “field of vision commonly buried under the hurly-burly of everyday tasks” (Iedema et al. 2006, p165).

I have previously argued that one of the challenges which existing WBA research has struggled to overcome is that the only visible, stable remnant of a learner’s WBA is their WBA document. As such, this has become the field of vision for much of the existing WBA research. Importantly, where researchers have attempted to make learner experiences visible and accessible, they have restricted themselves to particular qualitative approaches, such as post hoc interviews, focus groups or surveys. What remains lacking, and is offered through video-based approaches, is the opportunity to make visible, accessible and analysable those very activities that learners and assessors write about in WBA documents.
The way that my own understanding and engagement with this audiovisual data changed through the course of this research is perhaps reflective of my own personal journey through this research process. Initially, my original intention in using audiovisual recordings was to capture and analyse ‘objective’ reality. While I saw WBAs as complicated clinical, but also social situations, I assumed that the rich record of interactional phenomena that occurred within them - whether content, tone of voice, gestures, expressions and use of physical artefacts - were real-life phenomena that happened to, or were performed by, learners and would be replicated in my recordings. These replications could be stored, edited, anonymised and manipulated so I could uncover the underlying occurrences.

As my research progressed, I began to acknowledge how recording these clinical activities (or, as discussed above, my presence during them or even simply the learner’s awareness that they were taking part in my research study) might “distort (the) social interaction” that took place within them (Jewitt 2012, p9). To minimise this distortion, I chose to use a single, handheld video camera that I controlled. This enabled me to focus primarily on learner-assessor interaction, while providing mobility and flexibility to follow these interactions as the pair moved around the operating theatre and the wider hospital. I used small, unobtrusive, wireless lapel microphones, worn underneath the surgical attire of the learner and their assessor. These better captured the spoken dialogue and utterances that took place, mainly between learner and assessor, but also audible sounds between them and the wider team. These sounds would not have been picked up without the use of these microphones, and therefore added greatly to the richness of the audio data-stream.

Over the course of my data generation and analysis, I came to see this audiovisual data as my own subjective record of a learner’s engagement in these clinical, workplace activities, rather than an objective and faithful replication of reality. I realised I was constantly making judgements that affected how I visibilised a learner’s work. As examples, I made numerous decisions, either consciously or unconsciously, about who or what to focus on during a procedure. Similarly, decisions on when to start recording were choices that I made, at a point in time.
where I felt that relevant clinical activity began, often at the pre-operative surgical checklist (the timeout) at the start of a procedure. I also ended the recordings when the procedure was completed, although where possible, I tried to capture any post-operative debrief that took place between learner and assessor. But importantly, these were my own judgements, informed initially through my own experience, but then as the study progressed, influenced by earlier research experiences and preliminary analyses.

Jewitt (2012) drew on the work of Schindler (2009) and Erickson (2009) to explain how an audiovisual recording makes permanent what was audible or visible, but not necessarily what was seen and understood by the participants involved in that situation. A recording therefore documents visible and audible phenomena, without providing any of the context which might be needed to understand it. With such a perspective, I began to see that the audiovisual record in itself was not meaningful for me as a researcher, but it was processed into meaningful data through my own active and interpretive acts - first shooting, then watching and then analysing it.

Iedema et al. (2019) expand on this idea by contrasting vision with visuality. Vision refers to the physiological act of seeing and in video-based research, represents what is shown on the screen. Visuality is what is made of what is on the screen by its viewer. It is a constructive process, reflecting what one can see, is allowed to see or is made to see. In this way, different researchers see different things, and infer different things from what is displayed on the screen. Through my research experience, I came to see the footage I recorded, rather than an objective reality that I captured, more as my own interpretation of my experience in the research field. These interpretations were painted by my own evolving insights into my research participants and research subject. In this way, rather than video-based, the data became video-ethnographic, as they helped inform my own understanding of the ways that learners made sense of the world around them.

Ethnography involves studying, describing, representing and theorising a culture or social world (Harrison 2018). Traditional ethnographic principles saw researchers immersed in the field. Here they used observation, field notes and interviews to
document and analyse the social interactions, behaviours and perceptions that occurred within the cultures of which their research subjects were part. Digital technologies, including video, have been added as a carefully considered adjunct to ethnographic inquiry (Murthy 2008). More recently, video-ethnography has offered contributions to the study of learning, including in medical contexts. For example, Urquhart et al. (2018) explored the feedback given to medical students using a video-ethnographic approach. Using this approach enabled them to report on broad aspects of learner-teacher interactions and also perform an in-depth analysis of more subtle, embodied interactions such as body language, gesturing and speech. In this case, their incorporation of video allowed for the study of “in-action” feedback in the in-situ contexts of the medical workplace and the simulation suite.

Within the context of surgery, Bezemer et al. have explored the prevalence and effects of certain behaviours in the operating theatre (Bezemer et al. 2017) and the use of language to frame operative safeguards (Bezemer, Murtagh et al. 2016). Korkiakangas et al. (2014) and Korkiakangas (2017) used video-ethnographic approaches to analyse efficient communication and teamwork in the operating room. I have already discussed Cope et al’s (2015) study of the interaction between postgraduate surgeons-in-training and their clinical teachers, which is also relevant here. As Iedema et al. (2019) state, the use of video in these studies provides an alternative take on, but a repeatable view of, the unfolding activity, as if it was in the here and now. It therefore provides the opportunity to dwell on minute details of performance, through which practice becomes realised. These opportunities were of great value as I explored how surgical learners learnt through engaging with WBAs as part of their working practice.
WBA proformas

As previously described, after ten of the clinical activities that I observed, learners populated standardised, online WBA proformas which were then uploaded onto their online learning portfolio. In other words, these ten clinical experiences became WBAs. Whether (or whichever) experiences that I observed were written about was left up to the learners, but once completed, they shared a copy of their WBA document, which I then anonymised and used in my analysis.

Previous WBA literature has placed significant emphasis on the content of these documents, whether focusing on numerical scores or written comments. In this way, these very brief written accounts are arguably taken to represent the reality of the clinical activity that the learner has performed. However, just as audiovisual recordings cannot be assumed as faithful replications of reality, neither can these written documents. Instead, the documents are “created using socially shared cultural conventions and resources… invested with personal and cultural value” (Hammersley and Atkinson 2019, p125).

Hammersley and Atkinson (ibid p126-7) describe how individuals produce documents themselves, on particular occasions, for particular purposes and aimed at some audience. I draw parallels here to Goffman’s ideas on the presentation of self, where it is suggested that a learner will have some reason to “mobilise his activity so that it will convey an impression to others which it is in his interests to convey,” (Goffman 1959, p3) however that might look. In other words, these documents are actively constructed by the learner. As such, this document doesn’t speak for itself, but represents an active and interpretive re-telling of some prior experience that learners relate through the document.

I received copies of the WBA proformas from the learners in a variety of formats, depending on how they downloaded and then sent their completed forms to me. Some learners downloaded and sent me a PDF version of their completed proforma. Others sent sequential screen shots of the document as it appeared on their screens.
On other occasions, learners sent selected photographs of the entries they had made. Either way, what was available for me to analyse was these copies of the WBA proforma as they were presented to me by the learner. These copies would not normally exist in physical form.

Furthermore, I knew from my own insights into WBAs and the ISCP website that what I was seeing as research-generated data was often not what learners interacted with when they completed their documentation in real-time. Live, online, digital versions of these documents, for example, are long and require the learner to scroll up and down the page to fill in the various sections of the document. Learners were able to interact with the digital proforma – drafting, changing, altering their entries (if they chose to) before submitting them for validation. My research-generated data that related to this document was fixed and represented either the whole, or part of, the final product of the WBA.

Although the content of what was sent to me by the learners was relevant and formed an important part of my analysis, also relevant was how learners sent me these documents, what they took photographs and screenshots of and why they chose them. In this way, rather than a limited content analysis, I engaged with this data as an ethnographic artefact, as another avenue through which to better understand its author (the learner) and the process by which it was produced.
Interviews

Because of the complex, non-linear and unpredictable process of workplace learning, judgements about learning (in particular how the learner makes use of that learning interaction and its subsequent impact) would be impossible to elicit through data recorded and analysed solely through video-ethnography (Iedema et al. 2019). For this reason, I used my interviews to co-generate an understanding of the learner’s own insights and reflections on their clinical experience as related to the WBA they undertook. As Kvale (2015) suggests, I attempted to “understand the world from the subjects’ point of view, to unfold the meaning of their experiences,” (Kvale 2015, p3). In fact, I would extend this to say I was attempting to unfold their meanings of their experiences.

Carroll et al. (2008) demonstrated the benefits of the combined use of video and reflexive interviewing in a study to improve practice during ward rounds on an intensive care unit. After a period of in-depth observation, video recording and reflexive interviewing (which included showing selected footage to clinicians for feedback and reflection purposes), they reported that the resulting discussions amongst the researchers and clinical team catalysed a number of positive changes to the unit. Similar approaches have shown benefit in improving other healthcare practices, related to infection control (Iedema et al. 2015), dementia care (Hung et al. 2018) and end of life care (Collier et al. 2015). This approach has also been adopted to explore inter-professional, human interactions. For example, Gordon et al. (2017) explored how healthcare teams enacted leadership at micro-levels through acts of organising. Similarly, I found an approach combining video-ethnography and reflexive interviewing shed similar light on the micro-level processes that occurred in WBAs.

I interviewed participants twice to gather their reflections on their experiences. These interviews were semi-structured and facilitated by a preparatory interview schedule (Appendix C), but were reflexive and discursive. They lasted between 15 and 62 minutes. They were recorded, transcribed, anonymised and then analysed. They
were predominantly conducted face-to-face, although on two occasions they were done by telephone due to learner preference.

The first of these interviews took place after the learner completed their WBA proforma and sent me a copy of it. As mentioned, learners created their WBA documents at a time of their own choice, as part of their working practice. There was typically two to three weeks between the date of the observation and this interview. The reason for this was due to the time it took learners to complete their documentation after their clinical experiences, which in itself, served as a key point of discussion during the interviews. During the debriefing interview, I asked learners to reflect upon and relate their recollections of their experiences to how they recorded it on their WBA documents, using both the completed document and extracts of the audiovisual recording (based on an early preliminary analysis) as an aide-memoire. I asked learners about the aspects of the clinical activity that they felt were important to record, why they were chosen over other elements and how these decisions were made.

I conducted a second, follow-up interview approximately six weeks later, where I explored if and how the particular WBAs impacted upon the learners subsequent practice. The aim of the interview was to understand how that learner's feedback and learning, generated from the WBA I had observed, led to changes in their own thinking and practice. Because of the iterative approach I adopted during this research, the interview discussion was informed by my earlier analysis of the audiovisual recordings, observations and field notes, the entries made on the proforma and prior interview transcripts.

I did not see these interviews as a replication of facts. Instead, the interviews themselves were data-generating processes. Kvale’s explanation of the features of interview-generated data particularly resonated with me here (Kvale 2015). The interview was a site where interview content was actively produced and socially constructed through the interaction between myself as the interviewer and the learner as interviewee. It was constructed through conversation, where it provided an
avenue for the learner to make explicit sense of their everyday experiences and for me as the researcher to structure my own meanings from my experiences in the field. I interpreted learner responses (for example, about why they chose to document an event from their clinical performance in a certain way on their proforma) not as an absolute truth, but as a new interpretation of their experiences made by the learner as they reflected during the interview. In that way, interview data was contextual, constructed in the here and now of the interview, and preserved through recording and transcription.

Overall, my data were generated through eight hours of interview recordings. These recordings were personally transcribed verbatim by myself. This formed an important part of the familiarisation process as I began to relate each learner’s individual commentary and reflection with the actions which they had reflected on.
Data analysis

Having developed my theoretical framework based on the constructivist theories of workplace learning, sociocultural learning and Goffman’s socially constructed self-presentation, and having proposed a methodological process harnessing the principles of naturalistic inquiry, it follows that my approach to analysing the data generated in this study would be inductive in nature. I did not begin with a fully formed hypothesis, but with a desire to understand a phenomenon (Thomas 2006). In this case, the phenomenon I was interested to understand was learning through the use of WBAs. This approach contrasted with the deductive, positivist approaches that have more commonly been used to understand WBAs previously. These deductive approaches aim to test structured hypotheses that have been derived from more general phenomena (Varpio et al. 2020) about some pre-existing structured reality.

My inductive approach involved detailed readings and re-readings of the data. I moved between different data-streams, assigning and re-assigning codes, re-visiting previously coded data, returning to existing literature and my own theoretical framework. As my understanding of the phenomena became richer, new concepts, themes and meanings emerged, flowing from my interaction with the data (Thomas 2006, Miles et al. 2020). In this way, my analysis began from the first day of my field work, as I began my observations of the workplace contexts within which learner carried out their WBAs, and continued iteratively through my data generation phase of research and developed further as I wrote about it. Indeed, the analysis has only ended towards the very late stages of the preparation of this thesis.

To facilitate my analysis, the separate audio and video data from my microphone and camera recordings were first combined and edited using Adobe Premiere Pro CC (2017, v13.1 Magician). The length of the final recordings were highly varied, ranging from eight minutes to four hours. Because my aim was to understand how learners came to re-present their experiences in written WBA proformas, I recorded the entirety of the clinical activity that the learner engaged with. While some of these
took the form of short conversations and simple procedures, some were lengthier, more complicated operations, which lasted much longer. Again, I saw this variation as a strength because it gave me important insights into the challenges faced by the learners themselves when presenting their experience (long and short) in the same standardised proforma. I reviewed each recording several times and produced transcripts of the spoken interaction as I began to familiarise myself with the content of the recordings. Because the focus of this research was the learner, I took the learner as central to all analysis.

In the first instance, recordings were separated into broad segments representing different phases of the clinical activity, for example pre-operative, operative and post-operative. Each of these broader segments was then analysed further to generate shorter clips. Each clip represented an instance of coherent interaction between the learner and something/someone else. Some of these interactions were spoken, for example utterances, dialogue or group conversations. Others were non-verbal and included actions (e.g. surgical manoeuvres that involved a procedural act on the patient) or gestures (distinct non-invasive movements with meaning potential) (Bezemer et al. 2019). These clips ranged from instances to several minutes. Clips of coherent interaction often overlapped or were even nestled within one another.

To map and relate these interactions as they occurred through the course of the recording, I created a preliminary plot-diagram through a process outlined in Appendix D. This concept was based on the multimodal transcripts generated in previous studies (Bezemer, Murtagh et al. 2011, Bezemer, Cope et al. 2014) and served as an entry point for my own later multimodal analysis of learner engagement and learning through these events. The production of my multimodal transcripts represented my own ‘semiotic work’ that was guided by my particular interests and principles (Kress 2010) – in this case gaining analytic insights related to learning through WBAs. In producing them, I was making judgements about framing, selecting and highlighting those elements within these recordings that resonated with my research questions. The audiovisual data was transduced into the modes of image, colour and space, and although this meant certain details were lost, these
edited representations helped me generate my own analytic, but subjective, meanings and insights from my data (Bezemer and Mavers 2011).

My analysis of learners’ WBA proformas revolved around process and content. To understand the process a learner went through to populate their proformas, I analysed when they wrote them, why they had chosen to complete one kind of WBA rather than another and how learners had engaged with it, whether it was fully filled, or certain areas were left blank. I tabulated the entries learners made on these standardised documents using Microsoft Excel to facilitate content analysis, where I looked for any broad patterns that emerged as data from more learners were added to the table.

Importantly, the information – which ranged from brief comments, general topics or specific details - that learners had entered on their WBA proforma served as markers by which I could identify and then select sections of my audiovisual data to analyse in depth. In this way, I began my in-depth analysis using what learners had themselves chosen to include in their WBA proformas to analyse the audiovisual data. In doing so, I was able to approach the extremely rich audiovisual data in a focused way that remained relevant to the WBA processes learners were engaged with.

In my early analyses, this approach enabled me to interrogate the audiovisual data to understand the different instances that may have contributed to what a learner entered on their proforma. This provided a basic structure to my analysis, and through this process, I began to develop a sense for how certain ideas were discussed, paused and then re-visited. In other words, I began to see how experiences developed through the course of learner interactions. As I did this, both within data generated from each participant, or across different participants, and as I became increasingly familiar with my expanding dataset, I began to note other learning themes emerging from the audiovisual data, ones that learners did not explicitly report on their WBA proformas. Once these themes became apparent, I
was then also able to identify, select and then analyse in-depth the instances within the audiovisual footage that I felt led to their development.

The semi-structured, reflexive interview transcripts of the post hoc interviews were analysed in conjunction with audiovisual data and the WBA document, where they provided a further source of learner insights and commentary into how learners created their documents and how they learnt through that process. I initially followed the principles of thematic analysis described by Braun and Clarke (2006) where I assigned initial codes, using NVivo 12 and then began to organise and categorise those codes (Braun and Clarke 2014). The early coding stage was by no means a straightforward process – my early analyses were confusing and inelegant. I found it challenging to extract myself from the specifics of surgical specialties and negotiate the nuances of individual surgical procedures. Participants seemingly flicked between different specifics of their observed WBA activities in this study, references to their other previous experiences or general opinions about training practices. However, I also acknowledge that this early process of identifying, reviewing and cultivating the codes all became a crucial element of my overall analysis, and demonstrated a major strength of an iterative, analytic approach. As I immersed myself in the data, and as my dataset expanded and other concurrent analyses for different parts of the project developed, my codes were re-organised, refined and distilled to better explain how learners created these documents.

Importantly, although I have discussed the analysis of each of these data streams sequentially, I adopted a highly iterative analytic strategy. I returned to the different datastreams many times during the course of my research, such that by the later stages of my research, I no longer viewed these as different sets of data, but as one single dataset from which I drew my conclusions.
Ethical considerations

The study protocol for this research project received Health Research Authority approval (REC reference 18/LO/1816, granted on 24/10/18 – see Appendix E) and was approved by the Institute of Education Ethics Review panel (Registration number Z6364106/2018/04/105 social research, issued on 20/04/18).

I was consciously aware that I was entering a real-world research (and healthcare) environment. I was interacting with learners as they were undergoing their own professional development, but also importantly for me as a doctor myself, I was present as patients were being treated for real-world surgical problems. As I have explained, my presence as a researcher in this research environment inevitably had some impact on what occurred. Therefore, incorporated within my study design were steps to minimise, and where possible eradicate any potential risk to my study participants from my presence in this real-world environment.

There were different types of participants in this research project. These included the surgical learners themselves, but also prominent during the audiovisual recordings and observations were the WBA assessors and the patient whose care the learner was engaged in carrying out. In addition, there were the range of allied health professionals, for example theatre nurses or anaesthetic doctors. Although they were probably peripheral to the learner’s WBA, they did play important roles in the smooth running of the clinical activity. I considered how this research would impact on each of these types of participants, and how I would mitigate against this impact. My main considerations were grouped into consent, patient safety, audiovisual data handling and protection, learner involvement and disruption to clinical encounters.
Gaining informed and voluntary consent from all parties

Due to the different ways that participants were related to the learner and their WBA, I devised a flexible approach to gaining informed consent from the study participants. Learners, assessors and patients were likely to feature consistently in any audiovisual recordings and observations. As such, they were asked to provide written consent prior to the beginning of any audiovisual recording. Allied health professionals, who were typically only fleetingly present in the footage, were asked for verbal consent prior to starting any audiovisual recording and observation. I made it explicit to each participant that during the upcoming period, I would observe them, make notes about the encounter and audiovisually record it. Information leaflets specific for each type of participant were provided. Learners and assessors were asked to consent to have the WBA documents (that they both contributed to) analysed as part of this project, while the learner was also asked to consent to participate in the post-WBA interviews.

Learners who volunteered for the study were able to subsequently identify their assessors for the WBA. As such, the process of gaining informed consent from both could begin in advance of the day of observation. However, I only came to know the patients and the group of allied health professionals that would be present on the day of the observation. Therefore, for these participants, the consent process was carried out prior to any recording or observation commencing.
Maintaining patient safety

It was important for me to acknowledge my role as a medical professional as well as a researcher during this study, particularly in relation to patient safety. Therefore, I aimed to make the care of the patient (my) first concern (GMC 2019). If I had concerns about patient safety during the real-time observations or through my analysis of the audiovisual recordings, I recognised that my professional responsibility would override the boundaries of the agreed non-participant observation. In such situations, the period of observation/recording, and thus my data generation, may need to be stopped to make comments, suggest senior assistance or make further disclosures to maintain patient safety. However, because a WBA requires a senior clinician carry out a learner’s assessment, it therefore had an in-built supervisory safety-net. In fact, maintaining patient safety is one of the inherent advantages of the WBA and this mitigated against the risks to patient safety during the periods I was observing clinical encounters in this research.

Because a WBA focuses around the real-world practice of a learner, patients are an essential part of the interactions that take place within WBAs. As such, they were likely to feature in my audiovisual recordings of these clinical encounters. As per GMC guidelines (GMC 2011b), as I have explained above, I obtained each patient’s written, informed consent to be audiovisually recorded during the clinical encounters they were part of. To achieve this, I explained, in person and prior to the observations and recording, the nature of the research, its purpose and how they would be involved. I stressed that, although they were likely to feature on audiovisual recordings, their faces and voices would be anonymised. I also provided them with a patient information sheet, which summarised this information.

A further consideration here was that the WBA that I was recording was part of the patient’s routine care. By this I mean that I was attempting to observe and record an interaction that would be happening regardless of whether this research was taking place. Patient care was therefore not influenced by my presence in the field or by this study taking place. Patients were free to withhold consent, or to withdraw
consent during or after the recording. Furthermore, during the consenting process, I explained that choosing not to participate in this research, or subsequently withdrawing their consent, would not affect the quality of care they would receive or their relationship with their medical team.
Disruption to the clinical encounter

As explained above, WBAs are a part of a learner’s and assessor’s clinical routine. The learners in this study, and their assessors, had all carried out many WBAs before. This study did not look to encourage or discourage anything other than routine conduct of WBA practice. In this way, it would not be impacting heavily upon routine patient care. However, my presence, and the conduct of the research, as I have explained, made things different. For example, I had to explain this study to patients on the morning of their procedures, I attended the theatre briefings and was present as these encounters unfolded. I aimed to minimise the impact of this study in a number of ways.

Firstly, I liaised directly with learners, on an individual basis, to arrange a suitable time for each observation. The learner was at liberty to re-arrange this should the need arise, without reason. Secondly, I was only present for the selected encounters, as volunteered by the learner. Prior to and on completion of these WBAs, I would leave the clinical premises to allow continuation of other clinical activities. Thirdly, the clinical team (learner, assessor or any other member of the team involved in patient care) could ask for the particular observation to stop or be postponed if they felt it was inappropriately disrupting patient care.
Data handling

All data generated in this study was stored on encrypted password protected device. The use of audio and video recording as a method of data generation created a raw data record that contained participant identifiers because their faces and voices formed part of this record. To mitigate for this, all audiovisual data collected using cameras and microphones was only used for the purposes of this study. As part of risk management, I attempted to avoid excessive or unnecessary capture of participant identifiable data by controlling the direction of my camera lens, focusing it predominantly on the important learner - assessor interactions and thus minimising the peripheral and unnecessary recording of patients and other healthcare professionals. Where I was able to, I avoided focusing on patient faces.

My aim was to conceal the identities of the participants involved in this research and every effort was made to maintain confidentiality. All field notes and interview transcripts were kept free of participant identifiable information. However, not all the audiovisual data was useable, particularly where its use might have threatened a participant’s anonymity. In other words, where data could not be anonymised safely, they were not used and were destroyed.
Learner involvement

I was aware that there may be potential risks to the learners who volunteered to participate in this study. During the recruitment, I stressed to learners that participation was entirely voluntary and that not participating would not affect their education in any way. I designed the wording and nature of the request for participation so as not to coerce potential participants and ensure that they fully understood the nature of the study and their role within it.

Through the course of my analysis, I became aware that learners own practices differed from those that were advised and recommended by institutional bodies. The data therefore became sensitive. Maintaining the anonymity and confidentiality of my research participants became a prominent part of learner safety to ensure that learners were not compromised in any way by volunteering to participate in this research.
Summary

In this chapter, I have outlined the methodological rationale, theoretical underpinnings and ethical considerations behind the design, implementation and analysis of my empirical work. This involved developing a real-time learner-centric perspective of the WBA, its different components and understanding how learners related these components to each other. My study design, based on the principles of naturalistic inquiry, both complemented and enhanced the theoretical framework developed and presented in my earlier review of the literature.

To summarise, six surgical learners were voluntarily recruited to participate in this study from a single teaching hospital. Across the sample, they identified 14 upcoming clinical activities that were potential opportunities for them to undertake WBAs with their chosen assessors. During these clinical activities, data were generated, in-situ, including 19 hours of audiovisual recording and 50 hours of observations with field notes. These led to a total of ten WBAs being completed by the learners (as after four of the clinical activities, the learner decided not to complete a proforma about them). For each WBA, the learner shared their completed WBA document with me. Learners were then interviewed twice after their documents were completed, leading to eight hours of interview material. This led to a global dataset which included my own subjective experiences during the research process, the audiovisual record of clinical activities, written field notes, the learner’s WBA documents and interview transcripts. These were analysed together to investigate the content, process and subsequent meanings made by the learner as they engaged with an individual WBA as part of their workplace practice.

In the next five chapters, I present my analyses of this intricate dataset, as I explore how postgraduate surgeons-in-training learn through WBAs. In each of the next chapters, I answer the following questions:

1) How are WBAs embedded in everyday working practice?
2) What does a WBA look like in-situ and how is it currently conducted by surgeons-in-training and their assessors?

3) How do the real-time clinical events that learners take part in get transcribed into formal, written WBA documents?

4) Why do these documents get generated in these ways?

5) What meanings are made by the learner as they initiate and follow through with the WBA process?

I will explore what these WBA experiences look like from the learner’s perspective, discussing how they emerge from within a complex, workplace milieu. I study how learners interact with this learning milieu to sculpt personally meaningful learning narratives that help them understand their experiences. Furthermore, I follow through the WBA process, examining how these real-world narratives are then transcribed into written formats, discussing the impact this has on how learners make sense of what is happening around them.
Chapter 5
Workplace contexts

Introduction

In previous chapters, I have laid out and critiqued the literature that has explored the WBA in postgraduate surgery. I concluded that the way that this literature has conceptualised, studied and presented the WBA does not reflect what occurs during these complex social interactions in the real-world workplace, and therefore does not provide a robust explanation for what is happening to learners as they take part in them. I then proposed that focusing on these ‘assessments’ as part of a learner’s working practice, rather than as instances of assessment of that practice, would provide deeper and more useful insights.

I have delineated a theoretical framework which includes sociocultural and workplace learning theories, with an acknowledgement of the importance of the social performance that permeates through a learner’s working practice. This allowed me to re-frame the WBA to better understand what is happening to the learner in these situations, how they engage with an individual WBA and therefore what they learn from it. I then presented and justified my methodological choices, which were influenced by the principles of naturalistic inquiry. These choices allowed me to explore the learner’s engagement with WBAs and allowed me to plot, in real-time, how learners’ interactions and engagements during their lived, clinical experiences became reified in meaningful ways in formalised WBA documentation.

In the following chapters, I will present my empirical work as I answer my overarching research question:

“How do postgraduate surgeons-in-training learn through WBAs?”
In this chapter, I respond to the first of my secondary research questions exploring how WBAs are embedded in everyday working practice. The work presented in the chapter examines and analyses how learners engage with the clinical activities that they go on to complete WBA pro formas about as-they-happen. Rather than allow the written document (as the finished product and the outcome of the WBA process) to retrospectively define the experience to which it relates, I wanted to look at the real-time happenings to understand how these became experiences which were prospectively taken forward into a subsequent WBA document. This approach provided an opportunity to see the wider contexts and circumstances around these learner experiences. This, in turn, helped me to build a more accurate account of how learner experiences of clinical tasks were transcribed into written documents.

Using two examples, I explore how two different clinical activities unfolded for learners in real-time. I look at how they were embedded within each learner’s working practice, but also how they emerged, overlapped or fused with their other workplace practices. The first example centres around Luke, who performed a procedure in an operating theatre, under the direct supervision of his assessor. This was a typical situation in this study – where, as explained earlier, learners often volunteered WBAs that related to surgical procedures they performed. This particular set of experiences was summarised by Luke in his WBA documentation as “generic – Hand operation,” and later expanded in a comments box as “Excision dorsal finger lump over proximal phalanx – venous malformation.” Through this example, I highlight an elaborate, untidiness that this brief summary glosses over, and bring to light the everyday practice behind it.

The second account looks at a different kind of clinical activity - a clinical discussion that took place in a hospital canteen between Saira and her assessor, related to an operation that they were about to perform. Centred around a discussion, rather than a procedure, it acted as an exception to the typical experience volunteered by the learners in this study. Although the WBA proforma presents this discussion as a stand-alone, isolated and independent learning situation, this example shows how it is tightly interwoven with the fabric of Saira’s wider workplace practice.
Both these examples emphasise how the activity that learners participate in is ill-defined and naturally messy, with hazy boundaries between what came before or comes after. I demonstrate the learner’s to-ing and frow-ing between different activities that they later see as part, or not as part, of their WBA.
Example 1: Sequences of interactions in the operating theatre

Social arrangements

In my first extract, I observed a learner, Luke (L) perform a procedure under the supervision of his clinical supervisor, who also acted as the assessor (A) for the WBA that this activity became. Initially and superficially, this extract appears to represent a straightforward learner-assessor interaction. There was a single learner, being observed and assessed by a single assessor, whilst performing a procedure, which a WBA proforma was completed about. Figure 5.1 depicts the arrangement during the procedure. It has been edited to highlight the areas which held particular interest for me as the researcher studying this situation.

Figure 5.1: A clinical activity undertaken by Luke (L) in the operating theatre (L = learner, A = Assessor, Pt = Patients hand, SN= scrub nurse)
The patient was awake because the procedure was being done under local anaesthetic. They were lying outside of the shot, to the right of the picture, with their arm outstretched in the position seen (Pt). To the left of the picture is the scrub nurse (SN), who organised and presented the surgeons with the various instruments that they requested during the procedure. The learner-assessor interaction took place face-to-face. Both were sat down on opposite sides of the patient’s outstretched hand. They both had direct views of the operative field and both wore magnifying operating loupes.

The insights I drew here arose through my analysis of the exchanges that predominantly took place between Luke and his assessor. Additionally, where I had felt them important to Luke’s generation of understanding, I also analysed the various interactions with other members of the team and with the patient. However, I noted that there were multiple meaningful interactions between different groups of team members (e.g. between the scrub nurse and theatre team, or theatre team and patient) that occurred in this particular workspace, each of which would have held importance and relevance to those involved. This was one key insight that my first-hand, naturalistic observations allowed – learners were generating their own experiences in parallel with a range of individual experiences generated by those around them. In this way, as put forward by Lincoln and Guba (1984), these individually constructed realities were multiple. What I was attempting to understand was the learner’s perspective – or alternatively, I was trying to understand the reality that they constructed for themselves and therefore the sense they made of what was happening to them.
Beyond *just* the procedure

As mentioned earlier, Becker and Geer (1957) place value in situating a social event within what came before and after, so I took a step back. I looked beyond this *operative* aspect of this learner’s experience to understand it in the context of what preceded and then followed it. Over the course of my observations, it became apparent that the clinical activities that I observed taking place were entwined with other activities that occurred concurrently. For example, throughout that morning, Luke moved to and from different activities. In this way, his experience of this particular procedure was part of a much wider experience, generated as he engaged with his multi-faceted and dynamically changing learning milieu. As such, the clinical experiences that Luke subsequently tried to capture on the WBA proforma were also intertwined and punctuated by his experience of activities that he was not interested in capturing in his WBA proforma. I highlight this in the following timeline (figure 5.2), which details the sequence of Luke’s actions through the morning of this observation:

![Timeline of Luke's morning actions](image)

**Length of operating list = 4 hours**

The sequence of the clinical activities experienced by Luke on morning of observation. (Fig 5.1 and 5.3 occurred during the periods depicted by the red lines).

This timeline illustrates how the activity depicted in figure 5.1 (as indicated by the first red line) was the second of three procedures on the operating list that morning. Prior to any of these procedures beginning, Luke had attended the admissions lounge, met with all the three patients on the operating list and completed the relevant pre-operative administrative tasks. The first patient on the list was to undergo a simple procedure that the surgical specialist (who was also Luke’s
supervisor, and then for the purposes of the WBA, became his assessor) performed. Both Luke and his assessor had agreed beforehand that the second case - the finger lump excision (figure 5.1) - would be a potential procedure for Luke to perform and document as a WBA.

Luke greeted the patient as she was wheeled into the operating theatre. At this point his assessor was not present. Luke prepared the patient for the case independently – re-confirming what was to happen, completing the pre-operative checks and positioning the patient without his assessor’s presence in the operating room (figure 5.3a). He was in the process of administrating the local anaesthetic injection (figure 5.3b), when his assessor returned and briefly spoke with the patient while Luke completed the injection. They then both scrubbed for the procedure together (figure 5.3c), during which time the assessor gave suggestions and guidance for Luke to digest in preparation for the procedure.

Once scrubbed and wearing the sterile surgical gowns, both then approached the operating table and applied the sterile surgical drapes over the patient. The learner then carried out the procedure, under direct supervision, while the assessor sat opposite (figure 5.1) - assisting, guiding and quizzing the learner throughout the procedure. Through speech, audible utterances and gestures, the assessor fed back to Luke about his actions, moving between directing, advising, discussing and, of
course, doing none of these. In a re-framing of Schon’s (1983) concept of *reflection-in-action*, I saw these actions more like what Rizan et al. (2014) termed “*feedback-in-action*.” They were embedded, real-time correctional strategies to guide learners towards a particular action or answer. In this way, feedback occurred as a social act (Ajjawi and Boud 2017) – a near-constant, multimodal, highly contextualised feedback dialogue between Luke and his assessor (Ajjawi and Boud 2018). The dialogue was heavily intertwined with the activity itself, taking place naturally through the friendly, relaxed and discursive atmosphere of this particular environment.

When the procedure was finished, the patient left theatre and Luke completed the operation note. During this time, the final patient on the list was brought through to the operating theatre. Luke positioned the patient on the operating table and performed the pre-operative checks with the theatre team. After this short hiatus, both Luke and his assessor began to scrub for the next case (figure 5.4). During this time, they had another conversation about the procedure Luke had just performed. Unlike the intra-operative *in-action* feedback, this feedback was more structured, no longer *in-situ*. It was, using Rizan et al.’s (2014) term, *feedback-on-action*. This conversation continued as they put on their surgical gowns, approached the operating table, prepped the surgical field and began to place the drapes over the next patient.

![Figure 5.4: Luke and his assessor discussing the previous case, where the assessor provided structured feedback, while preparing themselves for the next procedure.](image)
Impacts of social complexity

This sequence examples the experience that Luke subsequently summarised as “generic – Hand operation” on his WBA proforma. Although it appears at first to be a straightforward, dyadic interaction between Luke and his assessor, the many different tasks and situations that Luke engaged with were nestled within and influenced by workplace contexts that made his experience unique, unstandardized and complex. For example, the analysis of the audiovisual data highlighted how Luke moved around the theatre as a physical space. He manoeuvred between the operating table and various other equipment trolleys, sitting and standing, as he prepared and carried out the various tasks required. He performed these with varying degrees of autonomy, switching from performing leading roles, to working under supervision, to being instructed directly. In this way, Luke’s physical and social position during this period was in a state of flux. His actions – his social performance - during this period represented his understanding of his position at any particular moment during the episode. At times, he behaved as the lead surgeon, at others as assistant and at others, and more complex, he behaved as if he knew he was acting as lead surgeon, even though his assessor was clearly present, and was therefore by default, the lead surgeon.

To understand this fluctuating role better, it has helped to think of the clinical work done by surgical learners as having both patient-centred (healthcare delivery) components and learner-centred (pedagogic) components (Kilminster et al. 2007, Tomlinson 2015). Patient-centred components represent what is required to appropriately and safely deliver intended aspects of the patient’s management. These relate to the process and outcomes of care (Snowdon et al. 2017) such as operative diagnosis and planning, clinical decision-making or utility of resources (Farnan et al. 2012). They exist in the surgical workplace environment regardless of the presence of surgical learners.

As an example, the patient in the extract above underwent a procedure to remove a finger lump. This healthcare delivery component of this clinical activity would have
happened, regardless of whether or not a surgical learner participated in the activity. Without Luke, this care would have been delivered by some other surgeon, e.g. the surgical specialist. There may still be learning, but that learning was not the subject of my research. Even when Luke participated (participation which varied between observing to having complete autonomy) those healthcare delivery components still occurred – the patient still underwent their procedure – their care still happened, regardless of what Luke learnt from the experience.

When Luke participated in the activity, the specialist surgeon took on the added role of supervisor, and highly varied pedagogic components began to feature. These included technical advice and instruction, guidance and support, safety netting, prompts to aid fluency or feedback for improvement (Kilminster and Jolly 2000). The pedagogic focus aimed to provide the contextualised, in-the-moment support, to help Luke’s real-time practice and to aid his development as a surgeon in wider contexts.

The healthcare delivery and pedagogic components might not always be differentiable, exclusive or consistent (Kennedy et al. 2009, Kilminster 2010). Neither is it the aim of this research to attempt to disentangle them. However, acknowledging their co-existing, but diverse, balance within the activities that learners in this study engaged with has stressed the complexity of the learning milieu, and therefore the richness of the personal, learning experiences generated through each learner’s interactions with it (Teunissen 2015). This was important because it was these experiences that learners had to find ways to present in their own written WBA documents.

This extract also exemplifies how other workplace activities punctuated the experience that Luke drew from to complete his WBA proforma. In other words, the learner’s WBA document reflected an experience generated from activities that were not sequentially continuous, but separated in time by other activities. Once Luke had finished the procedure, he began to prepare the next case, before he and his assessor found time to discuss about the procedure. But this could only take place while they were preparing for the next procedure. In other words, clinical activities
occurred between, or concurrently with, other activities. They flowed, overlapped and merged with what went before and what came after to generate a constant stream of experience as learners engaged with their complex learning milieu. I expand on this concept further with the next extract.
Example 2: The stream of experience

My next analysis uses an extract from a different surgical environment and involves a different activity. Here, through a detailed outline of another learner’s workplace activities, I highlight a flowing stream of fragmented, associated and un-associated, micro-events. I borrow this term from sporting literature where it refers to the deconstruction of a sporting event into a standalone unit - a discrete event within a match (Parke and Parke 2019, Russell et al. 2019). In this account, I begin to explore how learners relate these different micro-activities together into meaningful experiences, which become relevant as the learners begin reflecting on it for the purpose of generating a WBA document.

Beyond just the discussion

The image below (figure 5.5) was taken from the audiovisual footage of a clinical conversation between Saira and her assessor. It took place in the hospital canteen as they spoke about a patient that they were about to carry out a procedure on. Over coffee, the assessor was quizzing her about the practical steps of the upcoming procedure. This was a face-to-face conversation, but both used the pen and paper in front of them to draw and then annotate diagrams to mediate the discussion and demonstrate some of their ideas to each other – for example, where to make incisions. I chose this particular instance because it also illustrates Saira’s use of gesture. Here, she pointed to an area on her own cheek, as part of an animated gesture to emphasise where on the face she might “borrow” skin from, and in which direction it should be moved to reconstruct the defect in this patient’s lip, once a cancerous growth has been removed. The meanings Saira made from this conversation were therefore mediated through, not only through the words that were spoken, but also through the actions and annotations that took place continuously and dynamically through the course of the discussion. These meanings, Saira then attempted to capture on a WBA proforma some days later.
However, this discussion took place within a highly relevant, wider workplace context. I was invited to observe Saira as she participated in a full-day operating list. She felt there would be a number of different cases on the operating list that she might go on to record as WBAs. I use the following timeline to depict her experience that day:

![Timeline Image]

Figure 5.6: Saira’s experience depicted as a timeline. She performed several clinical activities within the same operating list, eventually choosing to complete two of them as WBAs.

To understand more fully the relationship between the different activities that morning required a more focused analysis. I met with Saira in surgical admissions lounge at the start of the day. There she met each patient in turn, answered any questions they had, co-signed their procedural consent forms, and completed their...
admission paperwork. This took approximately 30 minutes, after which she made her way to the operating theatre, located elsewhere in the hospital. On the way, she telephoned her supervisor to informally discuss the patients she had just met and inform her supervisor that all was in order. Saira relayed to me that she had been instructed to begin the first procedure, but that the supervisor (assessor) would be present shortly. On arrival in the operating theatre, Saira completed a pre-operative briefing with the theatre staff, discussing the operative plans for each of the patients. Upon completion, the first patient was brought into the anaesthetic room to be given her general anaesthetic. During this time, Saira was in the operating theatre preparing for the case. Once asleep, the patient was positioned on the operating table and she began the first procedure - a biopsy of a lesion at the back of the patient’s mouth.

Saira initially worked with the scrub nurse until the supervisor arrived in theatre several minutes later, after which the remainder of the procedure was carried out under the supervisor’s direct guidance. The entire procedure took about 45 minutes, with a further ten minutes where various post-operative duties were carried out (the patient was woken up by the anaesthetic team, Saira completed the operation note, the theatre team removed the dirty equipment and cleaned the theatre space).

Once she had completed her tasks, both she and her supervisor visited the hospital canteen to have a coffee while the theatre and anaesthetic teams prepared the next patient. During this time, they began a discussion about the next case on the operating list (figure 5.5). As explained, the discussion took the form of informal quizzing, where the supervisor guided Saira through the practical stages of how to carry out the procedure, why it was being done, possible alternatives etc. At no point during the discussion did either Saira or her supervisor flag its potential to become a WBA. They then began to speak about the biopsy procedure they had just completed in the operating theatre. The assessor gave feedback and they discussed future clinical management of that particular patient. Saira did not write her experience of this particular clinical activity up as a WBA, although she had previously intimated she would do.
After about half an hour in the canteen, they received a phone call from their anaesthetic colleague to request they return to theatre as their next case had been given their general anaesthetic and the theatre team were ready for them to start. The operation lasted for several hours – longer than the surgical team expected, delaying the start of the final procedure on the list. That final procedure, which was being done by Saira as lead surgeon, again had not been explicitly flagged as a WBA beforehand. It proceeded smoothly, and the operating list finished in a timely manner. There was no formal debrief between Saira and her assessor about the case afterwards, as there had been earlier in the day about the first case on the operating list. Again, Saira chose to complete a WBA proforma about this procedure.
Making sense of experiences

I created a more detailed timeline to illustrate my observations that morning (figure 5.7):

![Detailed timeline focusing on first two hours of Saira's working day. Activities related to the first patient on the operating list are shown in light blue, second patient in red, third patient in yellow, while grey represents an informal discussion where conversations between individual patients couldn't be delineated.]

This analysis portrays Saira’s activities as an iterative sequence of relentlessly ongoing, participatory micro-events, with which she engages, and through which her experience is shaped. Teunissen (2015) suggested that learners link together and relate these experiences in meaningful ways to create understanding – to make sense of what they have experienced.

It has been proposed that one way that medical learners make sense of their medical learning experiences is by organising their learning into patient cases. Using patients as real-world examples from which to learn is a notion which has been longstanding in medical education, and has been at the heart of major changes to medical curricula over the last 20 years (Srinivasan et al. 2007, Thistlethwaite et al. 2012, McLean 2016). Thinking of patients as cases might be beneficial in helping learners to order their thoughts and understanding (Bi et al. 2019, Turk et al. 2019), while also playing a more nuanced role in the transfer of values and establishing identity (Witm 2014). In my interviews with the learners in this study, many of them
appeared to organise their reflections on their experiences using the patient as a case.

Rather than an isolated discussion over coffee, Saira interacted with the patient they were discussing in figure 5.5 as a case on several occasions that morning. These case-specific interactions are marked in red in figure 5.6 and 5.7. These interactions, supplemented by data from interviews, revealed Saira engaged in, and therefore learnt from, different kinds of related workplace activity:

- conversations with the patient – for example, Saira met and spoke with the patient in the morning prior to procedure.
- clinical conversations about the case with her assessor (both face-to-face (i.e. the discussion in the canteen, during which time the supervisor quizzed Saira about how they should carry out the procedure on this patient, figure 5.5) and mediated via technology (i.e. the phone call with her supervisor that morning about the patient, which took place while Saira was walking towards the operating theatre)).
- self-directed reading that she had undertaken in preparation for this operation
- presenting information to the theatre team about the patient during the morning brief, where she both summarised the patient’s problem and surgical plan, but also re-framed this knowledge to express what equipment was required to perform the procedure.
- pictorial representations of the procedure (as created using pen and paper in figure 5.5), which were co-created by both Saira and her assessor during the discussion and in preparation for the procedure that was taking place immediately afterwards.
- the operation itself (where she reported she predominantly assisted her assessor).
- the creation of the operation note, which documented what occurred during the procedure for the official hospital records.
- clinical, post-operative examination of the patient in the subsequent two days and the discussion around these findings with her assessor.
This list shows Saira moving, sequentially and longitudinally, between different situations or micro-events. She developed her experience by continually and iteratively, re-encountering that patient as a learning case, and then re-visiting those experiences, by doing a different, but related activity. Here, for example, the related activities included a short phone call, or brief presentation about the patient in the operating theatre briefing meeting. With each related happening, Saira re-encountered the situation from a slightly different perspective. Her participation in these different micro-events created a chain of differently weighted perspectives, which, as proposed by Teunissen (2015), allowed her to generate a coherent, but multi-faceted, contemporaneously manufactured, learning experience – a contextual narrative - that related to the workplace activity that surrounded managing this particular patient.

Importantly, the list above only represents instances that were made explicit to me during my observations, recordings or interviews. I could not take into account what might have contributed to the development of this narrative that existed outside of my awareness. For example, Saira may have seen this patient afterwards in clinic or she may read further about the procedure afterwards etc. Similarly, there might be other elements she borrowed from other narratives she has created from other experiences e.g. similar operations that she has been involved with for other patients. All would contribute to the way that these sets of events were continuously experienced and therefore add to way Saira understood what was happening.
The WBA as part of the narrative

The timelines that I have used in the two examples above illustrate my interpretation of my observations on those days. They place the clinical activities with which learners engaged as part of their WBAs in a sequential context with the other clinical activities that occurred within the day. The clinical activities each represent instances or situations where the learner engaged with some form of workplace practice, albeit with varying degrees of autonomy. For example, Saira consented her patient and briefed the theatre team, before working through surgical reconstructive options with her supervisor over coffee, and Luke positioned his patient and delivered the local anaesthetic block. These were actions or duties they performed as part of an ongoing daily workload and routine - their job. Each learner carried these out, with and without their supervisor’s direct and indirect assistance and guidance as appropriate, and it seems they would have done similarly on any given day. They were not flagged as having, or carried out with, any formal pedagogic structure, but were duties that led to the generation of embodied, learning experiences - experiences that gave context and focus to later experiences, generated with different perspectives, in different situations and environments.

Through the use of these timelines, working practice appeared as a sequence of fragmented micro-events, which learners internalised through a process of dynamically selected, relating and then arranging into meaningful narratives (Teunissen et al. 2007). As learners populated their proformas and the WBA came into being, learners somehow fixed part of their narrative, giving it boundaries and treating it as, or changing it into, a discrete and separate event. For example, Saira appeared, from her comments in the debriefing interview, to limit what she wrote about in the WBA proforma specifically and only to the discussion in the canteen:

“I guess, I thought of the assessment as that conversation. I didn’t think about the whole patient care.”[Saira]
The above comment is telling, and the idea of the WBA giving lived experiences boundaries is reproduced in different ways by other learners in other interviews. There was a beginning and end to a WBA unlike the continuous, relentless sequence of lived experiences. For Saira, it began at the start of that discussion and ended at the conclusion of that discussion. In this way, the WBA obligated her to artificially delimit her lived experience, which had actually been generated continuously over a period of time. The creation of the WBA – i.e. the population of the proforma and the re-framing of lived experience into a WBA – in itself, contributes to the learner’s understanding. It both influenced and was influenced by how the learner recalled, selected and arranged their experiences into a narrative suitable for presentation as a WBA.
Key findings

The analysis in this chapter has helped me to conceptualise, and present, how WBAs arose in real-time. There were a number of key findings. The first relates to the nature of the workplace activities and practices that learners engaged with as part of WBAs. The two extracts I have presented illustrate that experiences were inherently messy, highly individualised, unstructured and multimodal in nature. So, while the WBA document populated by one learner might have referred to a task as a “generic – Hand operation” or “lip reconstruction”, the clinical happenings - and learner’s experience of those happenings - did not unfold as a single, discrete, congruent, pre-determined activity awaiting transcription into written form in some controlled, standard way. Instead, these activities seemed to occur as fragmented, messy micro-events. Each of these micro-events was one of many that occurred during the learner’s working day. Each was separated from, punctuated by and interspersed with the numerous other workplace micro-events – each flowing and overlapping with what went before and what came after.

The second finding relates to the learner’s embodied experience of their workplace activities. I found that, just as workplace practice existed as a relentless sequence of micro-events, which flowed and overlapped with each other, so too did the learners own role in, and experience of them flow, overlap, and merge with what came before and what came after. These clinical experiences that learners wrote about in WBA documents were nestled within, and emerged from, the learner’s complex learning milieu, with which they were dynamically and constantly interacting.

Importantly, it was learners who identified, selected and related together different micro-events (and their own experience of them), forging them into some personally tangible narrative. Furthermore, the learner’s experiences of different micro-events that they related together, each provided differentially weighted perspectives on the subject of whatever meaning the learner was trying to establish. I propose these learners are drawing together different, but by their own reasoning, relatable real-world micro-events into their own personally, meaningful and contextualised learning
narrative as a way to make sense of what was happening around them. In this way, learning experiences were meshed together, flowing one into another and only really become focused, singular and discrete when they become the subject of a learner’s reflections, where they were reified and processed as some embodied experience (Law 2004). In the next chapter, I will go on to describe in detail how these personally meaningful learning narratives are constructed by learner’s in real-time during clinical activities. There, I will examine how learners handle, generate and retrospectively label different experiences – manipulating, pulling apart or meshing together their different micro-events into meaningful stories.

The third finding that began to emerge through this analysis is that the WBA document itself was not an impersonal, objective window onto some prior practice. Instead it is part of an individual learner’s learning narrative. As part of the narrative, the document was influenced by the way learners relate and arrange what they have previously experienced, but it also shaped the way learners arranged, constructed and reified that previous experience. Just as a learner’s social actions during a face-to-face interaction (for example while removing a lump from a patient’s finger under supervision of an assessor) represents their understanding of their working world at the time, their completion of the document about that experience is also a representation of a new, perhaps different, understanding of the working world around them. The clinical experience and the document about it, I have argued, are different, but are part of potentially the same learning narrative and meaning-making process for the learner.

By observing how learners engaged with the clinical activities that they later wrote about in their WBA documents as-they-happened, I have developed insights into how these were then prospectively taken forward into subsequent WBA documentation. Rather than allowing the written document to retrospectively define the experience to which it related, my analysis gave me access and scope to take into consideration the wider contexts and circumstances around learner experiences. For me, this represented a move away from visualising the WBA as an objective, depersonalised window onto a learner’s proficiency. Instead, I was able to centre the
learner as a social being, one who participated in their learning milieu. I saw them as constructing and re-constructing experiences according to their own thoughts and perceptions, making sense of those experiences by generating meaningful narratives.
Summary

In this chapter, I have explored how WBAs arise, *in-situ*, in everyday working practice. I have examined how they are carried out as part of, nestled within and inextricably linked to the rest of a learner’s activities. I have used my data to illustrate how the learner’s working practice, along with the WBA, provide important contributions to the nature of the learning milieu. Through the chapter, I have taken a wide lens view of the learner’s experiences before, during and after the clinical activities that the WBA document purports to record. It is within these wider contexts and circumstances that the clinical tasks of the WBA unfold. I have argued that learners have key roles in relating and arranging their experience of sequential micro-events, and that the manner that they do this, reflects their own personal understanding of their working world. In the next chapter, I take a more focused look at how learners construct specific, personally meaningful learning narratives, and in particular how they then present these in future WBA documents.
Chapter 6
Constructing learning narratives

Introduction

In the previous chapter, I adopted a wide lens approach to understand how WBAs are embedded within everyday working practice. Based on a detailed, ethnographically informed analysis, I proposed that learners were continually interacting with their workplace milieu. Through the engagement in the various micro-events they encountered, learners generated a flowing stream of experience, parts of which they separated out, related together and subsequently documented in WBA proformas. That analysis showed that learner experiences, that were later recorded in WBA proformas, did not arise from neatly defined, discretely circumscribed events, but arose, hazy-edged, from what surrounded them. The focus of this next analysis is to disentangle how these experiences develop in real-time during workplace activities.

In this chapter, I present a multimodal analysis of three audiovisual extracts from my data to explore what was unfolding during these clinical activities. Using a multimodal social semiotic approach, I developed a sense of how learners manufactured personally meaningful learning narratives in real-time and *in-situ*. These often began almost innocuously and sporadically, through passing comments, but were then consolidated and built upon as learners drew together and related other multimodal micro-events that they engaged with. I argue that these learning narratives represent how learners have made sense of what they were experiencing.

The work in this chapter also acknowledges and builds on the notion that the WBA is not simply an *in-situ* clinical experience, but is made up of different spatio-temporal elements. It consists of clinical experiences sited in the workplace, but also involves digitally created written elements – namely the completion of WBA proforma. I propose some of these learning narratives – that are personally meaningful for the
learner - become the basis for the WBA documents that are subsequently created. I analyse the actions of, and around, two different learners, illustrating how they created, stabilised or moulded their learning narratives in order to reify them in written format in a WBA proforma. In one extract, the narrative remains unchanged in the proforma. In another, it is omitted from the proforma. In the last it is actively kneaded to take on a suitable appearance in the final WBA proforma.
Dynamic learning narratives

To begin, I have drawn from the experience of one learner (Sam) as he performed a diagnostic procedure in the operating theatre. I present two different multimodal transcripts from Sam’s experience to contrast how two different learning narratives developed, in parallel, as he took part in, engaged with, and therefore learnt from, the workplace task at hand. These extracts reinforce that these learning experiences took place in messy and vibrant, physical and social spaces. They involve multiple team members engaging with Sam and each other in different ways (figure 6.1).

However, in using two extracts from a single procedure that Sam was involved in, I show how different learning narratives were created at the same time, highlighting the energetic and chaotic nature of the real-world learning that arose.

Figure 6.1: Operating theatre environment for Sam (Sam = Learner)
Sam carried out a procedure called a laryngoscopy and biopsy of a vocal cord lesion, under the observation of his supervisor. The procedure was done under general anaesthetic and involved visualising the vocal cords, using a laryngoscope (referred to in conversation as a “scope”) in order to diagnose a vocal cord cancer. This “scope” was inserted through the patient’s mouth, down behind the tongue allowing Sam to directly inspect the vocal cord and surrounding areas for lesions. At this point, he was the only person able to look through the “scope” to see the operative field. However, a pencil-thin camera, placed through the “scope” allowed the view to be projected onto a monitor for other members of the team to share this view. Similarly, various instruments were placed down the scope at the same time as the camera, allowing for various different actions to be carried out (for example the suction tube, swabs to wipe and biopsy forceps). Using these instruments, a small sample of tissue from the vocal cord could be taken as a biopsy, to be analysed for the presence of cancer.

Importantly for Sam, this procedure was seen as an essential one for him to master. He had performed it several times before and was familiar with the set-up, equipment and techniques involved. He had also been working in this hospital for several months so was familiar with the team and the surgical specialist (who is also his supervisor for the procedure and assessor in the WBA). He reported during an informal discussion with me later that, in preparation for taking part in the study, he and his assessor had spoken prior to the procedure and identified it as one that he could use as a WBA. In this way, his role as the main operator had been already determined. There was no formal discussion about roles during the event or in the preceding discussion that I observed during the day. The procedure took approximately 20 minutes.

The static image shown in figure 6.1 intimates the complicated nature of the set-up – multiple people with different roles, orientated around a patient, along with different types of equipment – optic and visual equipment of the camera, surgical instruments and anaesthetic equipment. What the image does not portray is the constant physical movement of those involved, the shifting attention from patient to screen.
and the interplay between different team members. Therefore, I generated a more useful, dynamic and representative portrayal of what I observed during this clinical activity, in the form of the multimodal plot diagram shown in figure 6.2. The process by which it was created is documented in appendix D.

Figure 6.2: Multimodal plot diagram transcribing this clinical activity. The key is shown below and a full description of the process by which it was generating is given in Appendix D

Key:

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Pre-, intra- and post-procedure events</td>
</tr>
<tr>
<td>Red</td>
<td>Segmented actions of procedure</td>
</tr>
<tr>
<td>Purple</td>
<td>Verbal exchanges between learner and assessor</td>
</tr>
<tr>
<td>Pink</td>
<td>Group discussions, where the learner was part of a larger discussion with multiple people</td>
</tr>
<tr>
<td>Yellow</td>
<td>Verbal exchanges between learner and the anaesthetic team</td>
</tr>
<tr>
<td>Green</td>
<td>Verbal exchanges between learner and nurse/theatre team</td>
</tr>
<tr>
<td>Orange</td>
<td>Verbal exchanges between others that were relevant/appeared to be overheard by the learner</td>
</tr>
<tr>
<td>Slate Gray</td>
<td>Verbal exchanges with the helper</td>
</tr>
<tr>
<td>Gray</td>
<td>Actions performed by learner</td>
</tr>
<tr>
<td>Beige</td>
<td>Actions performed by assessor</td>
</tr>
<tr>
<td>White</td>
<td>Actions performed by helper</td>
</tr>
<tr>
<td>Light Gray</td>
<td>Actions performed by scrub nurse</td>
</tr>
</tbody>
</table>
I identified each of the 119 points in the diagram as an individual meaningful micro-event for Sam as he took part in this particular clinical activity. Delineating these points of conversation and action in the context of the procedure better reflected the dynamism of the situation. Actions and dialogue took various forms but were occurring continuously, often at the same time. They served as multimodal prompts, which Sam internalised, interpreted and acted upon (or did not act upon), as his clinical experience developed within what was happening around him (Bezemer and Kress 2016).

Portraying the clinical activity in this way allowed me to better track how Sam dynamically related together the various happenings, conversations and actions with which he engaged. Each of these micro-events were not independent of each other, but happened in close relation, either to what preceded or followed it, or other micro-events that happened alongside it. By pulling together different micro-events in the transcript, I was able to identify several examples of ideas, threads and storylines – Sam’s personally, meaningful learning narratives - that developed through the course of the activity. These included, as examples:

- the technical challenges that Sam overcame to carry out the procedure and obtain the biopsy specimen (see points 7, 11, 12, 13, 23, 32, 34, 49, 55, 66, 67, 68, 74, 75, 78, 79, 80, 98, 99)
- planning for future management of this specific patient (see points 9, 20, 22, 29, 38, 47, 102),

During my observations, I began to recognise how Sam and his assessor were experiencing the activity differently. Or, as naturalistic inquiry proposes, the reality was multiple. Sam, as the person who was performing the procedure and advocating for the various steps within it, was primarily driving forward a technical agenda. In this, he was heavily focused on carrying out the procedure in a fluent and correct way. His assessor had a different viewpoint on this particular situation, and instead drove forward an agenda to use this opportunity for planning (or mapping) for the next stage of treatment for this particular patient. The assessor was enacting a
healthcare agenda - here to establish the best course of treatment for this patient, based not only getting a biopsy, but also on making real-time observations of the surgical field which helped to provide insight that would inform his next steps. However, he was also enacting a pedagogic agenda – not only to guide Sam through taking the biopsy, but also to help him understand the other non-technical significance of what he was doing. These narratives were not pre-planned, but emerged, and then developed, from the various actions, interactions and responses that arose through the course of the activity. In the following transcripts, I animate how various agendas were enacted in tandem, leading to the dynamic development of meaningful learning narratives for Sam, each of which could be (or might not be) picked up, taken forward and woven into the subsequent WBA documentation.
“It’s not just getting a biopsy”

The following selective, but detailed, multimodal transcripts bring into view the intricate and unique social exchanges that occurred in relation to the idea that “it’s not just getting a biopsy.” They track how this learning narrative evolved from a conversational comment made by the assessor, into a key theme that was recognised by Sam as the primary take-home message from this experience. The importance of this message was made explicit during my interviews with Sam and it was documented twice in his WBA document (figure 6.3) as “Anticipate next step in mapping/staging patient and appropriateness of laryngectomy” and “I performed rigid laryngoscopy… for diagnostic confirmation and tumour mapping.”

| Feedback General | Microlaryngoscopy for confirmation of recurrence post CRT of glottis SCC |
| Feedback Strengths | Good understanding of the principles of the procedure and fluent in carrying out laryngoscopy confidently. Protects lips/teeth/gums throughout. |
| Feedback Development needs | Anticipate next step in mapping/staging patient and appropriateness for laryngectomy. Inspect subglottis/extent of anterior spread and spread in to perform fossa/pharynx. |
| Feedback Recommended actions | Developing skills of using the rigid laryngoscope and Hopkins rod together. |
| Trainee Comments | I performed rigid laryngoscopy/pharyngoscopy for diagnosis confirmation and tumour mapping (to ascertain the local extent of cancer/resectability) prior to total laryngectomy. |
| Procedure Name | Rigid Laryngoscopy/Pharyngoscopy/Oesophagoscopy |
| I. Consent | |
| II. Pre op planning | PL1: S PL2: S PL3: S PL4: S PL5: S |
| IV. Exposure and closure | E1: S E2: S E3: S E4: S |
| V. Intra op technique | IT1(G): S IT2(G): S IT3(G): S IT4(G): S IT5(G): S IT6(G): S IT7(G): S |
| VI. Post op management | PM1: S PM2: S PM3: S PM4: S |
| Global summary | Level 4b: As 4a and was able to anticipate, avoid and/or deal with common problems/complications |

Figure 6.3: Sam’s WBA proforma entries
Highlighted are the entries of interest to the analysis of the “mapping” narrative.
Interestingly, the term “mapping” was not used explicitly by the assessor during the procedure itself. Instead, the assessor referred to this idea as “the next steps,” or encapsulated it through his phrase “not just getting a biopsy” (although, this phrase is not explicitly mentioned in Sam’s WBA proforma). What I understood Sam to mean by “mapping” was referred to on five separate occasions throughout the 20-minute procedure, (and, although not included in the next figure, also once again when Sam and his assessor met eight weeks later to review the exercise during an office-based debrief). I have referred to these occasions as segments 1 to 5, each of which is marked in figure 6.4 by red stripes and superimposed onto the multimodal plot diagram.

Figure 6.4: Segments of the “mapping” narrative superimposed on the multimodal plot of this activity

This plot diagram emphasises how this learning narrative evolved within the context of the wider procedure. It displays the interplay between micro-events and the segments of the learning narrative. It highlights, not only how different segments of the evolving narrative relate to each other sequentially, but also how those segments relate to the micro-events of the procedure. It also provided a framework through which I analysed what unfolded during each of these segments. It is through this
unfolding of events that Sam appeared to generate something which held a particular meaning for him. My understanding in regard to this process was facilitated through the following detailed multimodal analyses.
Consolidating the narrative

The following extract illustrates how Sam comes to change an initially, almost passing, comment (“this is not just a getting a biopsy”) into a cohesive narrative associated with an abstract concept of “mapping.” In doing so, it became something important – personally meaningful - to him, such that it warranted inclusion in his formal record of this experience as a WBA. In the extract, I will present my account of each of the segments 1 to 5, using edited illustrations from the audiovisual record. The imagery, style and colour palette reflect my own understanding of those situations and emphasise how I have made sense of the data. I present these illustrations with the accompanying dialogue, and a descriptive account to explain the multimodal communication that occurred during these segments. Together, these portray how Sam appears to piece together his experience into a meaningful narrative.

Figure 6.5: The individuals present during the development of this narrative (A = assessor, H = helper, SN = scrub nurse, L = learner (Sam), T = theatre team member, An = Anaesthetist, Pt = patient). I have coloured the individuals with prominent roles in the actions depicted in each image.
Figure 6.6: Multimodal transcript related to Sam’s generation of the "mapping" narrative. Sam, as the learner is denoted by L, and his assessor is denoted by A

SEGMENT 1
02min 50s to 03min 45s (total 55s)
Presented through 7 descriptions

Illustration 1

Verbatim transcript
A But also at this, at this stage…

Multimodal description:
Sam (L) is in the “scrub area” preparing to begin the procedure. The assessor (A) has just finished a conversation with the anaesthetist and is wandering over from the operating table towards the scrub area, hands behind his back, while the anaesthetist is holding the patient’s breathing tube in preparation for the start of the procedure. The scrub nurse is ready with her equipment. The atmosphere is relaxed and conversational. As L is finishing washing his hands, A speaks, continuing on a previous conversation that took place between himself and the anaesthetist, which it appeared that L had been listening to. Approaching the scrub area, he looks at L and says directly to him “but also at this, at this stage…”
Illustration 2  

Verbatim transcript

A You know, you’ve got to be thinking why am I doing this procedure. Is that fair?

L Errrr. In that?

A W… W… W….

L What’s our concern?

A Yeah… what… what…

Multimodal description:

L has now finished washing his hands and, still in the scrub area, is opening a pair of sterile gloves. He puts the outer paper covering on the trolley in front of him and discards the plastic wrapping. While he does this, A stops next to him and continues his previous sentence “you know.” L glances up at him and then back down at his gloves. A continues by pointing to the patient with his right hand, and says “you’ve got to be thinking why am I doing this procedure. Is that fair?” He then pauses. This sentence introduces the idea that there is more going on in this procedure than the technical aspects of the biopsy. The next illustrations cover the period where L begins to apply this concept to the task at hand - and represent an attempt at re-organising his thoughts from one of a technical procedure he appears adept at, to applying that knowledge in a different way. Initially, in response to this question, L doesn’t seem to be entirely sure of how to answer (“errrr,” at the same time as looking up again, this time in the direction A is pointing, i.e. at the patient). At this point, L has picked up one of the gloves from the paper packet. L seeks further direction by looking back at A and asking for further clarification (“In that?”). During this brief exchange, L has continued to put on his right glove while listening and speaking to A. A tries to articulate his own response and provide L with the guidance he seems to be requesting by saying “W…w…w…” as if searching for the most appropriate follow-up question. At the same time, he opens his right hand fully so all
fingers are spread out and flutters his hand, seemingly emphasising that there is something he is trying to get L to say, but can’t articulate an appropriate prompt. L responds by suggesting his interpretation of what he thinks A might be asking “what’s our concern?” L’s right glove is now on and he has maintained his gaze at A. A seems to, at least partially accept L’s re-phrasing of the question at first (“yeah, what… what…”).
Verbatim transcript

L. Well our concern is recurrence

A. Well not just concern, but thoughts for the future

Multimodal description:

L appears to interrupt A as he quickly answers his own question. “well our concern is recurrence.” By saying so, he is suggesting that he is performing this procedure to check whether this patient’s previous cancer might have returned. He picks up his other glove out of the paper wrapping, begins to put it on and starts to walk past A towards the operating table. A appears to have decided that the question L suggested does not capture what he intended to ask. When he says, “not just concern,” with an emphasis on concern, he speaks with his fingers outstretched but together, moving his hand in a single, small downward chopping motion timed to the word concern. A re-phrases his question by saying “but thoughts for the future,” he emphasises this by moving his hand in a circular pattern and then pointing into an imagined future. They take a few steps as L puts the second glove on. Here, A appears to be reinforcing for L an idea that the procedure is not simply a technical rationale of confirming the recurrent cancer, but using this as a way of guiding/assisting/benefitting their future actions.
Illustration 4

Verbatim transcript

L In terms of his potentially having a laryngectomy and then being able to assess the airway? Or the appearance, in terms of whether he needs a laryngopharyngectomy or a laryngectomy

A Yeah yeah yeah.

Multimodal description:

L continues to walk towards his stool as he starts his response “In terms of his potentially having a laryngectomy,” at which point he sits on his stool, continuing to speak relatively uninterrupted. A listens, hands behind his back, seemingly looking at the patient on the table. L looks up at A from his stool, saying “and then being able to assess the airway?” A continues to listen to L as he speaks “Or the appearance.” Appearance is emphasised slightly in tone and L also raises both hands while he says the word, before carrying on “in terms of whether he needs a laryngopharyngectomy or a laryngectomy.” As he says the last few words of the sentence, he rolls his stool closer to the operating table, and A takes a couple of small steps to follow him. As he does so, A agrees enthusiastically with what L is saying, “yeah yeah yeah,” as if he feels that L is now viewing the problem in the way he is trying to explain.
Illustration 5

Verbatim transcript

A So you need to know extent of disease…to know what your… what your closure is going to be like.

L Yeah yeah

A Are you going to need other tissue to close him or not?

L Hmmm

A I doubt it…

Multimodal description:

With L now seated in the stool in the operative position, A summarises what L has said to him. For further emphasis, he points with his index finger towards the patient, saying “so you need to know extent of disease…” He makes a downward jabbing movement when he says the word “disease.” A then continues “to know what your… what your closure is going to be like.” His pointed finger remains outstretched (as shown above), but as says the words “what your…” he points slightly to his right, before bouncing his finger to the left to coincide with the word “closure.” His pointing movements seem to represent the two ends of tissue which would need to be closed. L, still looking directly at A from his stool, nods in agreement, saying “yeah, yeah.” A continues to build on this idea by saying rhetorically “Are you going to need other tissue to close him or not?” Again, A uses pointing to emphasis the closure element of his argument by making a downward jab with his pointed finger on the words “tissue” and “close.” L nods again. At this point, the scrub nurse has begun to look through the drapes on the scrub table. As L is nodding, he notices this, and as A continues to speak (“I doubt it…”) L reaches his right hand out in a request for the scrub nurse to pass him the first drape.
Illustration 6

Verbatim transcript

L So we just...

A Judging by what I’ve got, so far, in the picture in my head...

L Thank you

A That I’ve seen. But actually, if he had lots of piriform fossa going out and lots of posterior pharyngeal wall, that’s not just a laryngectomy, is it?

L Thank you. Yep

Multimodal description:

L’s comment “so we just” is very quiet and A, appears not to hear it and continues to talk “judging by what I’ve got, so far, in the picture in my head…” Meanwhile, the scrub nurse responds to L’s outstretched hand by picking up the appropriate drape from her pile of drapes and passing it to L. L very quietly thanks the scrub nurse (“Thank you”). While A builds on this line of thinking “that I’ve seen. But actually, if he had lots of piriform fossa going out and lots of posterior pharyngeal wall,” L opens out the drapes, ready for them to be placed. Once the drape has been opened out, and L is ready to place it, the anaesthetist, again as A continues to speak to L (“that’s not just a …”), lifts up the patients head to allow L to slide the drape underneath the patient’s head. L thanks him.
Illustration 7

Verbatim transcript

A I'm not doubting he's had radiotherapy and we might have to think about pec major to cover as another layer

L Yeah

A But I don't think we'll need pec major at a guess. To be honest I'm guessing. But that's part of the assessment today. It's not just getting a biopsy and things like that, is it?

Multimodal description:

A continues to stress the value this procedure will have for planning for future operations as L continues to open the drape, “I'm not doubting he’s had radiotherapy and we might have to think about pec major to cover as another layer.” L appears to maintain attention to what A is saying as he nods, turns and looks up at A when he says the word “layer” and utters “yeah” in response. L then looks back down at the patient and completes the draping. At this point, A has turned his back to the operating table and walks a few steps away, completing this part of his argument by saying “but I don't think we'll need pec major at a guess. To be honest I'm guessing. But that's part of the assessment today. It's not just getting a biopsy and things like that, is it?”
**SEGMENT 2:**

04min 45s to 05min 00s (total 15s)
Presented through 1 description

Ilustration 1

**Verbatim transcript**

A  *It's the thought process of the next stage on to be honest with you. Thinking about why am I really doing that? I'm getting a biopsy but I'm actually thinking what's my resection going to be…*

L  Yeah

A  *Where my resection’s gonna be. Where are my cuts going to be if I offer this guy a laryngectomy in a few weeks’ time*

**Multimodal description:**

The draping has been completed and L is beginning to set up his equipment. The scrub nurse has just passed the scope to L (seen in his left hand in the illustration above). A continues to reinforce the importance of the “thought process of the next stage,” while standing behind L. As he completes the sentence, L continues to set the equipment up, with the help of his assistant, anaesthetist and theatre team. He connects the light source to the scope, and picks up some lubricating jelly from the scrub trolley. It is only just after A says the words “actually thinking,” that L turns and looks at A briefly, before looking back down at his instruments and applying the lubricating gel to the scope. As he does this, he quietly murmurs “yeah” after A says the words “going to be” as he displays he is paying attention to A’s argument while setting up for the procedure.
SEGMENT 3
09min 10s to 10min 10s (total 20s)
Presented through 4 descriptions

Illustration 1

Verbatim transcript
A Does look a bit solid, doesn’t it?

H It does feel solid to me. But it could be fungal

Multimodal description:
L has placed the camera down the scope and the team is getting a view of the tumour on the vocal cord on the monitor. A is able to view the screen straight on, L is able to view it by looking over his left shoulder. As it comes into view, from his standing position, A moves his head towards the screen very slightly as if focusing more fully on the picture and says “does look a bit solid, doesn’t it?” A then walks around the back of the light-source and moves towards the screen. H feels the tumour with the tip of his suction device that he is holding in position down the scope and agrees.
Multimodal description:
Now standing next to the screen, A says “Yeah coz it’s all, it does look… and that’s right on the commissure.” A asks for pictures to be taken. During this time L was leaning slightly back on his stool, looking to his left to the screen, peering behind H’s head. He is holding the camera in position down the scope in his right hand, to keep the lesion in view on the screen and supporting the patient’s jaw with his left hand. H continues to peer over his left shoulder towards the screen. As H comments that he thinks “that looks suspicious. Infra-glottically,” he slightly shifts his position so L loses his view of the monitor. L now has to lean forward in order to better see the screen, now looking past H’s torso.
Illustration 3

Verbatim transcript

A I think we need a good... the problem is, I don’t think I can take that with a laser if that’s going in the subglottis like that.

Multimodal description:

A takes a step back from the screen and stands with his hands folded. He vocalises his thoughts about the future options for this patient “the problem is, I don’t think I can take that with a laser if that’s going in the subglottis like that.” Here, A starts to infer how what they have found might directly influence the next steps, suggesting that if they saw tumour in a certain area, laser treatment would not be an option. While he is speaking, because H has slightly moved his position, L has to lean back again slightly and look passed the back of H’s head to look at the screen. He is intently watching the screen, as if trying to do something.
Illustration 4

Verbatim transcript

L Yeah, yeah, yeah. I know

A It’s quite hard to be sure that we’ve…

L Going down

H Good picture there…

A That’s all ok

L Fine we’ll just take biopsies. I don’t think there’s any point…

A All I want to know is, is that definitely positive, is the truth

Multimodal description:

Although L responds to A’s comments by saying “yeah, yeah, yeah. I know” he is looking intently at the screen. L leans forward again to look passed H’s torso to see the screen, while A continues “It’s quite hard to be sure that we’ve…” At this point L manages to pass the camera down through the vocal cords to visualise the windpipe, which is what he had been concentrating on doing previously. He interrupts A by saying “Going down” to mark this verbally. A appears satisfied with what he sees (“that’s all ok”). L, sounding satisfied, verbalises that he will now take biopsies. A points to the site of the tumour on the screen where he wants the biopsy taken (“All I want to know is, is that definitely positive, is the truth”).
Illustration 1

Multimodal description:
L has been given a pair of biopsy forceps which he has placed down the scope and can visualize in the surgical field via the camera. As he does this, A makes a comment, which is unrelated to the biopsy procedure that L is about to perform. Instead he refers forward to a potential operation he might perform, “but the interesting thing is it’s a narrow field laryngectomy, which is good.” Here, A is essentially explaining how the information they are gaining from this procedure in real-time is informing them of their future procedures suitable given the findings of this procedure in real-time.
**SEGMENT 5**
15min 48s to 16min 10s (total 28s)
Presented through 2 descriptions

**Illustration 1**

**Verbatim transcript**

A *I’m sure it’ll be fine because there’s no disease there anyway. Coz you gotta remember that you’ll enter won’t you…*

**Multimodal description:**

Towards the end of the procedure, L is examining the nearby areas to confirm that there is no cancer spread to them. A appears satisfied that there isn’t (*“I’m sure it’ll be fine because there’s no disease there anyway.”*) As he says this, L is moving the camera around, trying to inspect the various areas. Prompted by something he sees on the screen (perhaps an area of laryngeal wall that L has in the camera view at the time), A starts to make a comment “*Coz you gotta remember that you’ll enter here won’t you…”* referring to where incision might be made during the curative procedure they may carry out. As he says this, he walks around back to the screen as L begins to slightly withdraw the camera.
Illustration 2

Verbatim transcript

A At this point

L It looks, it looks…

A You’ll enter here, won’t you

L It looks fine

A So you know that that side is ok.

L Shall I come out

A But it’s nice to have an idea. Ok. Good

Multimodal description:

L continues to withdraw the camera and A slightly speeds up his action (pointing to screen) and speech to ensure he can highlight the area he wants to demonstrate before the view is lost. Once L notices A is walking to the screen, he stops withdrawing the camera and waits for A. As A says “you’ll enter here, won’t you,” he is pointing to the area he means. Here he means that if the voice box would be removed, these areas are where the cuts would be made and the areas would be accessed from the outside. L suggests that area is disease free (“it looks fine”), which A agrees with. L asks A if he is happy for him to remove the camera fully (Shall I come out?) and the procedure is complete, as A again returns to the point about planning – “it’s nice to have an idea” about what this area looks like for the bigger procedure that may take place in the future.
Making sense of the narrative

The collection of segments draws together exchanges that relate to a key learning point that emerged from this activity for Sam, namely that of “mapping.” For him, this seemed to mean both mapping out the extent of the disease and using this information to map out the next steps of this particular patient’s management. The concept began nebulously for Sam. The assessor first introduced it to the discussion as an addendum to a previous conversation “but also, at this stage, you know…” while Sam was in the process of washing his hands. Initially, he was not clear exactly where the assessor was trying take him, but through the course of that segment, the assessor probed, asking him what the indication for this procedure was, and then guiding him through a process of re-framing his thoughts about these reasons (e.g. “not just concerns but…”). By the end of segment 1, it appeared Sam had come to understand that the assessor was driving him towards an answer related to “mapping” the next stages of treatment for this patient. From then on, it seemed both Sam and his assessor were aligned on this.

During segment 1 and 2, Sam and his assessor discussed the “mapping” principle in generic terms, based on predications and guesswork, rather than situated in the context of this particular patient – what they might find, rather than what they have found. They made few explicit links to the patient that was on the operating table. Through the next sequences, as the learner controlled the instruments to allow them to identify the presence of a recurrent cancer and to investigate its extent, the assessor began to emphasise exactly what it was that he saw that was helping him work out a plan for the future, and why. In this way, these segments demonstrated how, for Sam, the concept of mapping materialised from a previous partially formed, nebulous thought. He saw what was initially an innocuous comment, then realised through a live, clinical, concrete, real-world situation, which he was not only part of, but fully engaged with, and partially responsible for creating.

Each of these segments, these assemblies of micro-events, allowed Sam to consolidate this learning narrative for himself. It became more explicit and better
formed as something of meaning to him. The micro-events turned from a set of situations into a valuable experience for him (Teunissen 2015). In other words, this particular set of sequential micro-events led to the creation of a coherent, congruent narrative, which Sam then captured as he reified his experience in his WBA proforma.

As shown earlier, Sam recorded *mapping* as an important take home message in his WBA proforma. This now became telling for two reasons. Firstly, as a reification of lived experience, it makes explicit that this learning narrative, related to the concept of *mapping*, had become personally meaningful to him through his participation in building that narrative. But secondly, it was transcribed by Sam in his written WBA document in a manner that appeared largely in line with what his assessor was drawing attention to during the procedure, what Sam himself recounted about his experience and what I saw was happening through my own observations at the time. In the next example, I show how other learning narratives might be handled differently.
Handling narratives differently

The previous multimodal analysis gives an account of Sam's construction of a personally meaningful narrative, through his interaction with his assessor, assistant, and those other team-members present during his engagement with a clinical activity. Importantly, Sam took forward the gist of this particular narrative, presenting it quite directly in his WBA document. He recognised that this emerging narrative was important and documented it in the WBA proforma as such. However, some emerging narratives were handled by learners in different ways. In this section, I explore another learning narrative constructed by Sam, which unlike the previous example, he entirely omitted as he populated his WBA proforma.

Omitting a technical narrative

This learning narrative emerged in parallel with the previous example. Here the three segments (shown in figure 6.7) concern a technical agenda. As mentioned earlier, Sam held the technical agenda in a prominent position, as he sought to perform the technical aspects of the procedure (for example, setting up the equipment, manipulating the instruments during the various steps of the procedure and collecting an appropriate biopsy sample) fluently.

In particular, this narrative revolves around the application of a simple manoeuvre called “cricoid pressure.” As the transcript draws out, there are team-working and communication elements that become important through its development. Cricoid pressure is a frequently used adjunct in the procedure that Sam was carrying out, and allows surgeons to manipulate the tissues in the neck, in this case, to improve the view of certain areas as they look down the “scope.” It involves an assistant pushing down on the front of the neck, therefore pushing all the structures in the neck down very slightly.
Figure 6.7: Segments related to the "using cricoid pressure" narrative. The related segments are again superimposed onto the multimodal plot diagram.
Segment 1
8min.14s – 8min 25s (total 11s)
Presented through 3 descriptions

Multimodal description:
At the start of this segment, \textit{L} has just placed the camera into the scope for the first time and is trying to advance it down the metal tubing of the scope to see the tumour just beyond the end of the scope opening. \textit{L} is looking at the screen, as is \textit{A}. No words are being spoken as \textit{L} is trying to manoeuvre into an appropriate position.
Verbatim transcript

L Yeah… do you wanna just…it’s just, just a little bit on the…

Multimodal description:

A, looking at the monitor, sees that L is struggling to get a view. Without speaking, he steps forward and moves his right hand past L’s shoulder to apply the cricoid pressure. L, who is struggling to adjust a setting on the camera which he is holding with this right hand, notices A leaning over his shoulder and applying pressure onto the patient neck. L briefly looks back at the camera handle in his hand, and then says “yeah.” It seems to suggest that he follows what A is trying to help him with, but then, with a short glance at the camera dial he is trying to adjust, he then says the words “do you wanna just…” This implies he was trying to get someone to adjust it for him. L turns his head back towards the monitor quickly. A realises what L would like him to do and stops applying cricoid pressure. L begins to explain why he can’t do this himself (“its just… just a little bit…” as he sees A is moving to adjust it for him.
**Multimodal description:**
Having stopped applying cricoid pressure, A uses both hands to makes the necessary adjustments on the camera handle, commenting “let me just do this.” L, continuing to look at the monitor screen, again explains he needs this adjustment because “it’s just a bit tight there.” The problem gets quickly resolved, acknowledged by L’s comment, “there we go” indicating he now feels in a position to move on with the procedure.

**Verbatim transcript**

A *Let me just do this*…

L *It’s just a bit tight there. There we go*
Segment 2
8min 59s – 9min 20s (total 21s)
Presented through 4 descriptions

Illustration 1

Verbatim transcript
(no accompanying dialogue)

Multimodal description:
Here L is holding the camera in the scope and now has the tumour on the screen. The team are trying to examine it more closely. A is standing behind L and looking at the screen. H is holding a suction tube which he has placed down the scope. They are struggling to keep the tumour in view and suction away the secretions which are obstructing the camera view.
Ilustration 2  

Verbatim transcript  

A Let me just…  

H Let me just… I just can’t get to it  

L Yeah  

Multimodal description:  
To help, A again steps forward, passing his right hand over L’s right shoulder again as he moves to place his hand on the patient’s neck to apply cricoid pressure. He verbalises this as he does it ("let me just…"). L is engaged with a brief exchange with H, where H has explained that he can’t seem to suction up the secretions, which L acknowledges ("yeah"). As a result of this exchange, L hasn’t initially realised A’s actions.
Multimodal description:

L begins to partially withdraw the camera, presumably to clean it, but then stops as he turns his head and notices A’s hand in position on the neck. However, A had also noticed L was withdrawing the camera, so he removes his hand from the patient’s neck almost instantaneously and returns to a standing position. L looks back at the screen.
Illustration 4

Verbatim transcript

**H** I think it’s still…

**L** Do you want to apply some cricoid?

**H** Yeah

Multimodal description:

**L** replaces his camera, but as indicated by **H**’s comment (“I think it’s still…”), they still appear to struggle to get a good view of the tumour. Now, **L** explicitly asks **H** to apply some cricoid pressure. At this point, **L**’s hands are occupied (holding the camera with the right hand and supporting the jaw with the left hand), so he accompanies his request with a nod, intended for **H** to notice, aimed in the direction of the patient’s neck. **H** moves his hand to the front of the patient’s neck and applies the cricoid pressure.
Segment 3
12min 20s – 12min 50s (total 30s)
Presented through 7 descriptions

Illustration 1

Verbatim transcript
(no accompanying dialogue)

Multimodal description:

L is advancing a pair of biopsy forceps down the scope. He is looking at the screen and sees the instrument enter the view and approaching the surgical site.
**Multimodal description:**

The view on-screen at this point is shown here. The tumour (red blur) is at the upper limit of what is visible through the scope. The diagram illustrates that about half of the lesion is obscured by the metal of the scope tube. So, while L can see the edge of it, he cannot see enough of this to take an appropriately sized biopsy.
Multimodal description:

Once L has his instrument fully advanced and is trying to get in position to take the biopsy, A recognises that the tumour is only partially in view. He steps forward to the patient and places his right hand on the throat of the patient and pushes down applying cricoid pressure. He gives a verbal commentary as he does this “So you need that.” (referring to his downward pressure he is applying) and then “Let me try and give you that” (which refers to the much-improved view (see illustration 4, below) that is provided because of his intervention.)
Illustration 4

Verbatim transcript

L  Thank you

A  And again it's about knowing... yeah, see that's representative. But you need to use the people around you as well

Multimodal description:

The pressure provided on the outside of the neck pushes the lesion inside the throat downwards into a better view down the scope, which L acknowledges. He is now about to get into a better position to take a tissue sample. As he manoeuvres, A begins to make a comment on the learning point which he wants to make ("and again it's about knowing"), but stops himself as he watches L take the biopsy. A is satisfied that an appropriate biopsy is taken and approves "yeah, see that's representative," implying that they may not have been sure to get a 'representative' sample had they tried to perform the biopsy with the previous view (i.e. without cricoid pressure). He now picks up the learning point again ("But you need to use the people around you as well"). Here he is implying that L needs to make use of the team to apply cricoid pressure, which will make it easier for him to take an appropriate biopsy.
A  Just to know, that sort of…

H  So that is subglottis biopsy

L  Left

H  Just put it in the same pot. All of it in the same pot

L  I might take just a little bit more.

A  Yeah take one more and then that’s good

**Multimodal description:**

L removes the forceps and gives the specimen to the scrub nurse. L and H ensure that the scrub nurse is aware what to label it and where to put the specimen, as shown in the transcript above. L then takes another biopsy sample, with agreement from A
Multimodal description:

This time, L asks for someone to apply the external pressure to give him the best view. H acknowledges and obliges, checking that L is happy with the view.
Verbatim transcript

A Oh sorry. You got the pressure?

Multimodal description:

A did not hear L’s request for cricoid pressure, so when he sees the biopsy instrument being advanced, he goes (and speaks) to provide cricoid pressure, beginning to stretch out his hand. Then he realises that it has already been applied by H so withdraws his hand again.
Using alternative narratives

In the first extract, instances of “planning the next steps” coalesced into a meaningful narrative that was captured almost directly as “anticipate next step in mapping” in Sam’s WBA documentation. Importantly, in this extract, Sam summarised his technical experiences differently, using a generalised statement “fluent in carrying out laryngoscopy confidently” and selecting satisfactory for all the components of the checklist (figure 6.9).

![Figure 6.9: Sam’s WBA proforma entries](image)

Highlighted is the entry of interest to the analysis around technical fluency.
The use of the cricoid pressure manoeuvre came up repeatedly during the procedure. Its value was re-iterated several times by the assessor and Sam came to see first-hand its benefits. However, Sam did not refer to it in the WBA proforma. Instead, he omitted these experiences and the accompanying narrative that had been generated through that experience. The reasons could be multiple. Sam may not have considered this particular narrative at all when writing that statement. He may have chosen to summarise other technical narratives derived from this procedure instead. He may have interpreted or remembered the situation differently to how I, as an observer and researcher, have interpreted it. Sam may have also felt that, at his level of seniority, he felt he needed to make it clear that he could fluently carry out this procedure. Therefore, in constructing his re-presentation of the experience, he did not include those reflections on the difficulties he faced and how he overcame them. For him, at his level of seniority, a fluently performed biopsy-documented and validated, was more important than recording any new learning that occurred through the use of this cricoid pressure manoeuvre.

Although Sam may not have specifically documented any learning about using this manoeuvre in the WBA proforma, the multimodal analysis shows that his attention was drawn to its value and use. This is shown through his engagement with it as a real-world exercise in a series of multimodal references and actions, where he first acknowledges and then incorporates the manoeuvre into his own real-time practice.

As Sam struggled to visualise the tumour, his assessor offered to perform the manoeuvre to help on two occasions (in segment 1, illustration 2 and segment 2, illustration 2). Sam did not take up these offers on either occasion, but on both, his assessor’s actions were noted and acknowledged by Sam with a brief gesture. Sam saw his assessor offering to perform the manoeuvre, and in doing so, realised it was something his assessor deemed important, and of potential use in this situation. This recognition of its value was manifested by Sam’s subsequent action as he recruited his helper to apply the manoeuvre instead of his assessor, while he continued the procedure. Through recruiting his helper, he demonstrated to his assessor that he had firstly recognised the assessor’s efforts to apply the manoeuvre, secondly that
he realised it was a valuable manoeuvre and thirdly that he was able work independently from the assessor, using the other team members around him.

The learning experience continued through the action of taking a biopsy, where Sam saw the direct consequence, in real working practice, of using this technique. In this example, it allowed him to take a “representative” biopsy. Segment 3, illustration 2 was the view Sam and his assessor shared without the application of pressure. When the assessor pressed down on the neck, Sam saw explicitly the improved view (illustration 4), which directly and immediately enabled him to obtain a suitable tissue sample. He incorporated this into his subsequent practice, directing his helper to once again to apply this pressure. In doing so, he demonstrated his recognition that this remained a useful thing to do and that he was able to apply it correctly and independently of his assessor’s prompts.

Over these segments, Sam took increasing ownership of the manoeuvre, acting with increasing autonomy, shown by his ever-more explicit directions to his helper. Initially the assessor made the move to apply cricoid pressure with no prompt, which Sam noticed. Later in the procedure, when there was a similar problem, the assessor again made the move to apply cricoid pressure, which Sam again noticed. The next time, Sam quietly asked his helper to apply the manoeuvre instead. Then in the final instance everything is made explicit, as Sam directly requested for cricoid pressure to be applied, which enabled him to take a satisfactory biopsy.

The way Sam handled this emerging narrative is in contrast to the earlier “mapping” narrative, where the gist of the learning narrative was transcribed into written form. This example reveals how some noticeable learning was not acknowledged in written form. Instead, Sam omitted this particular technical narrative about cricoid pressure entirely from his final WBA proforma.
Kneading the narrative

My final multimodal analysis illustrates how a personally meaningful learning narrative was moulded or kneaded into a form suitable to be reified in a WBA document. The focus of this extract is the interaction between Omar and his assessor, as Omar sutured two blood vessels together under a surgical microscope. Omar was attempting to attach one vessel from some tissue that had been harvested from the patient’s forearm and to another vessel that was located in the patient’s neck.

A full account of the context is given in appendix F, but the following image (figure 6.10) provides an overview of the learning environment. The image depicts a similar social arrangement to the previous examples of WBA clinical activities, namely a learner (Omar), carrying out a clinical task – in this case suturing two vessels under a microscope – whilst under the direct supervision of a WBA assessor. The scrub nurse is again present, handing them specialised microscopic equipment. However, here, Omar and his assessor are physically separated by the body of the microscope. The microscope has two eye-pieces, one on each side, which allows each of them to visualise a magnified operative field. Omar and his assessor have limited views of each other, which restricts their ability to communicate with bodily gestures (for example, head-shaking, nodding, eye raising etc.). They were still able to respond to audible cues – grunts, utterances or verbal comments.
Figure 6.10: The learner and assessor at the microscope (L = learner (Omar), A = assessor, SN = scrub assistant). The blown-up image of the screen represents a view that both would see down the microscope lens, but they are not interacting with this screen. The screen was set up so members of the theatre team could follow the surgeons’ actions under the microscope (see figure 6.11 below).

Figure 6.11: A diagrammatic representation of the view down the microscope. It is provided to demonstrate the orientation used in the upcoming multimodal transcript.

This narrative evolved through a single segment, which I have broken down into five parts (demonstration, modal experimentation, observing modal restrictions, demonstration of current understanding and explicit re-explanation). This helped me
to understand how Omar came to make sense of what he interacted with down the microscope. At the start of the segment, the supervisor had already placed two sutures at each end of the vessel to help orientate Omar. I show how he responded to multimodal commands, warnings, instructions and suggestions which were context-specific, as he internalised, interpreted and reacted to them in real-time (Bezemer and Kress 2016). Omar’s actions, in turn, were met with near constant and, importantly, multimodal responses which were correctional, supportive or somewhere in between. He was also able to see the immediate effect of his actions, albeit with guidance from his assessor.
Figure 6.12: Multimodal transcript related to Omar’s microscopic suturing narrative
(A = assessor; L = learner (Omar); SN = scrub nurse)

<table>
<thead>
<tr>
<th>Timeframe 0 – 12s</th>
<th>Multimodal description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOX 1:</strong></td>
<td>At the start of the clip it is difficult to visualise the area to be sutured. A initially tries to point to it, but realises that it is difficult to demonstrate the exact area he wants the learner to suture.</td>
</tr>
<tr>
<td><strong>BOX 2:</strong></td>
<td>A grasps the forearm vessel, pulling it so the area to be sutured can be visualised better. Using the instrument in his left hand, he then lifts up the neck vessel, pulling the tissue taut, which makes the area that needs suturing clearer. L already has his suture loaded in the suture holder in his right hand and has another pair of forceps in the left hand. While A has been manoeuvring the tissue, L has his instruments in view, ready to start suturing.</td>
</tr>
<tr>
<td><strong>BOX 3:</strong></td>
<td>A appears satisfied with the positioning of his instruments and the view, so pauses in a final position. L moves his instruments towards the area to be sutured. He places the instrument in his left hand into a position to stabilise the vessel wall, and he moves the suture holder in his right hand, with the suture in it, to where he wants to place the first suture. No words have been spoken, or audible utterance made, between L and A, up until this point.</td>
</tr>
</tbody>
</table>
### Part 2: Modal experimentation

<table>
<thead>
<tr>
<th>Timeframe 12 – 17s</th>
<th>Multimodal description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOX 1:</strong></td>
<td>L is just about insert the needle for his first stitch meaning he has committed to placing the needle in a certain position. A begins to speak “in the mi…, in the middle of that.” He seems to be communicating to L that the position where he intends to place his suture is not correct, and A wants him to place the suture somewhere else.</td>
</tr>
<tr>
<td><strong>BOX 2:</strong></td>
<td>At this point, A releases the neck vessel with the forceps in his left hand. He moves, and then uses, that instrument to gesture up and down around the area which he wants to draw L’s attention to, while saying “so, can you see, it’s not…” L then retracts his instruments slightly while A gestures and speaks. A pauses, because, in releasing the vessel, the view changes as the tension in the vessel wall is lost. As such, he can no longer demonstrate with his gesturing motion what he wants to. As such, he declares he will re-position the forceps back to their original position saying “so, if I hold it like that…” During this time L has kept his instruments withdrawn from the site and replied “yup”</td>
</tr>
</tbody>
</table>
## Part 3: Observing modal restrictions

<table>
<thead>
<tr>
<th>Timeframe 17 – 24s</th>
<th>Multimodal description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOX 1:</strong></td>
<td>L keeps his instruments withdrawn. A repositions the forceps to hold the neck vessel, thus re-applying tension to re-establish the previous view, repeating the words “if I hold it like that.” As he says this, he gently pulls the neck vessel upwards, and the triangle representation he was speaking of is re-created. Then he says “It’s like a triangle.”</td>
</tr>
<tr>
<td><strong>BOX 2:</strong></td>
<td>Then A lets go again, quickly, and the triangle flattens again. He quickly points the instrument over where the triangle was, saying “you want to put one in the middle of that triangle,” with a gentle emphasis on the word one.</td>
</tr>
<tr>
<td><strong>BOX 3:</strong></td>
<td>A then re-positions the forceps to gently pull the neck vessel wall, re-creating the triangle. L begins to move his instruments back into position.</td>
</tr>
</tbody>
</table>
### Part 4: Demonstration of current understanding

<table>
<thead>
<tr>
<th>Timeframe 24 - 31s</th>
<th>Multimodal description</th>
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</thead>
<tbody>
<tr>
<td><strong>L</strong> continues to move the instruments into position. The forceps in his left hand are stabilising the vessel wall and he moves the suture needle into a different position, although visibly hesitant. Both <strong>A</strong>’s instruments are holding tissues to create the view of the triangle. <strong>A</strong> gives a verbal instruction to advise about the best place to put the suture in real-time “Try to go a little to the side.” But just as <strong>L</strong> touches the needle to the vessel at the point he wants to suture, <strong>A</strong> gave a warning “No. No, that’s too high.” At this point, <strong>L</strong> once again retracts his instruments, indicating that he doesn’t understand and requires further clarification.</td>
<td></td>
</tr>
</tbody>
</table>
Part 5: Explicit re-explanation

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<thead>
<tr>
<th>Timeframe 31 – 37s</th>
<th>Multimodal description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOX 1:</strong></td>
<td>L’s instruments are out of the operative field. A for the first time lets go of the forearm vessel that he has been holding with the instrument in his right hand. His left-hand instrument is still holding up the neck vessel, thus maintaining the view of the triangle. He points with the tip of the instrument in his right hand explicitly to the top of the triangle. He describes to L while pointing “if that’s the apex of the triangle…” L acknowledges an understanding of this through his utterance “yup.”</td>
</tr>
<tr>
<td><strong>BOX 2:</strong></td>
<td>A continues to speak and gesture, using the tip of the instrument, “you want to put one there,” with an emphasis on there, which coincides with a slow tap at the exact position he wants the suture placed (position 1). L responds more fully to this (suggesting more of an understanding), “Oh right ok. I see what you mean. Ok sorry.” After this, A points to a different position with the tip of the instrument, while speaking the words “and one there” again, touching the vessel wall at the exact site coinciding with the word there (position 2).</td>
</tr>
</tbody>
</table>

Based on this analysis, I could see Omar testing his understanding through the process of doing. First his assessor merely set up the scene, presenting Omar with a view of the site to be sutured, without any verbal communication. Omar, at this point, demonstrated his own at-that-moment understanding of the situation by, for example, noting the assessors pause in Part 1, Box 3, as an invitation to move their instruments into position and proceed with the stitch. He can be said to have
interpreted that situation (e.g. the assessor’s actions and what he felt that the assessor meant by them) through what he knows about these situations already and the knowledge he has built through his own personalised prior experiences. Importantly, it is through his actions that his interpretation of the situation is realised (Bezemer 2016).

At the point where his assessor decided that Omar was not going to place the suture in the position he wanted (Part 2, Box 1), his assessor began a period of modal experimentation. The physical set up was relevant here because the position of the microscope between Omar and his assessor meant that the gross non-verbal modes of communication were unavailable, although the assessor still made use of audible modes (speech and utterances) as is demonstrated on several occasions here. However, despite a restriction in modal availability, the assessor did experiment with micro-gestures using the instruments in the microscope view, in an attempt to communicate his own interpretation of the situation to Omar.

For example, first the assessor attempted to use speech to a) stop Omar from placing the stitch in an incorrect position and b) to direct him where to place it (in the middle of that,” Part 2, Box 1). However, it appeared the assessor quickly acknowledged this was not precise enough to convey his intended meaning. So, he used a micro-gesture to expand his point (Part 2, Box 2). That particular gesture did not appear to work in this situation either. The assessor proceeded to set up clearer view for the learner again. Omar demonstrated his attention, if not understanding, at this point, through his responsive utterance (“yup”), along with his relevant (non-) actions of holding the suturing instruments away from the area while his assessor tried to explain his thinking.

The assessor’s experimentation with different modes to express his own interpretation of the situation, iterates with the discovery of various modal restrictions, which required the assessor to adapt their efforts to convey meaning. For example, in Part 3, the assessor tried to explain the positions he wanted the suture to be placed by describing the area as a triangle. However, the triangle was
only visible when the neck vessel wall was gently stretched (Part 3, Box 1). Therefore, to fully demonstrate the point, the assessor needed that same instrument to also point to where the stitch should go. But, as the assessor released the tension on the vessel wall to point to the position, the triangle was lost. In an effort to overcome this, he sped up his speech and gesture, to shorten the amount of time between the loss of the triangle and his pointing gesture, before re-applying the tension as soon as possible again (Part 3, Box 2). Omar’s actions in Part 4 (the hesitancy, ongoing uncertainty about where the assessor wished him to place the stitch, his final (incorrect) stitch position and his withdrawal of the instruments pending further clarification) all again highlight a new (albeit, in this situation, a misguided) interpretation of the situation. In response, the assessor employed a different set of micro-gestures (using different instruments, his other hand and a tapping motion) and verbal comments to try to make his interpretation of the situation more explicit (Part 5). This enabled Omar, over the next couple of minutes, to place the required stitches. Importantly, these cycles of multimodal feedback-in-action (Rizan et al. 2014) and the resulting reflection-in-action (Schon 1983) acted as learning exchanges, creating new instances of learning, which, when linked together, generated a coherent learning experience for this learner during this particular clinical activity.

This analysis revealed how Omar reciprocally engaged with his assessor’s actions to construct his understanding and execute what he required. However, as part of the WBA process, Omar was required to acknowledge and present (thereby reifying) these technically challenging aspects of this learning experience in his WBA proforma. When he completed his WBA proforma, Omar summarised these aspects only briefly by making two different short entries: “How to hold and suture the VC to IJV” and “majority of knots were flat and in good positions.” Although, as he stated, the majority of knots were correctly placed, the statements don’t capture the intricate nature of the narrative that the multimodal analysis suggests he constructed. It was difficult for me as a researcher to ascertain independently how he decided upon this use of language, and even when asked during later interviews, Omar (in keeping
with many of the other learners) struggled to articulate the exact source of his written comments.

Although Omar briefly mentioned knot-tying in his WBA document, I argue that the brevity and generalised nature of the comment suggests that he has either chosen not to, or has struggled to, represent this instance of learning in the WBA document. Importantly, this is not to say that he hasn’t learnt from this experience. Rather, I suggest that at the time he came to complete his WBA proforma, he has not recollected that learning as something fully presentable as a WBA. Therefore, part of his learning narrative is that he has to *knead* that narrative to give it some alternative appearance, thus changing the way that this clinical experience is reified in the written, formal documentation.
Key findings

A number of key findings have emerged through my analysis in this chapter. Firstly, through the three detailed multimodal transcripts I have presented, I have suggested and demonstrated that learners dynamically generate multiple personally meaningful learning narratives as they make sense of their engagement with workplace activities in real-time. I have shown how these narratives are not pre-determined, but emerge through, and are then consolidated upon, by the learner's actions and interactions that take place between themselves, their assessors and the working world around them. I have argued that these learning narratives are not exclusive. Instead, I suggest they overlap, as learners construct different narratives simultaneously from the same clinical activity.

Secondly, importantly, how learners manage these learning narratives in terms of their WBA process is variable. I have shown differences in the way that learners reify their own personally meaningful narratives in their formal, written WBA documents. Some learning narratives are transcribed largely unchanged (for example in the first transcript). Others are omitted entirely - these narratives are not taken forward at all (for example in the second transcript). As such they remain unpresented by the learner in any reified form. Alternatively, I have also shown in my third transcript, learners also knead or mould some narratives to appear, in the eyes of the learner, more presentable.
Summary

Through the analyses presented in this chapter, I have suggested that learners assemble *in-situ*, personally meaningful learning narratives as they made sense of their engagement with workplace activities in real-time. I have come to understand the entries that learners made on their WBA documents as a reification of these learning narratives. In this way, WBA entries might be seen as the products of these narratives. However, it is also important to realise that the creation of the document itself is a part of a learner’s meaning-making process. As such, these personally meaningful learning narratives, which begin during, and/or are developed through clinical activities, are ongoing. In this chapter, I have begun to show these narratives extending beyond the clinical activity itself, and into the production of a WBA document. In particular, I have suggested the narratives can remain unchanged, or be *kneaded* into something more appropriate, or be omitted entirely.

In the next chapter, I change my focus to analyse the written product of the WBA process – namely the completed WBA proforma. I will show the different ways that learners engage with this document. I explore how this document is an entity that is entirely separate, in time, space and modality, from the experiences that previous literature has assumed it directly correlates to. I examine the WBA proforma as an ethnographic artefact – studying the ways that learners interact with it. In addition to the storylines that learners carry forward from their clinical experiences, I explain how, in certain instances, the nature of the WBA document itself leads learners to generate other narratives that they include in it. In this way, the WBA document has potential to shape the way learners reify their clinical experiences.
Chapter 7
Doing a form

Introduction

The WBA is a complicated phenomenon. In the two previous chapters, I have focused on the *in-situ* clinical experiences, which learners then write about as they populate WBA proformas. I have argued that learners play an active role in constructing their emerging WBA clinical experiences in real-time, as they interact with a social, cultural, and physical learning milieu through their day-to-day practice. In particular, I have suggested learners work to relate, and string together, multiple, modally different micro-events into personally meaningful learning narratives, which help them make sense of the happenings they are engaging with and are participating in. However, these clinical experiences only partially represent what a learner engages with as a WBA is conducted. At some stage, a learner is required to transcribe those clinical experiences into written form by populating a WBA proforma. To more fully understand the WBA process, I now shift my attention to how learners create the WBA document itself. This document serves to give these clinical experiences a material form.

The learner’s creation of this document serves to differentiate their WBA clinical experiences from other clinical experiences that the learner undergoes throughout their working practice. The proforma is often viewed as a key and defining feature of the WBA. Indeed, learners equated completing the proforma (or *‘doing a form’*) with performing a WBA, seeing them as one and the same:

Myself: *If someone says let’s do a WBA, what goes through your mind?*

Saira: *We are doing a form*
In this chapter, I address the third of my research questions, exploring how real-time, messy, clinical experiences get transcribed into formal, tidy WBA documents. In doing so, I argue that performing a WBA does not equate to ‘doing a form.’ Rather, a learner’s experience of their clinical activities is resemiotized (Iedema 2001) as a written, institutionally-driven document.

Resemiotization describes the shifts in meanings made from one context to another. Iedema (2003) drew from earlier work by Mehan (1993), who described how reconstructions of a teacher’s interactions with a student were orchestrated by means of organisational procedures such as written reports in a student case-file. For example, student performance or behaviours were recorded by teachers in some written form, which was then discussed by other teachers in a sequence of meetings, where new or different records were created, which were in turn discussed by others in different meetings etc. In other words, students were progressively re-contextualised, and ultimately categorised, based on these textual reconstructions. Iedema further explained that progressive re-contextualisation increasingly reconfigured the situation which it posited as its origin, but yet, with increasing re-contextualisation came increasing authority, institutional importance and greater likelihood of the re-contextualisation to be taken as fact (Iedema 2003). Furthermore, Iedema argued that these reconstructions represented a ‘material realisation’ of a localised, situated and transient happening, into more formal, ritualised form of interaction (ibid p42). I draw parallels here with the WBA process, where learners are required to reconfigure their experiences in different temporal, spatial and cultural contexts as they move away from real-time experiences to textual re-presentations.

The analysis in this chapter explores how learners re-configure their experiences by engaging with the prompts in their proformas to produce their final WBA document. I investigate what learners choose to write in their proformas - using, or not using, the learning narratives that coalesced through their clinical activities - and why they present them as they do.
In doing so, I illustrate how these WBA documents are not simply inert replications of experiences. Rather, they come into being through a learner’s interpretations of their working world around them. What learners select, record and write, and why they choose to do so, all give insight into the learner’s understanding at the time the document was generated – its creation is an episode of meaning-making. As such, while they may have been stimulated through, by definition, the particular clinical task, the way this activity is re-presented through the WBA document requires interpretation in its own right.
Temporal and spatial contexts

Learners in this study populated their WBA proformas at some time after the clinical experiences that the documents refer to. These documents were therefore separated in time from the activities that they resemiotized (Ledema 2001). Learners generally completed their documentation between one and three weeks after their clinical experiences. No learner in this study completed their proforma directly after their experience, or even within 24 hours of it. The earliest any learner completed it was three days after the event. The latest was eight weeks.

The time between clinical experience and production of the WBA document separated that experience from the document which defined the experience as a WBA. This space is not vacuous, but filled with other experience-influencing activities (in the workplace setting, but also a whole range of non-professional related activities outside of this). These activities, i.e. the learner’s working practice, includes the ward rounds, patient reviews, clinics, administrative duties, operative work, some of which might be related to the WBA, others may not be, or may contribute to other WBAs. In this way, the WBA process overlaps with multiple other experiences within the learner’s working practice.

This space between activity and the creation of the WBA document has been under-explored in the current WBA literature. Most quantitative studies do not mention the length of time between ‘doing a form’ and the clinical event itself (as examples, Awad et al. 2014; 2015a; 2015b; 2015c, Shalhoub et al. 2015, De Siqueira and Gough 2016). For me, this illustrated a significant shortcoming in how this literature has conceptualised the WBA. There is an overwhelming willingness to assume that the WBA document is a proxy for, or a direct representation of, a specific performance by the learner. These studies, echoed by Saira’s own views in the earlier quote, fail to see the population of the proforma itself as a meaning-making activity. The two (clinical experience and its documentation) are instead viewed as one and the same entity, where the document acts as a transparent, volume-less wrapper, preserving the learner’s performance unchanged from its in-situ context. How one becomes the
other, and the implications of the different ways this might happen has not been questioned or discussed in these studies.

In some smaller studies, which generated data through interviews and questionnaires, learners had opportunities to self-report the time between their clinical experience and the records they created about them. This space – i.e. what happens between the activity and the creation of the document, as mentioned, has remained underexplored. For example, Gaunt (2016) found that almost 80% of the 178 learners who responded to her questionnaire completed their WBA documents within a week. Furthermore, almost 40% completed their documents immediately after their clinical experiences, and 20% did so on the day of the experience. Similarly, Bindal et al. (2011) reported that, of the 130 respondents to their survey, 30% completed their online proforms within 2 hours, 15% on the same day, while 30% took over a week. Interestingly, the reported length of time between experiences and their documentation in the studies above was inconsistent with how learners behaved in this study. In this study, learners took far longer to complete their proforms. In fact, there were times during my data generation where I felt that my presence as a researcher and the learner’s participation in the study may have in fact prompted learners to complete their forms in a timelier fashion that they otherwise would have done. This would have further skewed my research findings away from the findings in existing literature. This is illustrated in the following extract:

Jatin: I normally do it the same day or in the evening… (this one) was done three or four days later actually.

Myself: And why is that?

Jatin: I think its coz you reminded me… otherwise, I probably would have done it in three months’ time

This exchange highlighted a conflict within the learner. In keeping with the studies above, where learners self-reported that they complete the paperwork as soon as possible after the event, learners in this study also felt that they should complete their paperwork as soon as possible. Jatin actually stated that his normal practice
was to complete the proforma on the same day. However, he also described completing this proforma (about the clinical experience that I had observed during this research) three or four days later, which he implied was unusual for him. On further probing, Jatin seemed to contradict himself. It appeared that what prompted him to complete the document was his awareness of his participation in this study. It was this awareness that led him to complete his proforma more quickly than he otherwise would have done. In this way, learners seem to accept that, although they recognise the value in completing proformas as soon as possible after their experiences, they often did not do so:

Luke: So, I wrote this form out yesterday
Myself: So that’s about a week, 10 days?
Luke: That’s quite a fast turnaround for me

These behaviours – where learners worked to present an acceptable practice (for example completing their paperwork quickly), while engaging in a different set of practices (accepting that they often did not complete their paperwork quickly), suggest learners make judgements about what they should be and what they are actually doing. In this way, they are playing a game, and adhering to unwritten laws that govern how they engage with the process of the WBA. These ideas of unwritten rules and game-playing became increasingly prominent during my ongoing analyses of how learners re-configure and re-present their experiences in textualised formats.

Unlike, for example, scripting surgical operation notes, which the accounts in chapter 5 demonstrate were written in surgical spaces, learners created WBA documents in spaces different from where their experiences happened. This further highlighted how the act of creating the document is different to the experience itself. Learners create these documents virtually on the ISCP website, via a digital interface. They were often not in clinical spaces as they completed them. This enabled learners to complete this document by themselves, outside of the working environment and often in their own time:
“…you can do it on the internet at home, but you get home tired and this is the last thing I want to do.” [Luke]
Populating the WBA proforma

Despite the WBA proforma being presented as a document that is completed by both the assessor and the learner, the learners in this study wrote the narrative comments and made the checkbox selections within their WBA documents *themselves*. Although their comments and selections were subsequently validated by their assessors, none of the learners in this study co-created these documents with their assessors, at the same time, in the workplace. Instead, learners reported that they completed the documents on their own, after which these learner-completed proformas were uploaded to their online learning portfolio and then validated by their assessor at some later date. Although there was opportunity for assessors to amend learner-entered comments, the learners in this study reported that changes were rarely made after submitting their documents to their assessor.

“As with most of these WBAs, you kind of pre-fill them in and you kind of just go through it and then send it to the consultant really.”

[Jatin]

Here Jatin seems to be allude that this practice is relatively common, but because of the limited literature examining WBA practice *in-situ*, such practices appear to be under-reported in the literature. Even where studies claim to evaluate real-world use of WBAs, their chosen methodologies have not allowed for deep understanding of in-situ practices around WBAs (Beamish et al. 2020). However, examining what learners selected, recorded and wrote, and why they chose to do so, furthered my understanding of how learners *resemiotized* their prior experiences.

Learners completed their proformas by interacting with a series of onscreen prompts. An example is shown in figure 7.1, which displays an anonymised version of Luke’s entire completed document. This particular proforma was completed on his mobile phone. The figure has been annotated into three sections, which demarcates the proforma into separate sections as they appear to the learner as they scroll down their screen.
Figure 7.1: Luke’s populated WBA proforma. A (dark blue) = a series of spaces for free text comments, B (red) = a ratings checklist, C (light blue) = global summary.
Free text comments

The first section of the proforma (figure 7.1, section A) is an area to provide free-text entries about the learner’s performance. The section is made up of an area for assessor (rater) feedback, an area for learner feedback and a section for learner reflections.

Rater feedback

Here, users are invited to respond, in a series of spaces, to the instruction ‘please use this space to record areas of strength and suggestions for development which were highlighted during discussion with the trainee.’ Re-iterating my earlier remark, all learners drafted this section of the proforma themselves. They used their own words in these spaces. So, although these comments appeared under a heading of Rater feedback, they represented what learners had written, rather than what the assessor had written.

Users (whoever completed this form - namely the learners) are invited to record feedback in this section under the following headings:

- General
- Strengths
- Development needs
- Recommended actions

Most learners used the space under rater comments, general as a scene-setting opportunity. Entries took the form of short summaries, either of the clinical activity or of the learner’s role in it:

“41-year-old left carpal tunnel decompression” [Vinay, proforma entry]
“Jatin carried out a neck dissection under my supervision” [Jatin, proforma entry]

Most learners opted to use factual statements here, rather subjective or evaluative comments. Omar, however, did expand more descriptively in this space:

“Managed to complete the VC – end to side (IJV) with guidance. Felt some pressure with procedure... Previously felt confident in this. Was too conscious of performing well and as a result this affected performance – somewhat shaky.” [Omar, proforma entry]

In the **rater comments, strengths** section, learners used shortened sentences and bullet points. As above, strikingly, learners engaged with this space differently and flexibly. The content of learner entries varied considerably. Learners presented between one and eleven separate strengths in this section, although three to four topics were the most typical. The content, perhaps reflective of the differences in the underlying clinical tasks, covered numerous themes such as:

- operative skill - “able to deal with complication - bleeding vessels.” [Saira, proforma entry]
- situational and/or clinical awareness - “Used the delay while waiting for missing tenotomy scissors to ensure scrub nurse knew which instruments and suture would be required,” [Luke, proforma entry]
- learner attitudes - “Jatin is a keen trainee,” [Jatin, proforma entry]
- patient safety - “performed safely.” [Saira, proforma entry]
- inter-professional communication - “clear communication with scrub team requesting correct instrumentation to be handed by the nurse,” [Sam, proforma entry]
- career progression - “He plans to take the exit exam soon,” [Jatin, proforma entry]
The final statement does not directly resemble a strength, but for some reason Jatin saw fit to include it here. I felt his statement “He plans to take the exit exam soon” seemed out of place. There did not seem to be an obvious space to house such comments on the proforma. Therefore, Jatin simply wrote it where-ever he could. This effort to fit in remarks that had no signposted place was another variation I found in how learners used this space.

A further variation in the use of this space is highlighted through a different example. Here, Saira revealed that her entry was directly copied from the checklist that appears later in the proforma. She felt that carrying out the checklist of actions was a strength and therefore including this list as free-text under strengths had value:

“Prepare patient for theatre including pre-operative consideration of comorbidities, communication with surgical scrub and anaesthetic team in team brief incl (sic) not using muscle relaxants, knowledge of anatomy, choice of instruments, dissection of planes and able to deal with complications – bleeding vessels, wound closure including haemostasis, dissection in planes, preservation of important structure, post-operative review and care of patient, delivery of gland with minimal damage.” [Saira, proforma entry]

“So I just list all the headings, especially if I think yeah I achieved that. So, I add those to the strengths section. Because it’s important to write.” [Saira]

These three different examples of how learners engaged with this particular space on their proformas (i.e. using different content, inserting comments that had no other place to be written, and copying words from other sections) demonstrate that different learners use this space for different purposes. What learners see fit to write in this space is variable, and importantly, how learners interpret the request to report on their strengths is different from learner to learner.
In the rater feedback, development needs comment box, learners typically documented one or two areas to develop. Many of these were focused on the learner continuing to do something they are already doing. Comments were often general;

“Further reading on the eponymous names for each flap design”
[Saira, proforma entry]

“Continue to build on knowledge base and technical skills” [Jatin, proforma entry]

The final space in the rater feedback is under the recommended actions subheading. All comments here referred to continuing or building on things that were occurring already. Comments were highly generalised.

“Gain experience with more difficult cases” [Sam, proforma entry]

“Attend more theatre cases” [Omar, proforma entry]

As they made entries in the boxes throughout the rater comments section, learners were attempting to:

i) directly recall what tacit or explicit feedback their assessor provided at the time (“What I remember him saying, during the procedure. Even if its minor, I put it in there,” [Jatin])

ii) paraphrase or summarise feedback that they received (“I try and think what did my supervisor tell me during that procedure and you know, what’s that to me. And then I summarise those,” [Saira])

iii) interpret what they felt their assessor would have fed back to them, based on what they recall of the clinical experience they
went through ("It’s my expectation of what he would say, but I could be wrong." [Omar])

In other words, they tried to either replicate the feedback they had received from their assessors at the time, write an entry based on what they have been told, or create statements that they felt were appropriate based on their own recollection of their experiences. Interestingly, learners used neutral language, bullet points or segmented sentences, often with absent or ambiguous referents, to reduce the emphasis that they had written the words in these sections themselves. Sometimes, learners even referred to themselves in the third person.


“Jatin carried out and end-to-side venous anastomosis under my supervision and guidance.” [Jatin, proforma entry]

This happened despite explicitly acknowledging that they, themselves, were writing these comments. In this way, learners wanted to make it look like their assessors had written these comments. This again represented an effort on the learner’s part to engage with a set of complex, but unsaid rules that seemed to govern what they should include in these documents and how what they included should be presented.

Trainee feedback

Learners are prompted to record their own comments about their experience in this section. The comments box was completed in a range of ways. One learner did not enter any information, but recorded all their comments in the later learner reflections section. One learner used the space to document a reflective passage, written in full prose addressing how they felt during the activity. Several learners repeated factual information they had entered in previous sections on the form. For example:
“need to perform more oesophagoscopies on challenging cases,”
having written in a previous section “gain experience with more
difficult cases.” [Sam, proforma entries]

Sometimes entries were simply lifted from previous sections – Vinay twice used the sentence

“71-year-old left little finger and ring finger dupytrons contracture
fasciectomy.”

Other entries into this section were generalised, for example:

“Good platform to learn and demonstrate safe microvascular skills”
[Jatin, proforma entry]

Trainee reflections

In the section trainee reflections are three separate prompts (what did I learn from
this experience, what did I do well, and what do I need to improve or change? How
will I achieve it?). A learner’s answers to these reflective questions can be hidden so
they were only visible to the learner, rather than any of faculty/administrative staff
who would routinely have access to the rest of the online portfolio. Some learners
chose not to enter information here. Other learners used this space to re-iterate
comments made earlier in their proforma. For example, Saira entered:

“pulling the gland out of the wound and rubbing at planes with
gauze to reveal areas it is stuck down,” having previously written
“apply tension to reveal planes… rubbing on tissue to reveal tissue
planes.”
Just as Sam, in chapter 6, had found that he was able to coherently transfer his “mapping” narrative into a written configuration, here, Saira similarly bought forward a specific learning narrative into her written document. For her, the repetition she demonstrated in the proforma, using different free text spaces to record things about the same narrative, provided for her another opportunity to re-inforce that narrative and make it explicit.

What was again striking was the ambiguous nature of many of the comments made by the learners. Their use of shortened sentences, bullet points or note forms made it difficult to ascertain the exact meanings of these reflections. Learners, in their interviews, were also uncertain or struggled to articulate their intended meanings at the time the proformas were populated:

“I think those two topics were probably the things that kind of stick in my mind.” [Vinay]

“I probably forgot about it to be honest.” [Luke]

It appears that many learners made use of vague phrases to demonstrate on their proforma that some learning had occurred, rather than provide the detail of exactly what they learnt. Learners felt this was not a space for precise and detailed notes to be made, and reasoned there was no need for them to be particularly specific in this section. This had implications for how learners might make use of entries in the future. For example, when I asked Luke how he would look back on one particular entry, he replied saying:

“If I was to look back on it, I wouldn’t use it as notes.” [Luke]

The statement suggests, firstly that it is unlikely that he will look back on this entry. Secondly, he has acknowledged that the entry would not be useful for his own personal study. In other words, learners populated these proformas, with particular content, using certain styles and in a particular manner, for purposes that were not
intentioned to be used as a future learning reference. Instead their purpose was highly context specific – namely the entries were specifically relevant to the WBA as part of the learner’s portfolio. They were not, it seemed, readily transferable to other learning situations. The account of their experience that they create is therefore particular for this particular setting – the WBA proforma. From the learner’s perspective, the link between their learning and the proforma is consequently limited. This means that the construction of the proforma has its own context and must be interpreted with that in mind. To illustrate, I use Vinay as an example:

“I learnt about the anatomy of the carpal tunnel and its proximity to Guyons canal.”

In order for Vinay to ‘use it as notes,’ it might be reasonable to assume that he might have wanted to detail what anatomical features of the carpal tunnel he learnt about, and perhaps the implications of its proximity to Guyon’s canal, rather than simply to describe that he had learnt it. However, no learner in this study documented specific details in such a way – it was not a way in which they engaged with and used this document.

Learners also linked the separate questions together differently within this section. Some learners developed a narrative through their sequence of answers. Here. I return to Omar’s learning narrative about microscopic suturing from the previous chapter:

“How to hold and suture the VC to IJV” (Trainee reflections – what did I learn)

“Good attempt. Most sutures were square and flat.” (Trainee reflections – what did I do well)

“Attend more cases to regain previous levels of competencies.” (Trainee reflections – what do I need to improve)
Here, Omar can be seen making sense of his experience by adding to his pre-existing narrative. The first comment relates to learnt specifics about where to place sutures when suturing two blood vessels together under a microscope. Using these specifics, he explains how he went on to complete this task well, placing most of the sutures “square and flat.” Finally, without directly acknowledging what needs to be improved, he stressed that he should practice more to improve. As outlined in the previous chapter, this narrative appears to have been kneaded into shape – it is different from what I saw happening in the clinical activity itself. The reasons for such differences are explored more fully in the next chapter.

Other learners used sequential comment boxes independently. Here for example, Saira wrote about different parts of the procedure in each of the different comment boxes:

“Pulling the gland out of the wound and rubbing at planes with gauze to reveal areas it is stuck down” (Trainee reflections – what did I learn)

“This was especially vascular gland with many vessels. I multiple times breached vessels causing bleeding but was able to arrest the bleeding each time with appropriate measures and minimal blood loss. I noted how my knowledge of anatomy guided my performing the procedure esp in this case with multiple LN which would otherwise cause me to get lost.” (Trainee reflections – what did I do well)

“Further reflective practice.” (Trainee reflections – what do I need to improve)

Saira chose four distinct points to include in her reflections, which were recorded in the separate spaces. The first documents a dissection technique, the second box
covers appropriate management of bleeding, followed by using anatomy knowledge, and the third box mentions reflective practice.

In the studies of narrative comments in workplace assessments conducted by Ginsburg (2015) and Sebok-Syer (2017), the WBA documents were reportedly completed by the assessor. Here, I was analysing a real-world practice where learners were generating the content within these proformas, based on what they recalled from their workplace experience. Yet, learners did not write indiscriminately and with free rein. Comments were measured as learner considered what to write, and how to write it. In doing so it appeared that learners still recognised and understood the “hidden code” that exists within these assessment tools (Ginsburg et al. 2017). Through their use of this hidden code, learners operated within a set of tacit rules, which allowed them to manufacture appropriately looking documents.
Checklist

Below the free-text spaces, as depicted on figure 7.1 (part B), is a checklist. Learners in this study did not particularly value it within the WBA proforma. Two learners in fact, when asked to forward on their completed assessments for analysis, initially did not see fit to send this section. They felt it lacked educational value so would not be relevant to this study. It instead represented a statement of factual events:

**Saira:**  
I didn’t find it useful so I didn’t send it to you…It’s a tick box exercise. I don’t think it prompts further reflection. Medical record keeping, professionalism, things like that. I only ticked management and clinical decision making. Nothing else was relevant.

**Myself:**  
And while you were ticking them, any thoughts on why you were ticking them?

**Saira:**  
I was thinking, did this happen during the event or not.

There was a sense of indifference towards this particular section, a feeling of redundancy. It lacked both the narrative freedom of the free-text sections and the finality of the global outcome score. The checklist is designed to assess domain specific outcomes, but learners suggested that the way it was organised did not correlate intuitively with how their experiences could be easily recorded:

“The technical details (in the checklist) go step by step. When you first saw the patient, whether you consented them. Prep and drape. In your mind, you just think about the specific things you learnt and some of them are quite broad. They would be about the whole operation, about lights, retraction. It doesn’t really go into one specific step, it’s about the whole thing. But the WBA (checklist) goes step by step by step, so it’s different.” [Jatin]
The rigidity of the checklist limited the freedom with which learners could present their experiences. There was also variation in how learners engaged with it. One learner selected satisfactory in all components. Other learners used a combination of all three tab selections (not seen, needs development or satisfactory). In Sebok-Syer’s study (2017) of the comments made in WBA proformas, tasks that were judged as “done, but needs attention,” prompted further task-focused written recommendations. In this study however, any free-text entries made after check-boxes were often non-specific and generalised, completed either in the third person or with ambiguous referents.

“Omar made a good effort here. He needs to perform more to regain his skill.” [Omar, proforma entry]

“Improve economy of movement and use of assistants. Stick to tissue planes.” [Jatin, proforma entry]

The themes of these comments, that were meant to explain the check-box selection, often echoed, or even replicated information that was recorded earlier in the proforma in the free-text feedback sections. Rarely were new ideas or suggestions about the clinical interaction made in this section.
Global ratings

The final section of the proforma is a global rating (figure 7.1, part C) which is selected from a drop-down menu of pre-existing options. Each option represents the overall level at which it is judged the learner performed during the clinical activity:

<table>
<thead>
<tr>
<th>Level 0</th>
<th>Insufficient evidence observed to support a summary judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1a</td>
<td>Able to assist with guidance (was not familiar with all steps of procedure)</td>
</tr>
<tr>
<td>Level 1b</td>
<td>Able to assist without guidance (knew all steps of procedure and anticipated next move)</td>
</tr>
<tr>
<td>Level 2a</td>
<td>Guidance required for most/all of the procedure (or part performed)</td>
</tr>
<tr>
<td>Level 2b</td>
<td>Guidance or intervention required for key steps only</td>
</tr>
<tr>
<td>Level 3a</td>
<td>Procedure performed with minimal guidance or intervention (needed occasional help)</td>
</tr>
<tr>
<td>Level 3b</td>
<td>Procedure performed competently without guidance or intervention but lacked confidence</td>
</tr>
<tr>
<td>Level 4a</td>
<td>Procedure performed confidently to a high standard without any guidance or intervention</td>
</tr>
<tr>
<td>Level 4b</td>
<td>As 4a and was able to anticipate, avoid and/or deal with common problems/complications</td>
</tr>
</tbody>
</table>

Figure 7.2: The options available to score a WBA overall performance

When selecting their options, the drop-down menu displays both the number of the level (1, 2b, 3b etc) and the description. A selection is compulsory and the proforma cannot be validated without providing one. However, again, learners are able to pre-select their global scores before submitting the document to their assessors for validation. While assessors had the freedom to change these scores, learners reported that their scores often remain unchanged. Learners had to make judgements about what would be appropriate for them to award themselves and so, in a way, learners used this section as a modified self-assessment. The rationale for these judgements is the subject of detailed discussion in the next chapter.
The proforma drives certain learning narratives

In the previous chapter, I noted that learners constructed personally meaningful learning narratives as they made sense of their lived clinical experiences. I reported three ways that learners handled those learning narratives. Firstly, they could be taken forward largely as they were experienced – the constructed narrative that the learner assembled was textualised in their WBA document seemingly unchanged. To illustrate, I showed how a learning narrative relating to “mapping,” was then congruently presented in Sam’s WBA document. Secondly, I showed that some learning narratives that were constructed by the learner (for example Sam’s recognition of the benefits of a simple surgical manoeuvre to help with taking a biopsy) were omitted as they came to populate their WBA proformas. In other words, how learners made sense of their clinical experiences in real-time could not be captured or was not deemed presentable in the written form required in the WBA proforma. Thirdly, learners might, for any number of reasons, knead or adapt a narrative to fit with how they wished to present themselves in their subsequent document. As an example, Omar re-fashioned the guidance he received to suture under the microscope into a statement whereby he reported his sutures were square and flat.

As learners reflected on how they populated their WBA proformas during my interviews with them, an additional way that they linked their clinical experience to their subsequent presentation of that experience emerged. To illustrate, I begin with a comment made by Jatin on his WBA document, in the trainee comments section:

“Tissue handling, use of assistance and planning for surgical efficiency.” [Jatin, proforma entry]

Here, Jatin noted three broad, but unspecific, themes. It is unclear whether these were aspects of the procedure that he performed well, or they are areas that required improvement. His use of language does not make their meaning explicit here. In later interviews, I explored his rationale behind the use of these statements:
“It’s usually the same three things … its economy of movement, how you are getting along, using your assistant. The same three or four things. I would be putting the same thing down in every WBA.”

[Jatin]

Jatin seemed to be suggesting that he had a collection of common points with which he populated WBA proformas, and furthermore, he usually wrote the “same three things.” Other learners have also said that they copied statements from other WBA documents, or from within the same document. In this way, as learners created their WBA documents, they seemed to draw from a pre-existing, mental list of suitable comments.

Unlike the examples in the previous chapter, where learners considered (either taken forward unchanged, omitted or kneaded) the learning narratives constructed during learning experiences, in this example, the WBA document seemed to structure, or perhaps even dictate, the learning narrative. Jatin had a script which he was going to apply in this document, a script which he then made his experience fit with:

“I might have actually mentioned it one of the other forms, and then when I think back, all the assessments merge into one and become very similar. The feedback that you generally get when getting trained is be faster, stick to planes, economy.” [Jatin]

and then,

“I just put something general down… you know, I think that throughout the procedure, what (he) was trying to do was think ahead, use my assistant and keep moving. All these things with regards to efficiency and economy of movement really.” [Jatin]
In this instance, Jatin’s written proforma dictated the narrative that he pieced together about his experience. He chose those three elements as valuable to pick out from his clinical experience, to focus upon and write about, because he always includes those points in his WBA documents.

My own observations and analysis of the procedure that Jatin describes in his WBA proforma was useful here, because it enabled me to get sense of the learning narratives that did develop for Jatin, *in-situ*. These three topics that he mentioned in his proforma (tissue handling, use of assistants and planning for surgical efficiency) certainly contributed to the *in-situ* discussions and interactional exchanges that took place during the 3-hour procedure that I observed and on which this document was based. However, they were never discussed categorically or acted as the centre point of a major intra-operative exchange between Jatin and his assessor. There were other topics, such as the use of tension or neck anatomy, which were far more prominent, which Jatin did not document in the proforma. In this way, I felt that he chose to include certain points over others and in this way, his perception of his experience was altered. For Jatin, “*all the assessments merge into one and become very similar*” as his learning narratives were driven by a motivation use his pre-scribed entries - to perhaps comply with bureaucracy with minimal effort - rather than a motivation to learn through reflection on the actual case.
The proforma as a reflective prompt

I saw the requirement for a learner to populate a WBA proforma as an enforced *reflective prompt* (Renner et al. 2016). It demands that a learner, willingly or unwillingly, and whenever they decide (or are required) to do so, pauses and thinks back to their participation in a clinical activity, even if only cursorily, and produce a written account of it:

> “You have to sit down and do it. It forces you to think. I understand you can fill it out superficially, but even if you do, you have to do some thinking about the case, some kind of reflection.” [Saira]

In doing so, as Von Glasersfeld (1991) describes, the learner is “stepping out of the stream of direct experience,” to isolate that experience from what came before and from what followed, to “look at it as though it were direct experience,” and subsequently to re-present it (p2). Looking at, interpreting and then re-presenting requires new meanings to be made - learning (Bezemer and Kress 2016). In the case of WBAs, the learner interacts with the proforma as a semiotic *prompt* (ibid p37). The learner’s engagement with the proforma prompts a re-interpretation of their clinical experience. In other words, this engagement is transformative (ibid p41). As they review the workplace happenings they took part in – what I have shown earlier to be unrefined, hazy-edged, nebulous ideas - become defined, explicit narratives that are bounded and fixed as a WBA.

This process by which hazy-edged, ill-defined ideas become explicit narratives, and ultimately are presented on formal institutional documents are akin to processes described by Waring (2009). In his analysis of how narratives were constructed and de-constructed about patient safety within a large healthcare organisation, he suggests that stories produced by healthcare workers about critical patient safety events were developed within diverse, unstructured and dynamic interactions within clinical practice. He then looked at how these emotion-filled, personal narratives were sequentially re-presented and re-produced as incident reports and risk-
assessments, where knowledge was transformed through check-boxes and pre-defined categorisations. This led ultimately to highly personalised stories being reified as de-contextualised, de-authored and re-constructed narratives (Waring 2009). As they are currently used, WBAs can be seen as an attempt to re-construct, de-contextualise and de-author a learner’s personal experiences.

Learners in this study demonstrated autonomy in determining how to translate their clinical experiences into WBAs. Earlier, I described the temporal relationship between the activity and the completion of the proforma. However, another important part of the reification process took place when learners became consciously aware of the potential for a particular experience to become a WBA.

In keeping with reports in the WBA literature, some learners might only decide retrospectively to document certain experiences as WBAs (Bindal et al. 2011, Barrett et al. 2017). Therefore, at the time of the clinical activity, learners and supervisors (I use the term supervisor here because they have not yet taken a role as assessor as no WBA has happened yet) will display very little overt, and probably limited, if any, covert awareness that they are participating in any kind of formal assessment activity at all. In these situations, in real-time, the potential for something to become a WBA would not have had any effect on how the clinical activity itself was carried out and experienced by the learner.

However, on other occasions, learners might realise before a clinical activity that it might have potential to become a WBA. Or, they might become aware of this potential whilst taking part in that activity. This awareness, whether before or during the activity, is likely to influence how that activity is experienced in real-time, as it happens, thus serving to refine that experience for the learner. In other words, the awareness of the whether an activity might become a WBA contributes to the learning milieu.
For example, some learners in this study had explicitly discussed with their supervisor beforehand, and identified that they will be “doing a form” about an upcoming activity. This was the case with Saira, Sam and Luke in this study. These discussions sometimes took place far in advance (for example during formal operative planning meetings), sometimes informally in theatre coffee rooms on the morning of the operating list, or even acknowledged just prior to the relevant clinical activity itself. Regardless, pre-determining the upcoming clinical event as a potential WBA led to an active identification and exploration of learning opportunities embedded within that particular exercise.

“but actually, assigning this as ‘we will do a PBA,’ you look for the learning opportunities in it and you find them. It’s artificial but it’s real. You find them, they are there. I don’t think we’ve made these up.” [Sam]

This extract also highlights a further tension in how WBAs have been previously understood. The surgical education community has positioned WBAs at the peak of Miller’s pyramid, conceptualising them as assessments of what a learner actually does in practice. However, here, Sam admits that the WBA created an artificial environment. Rather than solely reflecting clinical practice, the WBA document was reflecting WBA practice. Sam is doing a WBA rather than doing real practice. This does not mean that these WBA experiences are not useful or authentic – Sam directly comments that they were “real,” and that they haven’t “made these up.” What it suggests instead, as Sam intimated, is that learners were aware of the artificiality of the WBA and incorporated that awareness in their meaning-making processes.

Sometimes, the decision to turn a clinical experience into a WBA was not explicitly agreed upon by learners and assessors. Vinay reported it was commonplace for learners and their supervisors to discuss upcoming activities in advance and decide on how roles could be allocated or how learners could best make use of the available learning opportunities. Learners were therefore aware that certain
upcoming clinical activities might have potential to become WBAs, without any declaration of it being a WBA.

“We hadn’t discussed it much. On the day, really. These cases are yours, these are cases I probably need to do sort of thing. But there are other placements… where you have planning meetings where you discuss like the next month’s operations and cases are allocated then.” [Vinay]

Therefore, learners were often aware that an upcoming activity, or perhaps one that they were currently taking part in, might be valuable to record as a WBA even though they had not made their intentions explicit to their supervisor (not-as-yet assessor) prior to the event. By the nature of this study design, this was the case for many of the participants (learners and assessors), as by volunteering for the study, my presence, or intended presence, would probably prompt the learner to consider any episode of clinical care during the period I was there as an observer as a potential source of a WBA. That being said, not all the clinical activities that I observed ended up being recorded as WBAs by the learners. Indeed, the decisions not to take forward these experiences as WBAs also provide valuable insights into the learner’s meaning-making processes and contribute to later analyses.

The awareness that a certain clinical activity has the potential to become a WBA influences the learner’s experience of those activities. It alters their learning milieu, thereby potentially impacting that learner’s subsequent learning trajectory, changing the way that a learner might make sense of what they engage with, in real-time. I summarise the above considerations in figure 7.3
There was however a difference between a learner seeing their upcoming, current or past experience as having potential to become a WBA and the learner definitively committing to creating a WBA about it. Regardless of when decisions about whether an upcoming, current or previous experience of a clinical activity was valuable to record as a WBA, what became clear through my analysis was that learners had the ability and freedom to disregard or omit experiences that they didn’t want to include.
in their portfolio. Furthermore, these decisions were also important parts of their meaning-making processes.

The act of creating the WBA document was an important transition point, because it was only at this point that a learner fully committed to engaging with that particular clinical activity as a WBA. At this point, the previously unarticulated clinical experience becomes an explicit, fixed and written artefact. Experiences that were considered initially as having potential to be WBAs, but ultimately were not taken forward as such, would fall back into a learner’s catalogue of clinical experiences. However, for those that are taken forward, as the learner reviews what they felt happened during those activities, the learner’s experience of them is re-shaped, re-focused, re-arranged and ultimately defined through their WBA document. In other words, the document gave those experiences prominence, boundaries and an internal cohesion as a distinct event.
Key findings

There were a number of key findings that emerged through this analysis. One important finding was that it was the learners themselves who were creating this record, in their own words, as they tried to encapsulate what they have experienced. Their drafted records were then uploaded to their online portfolio to be signed off by their assessors (possibly with, but almost exclusively without, amendments). Different learners interpreted prompts and made use of spaces within the proforma in a variety of different ways. Furthermore, despite the restrictions of the proforma—the fixed spaces for narrative comments, the checklists and pre-set choice of global outcomes, learners had individual and varied ways of engaging with this document. Indeed, in the next chapters, I will explore how learners were not only aware of, but actively made use of the restrictions that were inherent within the document to aid the way they presented themselves and their learning.

Another finding that emerged through this analysis was that WBA documents are typically created in different times and spaces from the clinical experiences on which they are based. In this way, they naturally require the learner to re-visit a previous clinical experience. Subsequently, learners attempt to re-configure their prior experiences in a way suitable to populate these standardised proformas. My analysis in previous chapters showed that learners develop personally meaningful, and therefore highly individual, learning narratives during their clinical experiences. The analysis in this chapter adds to this by showing that a learner’s resemiotization of experience into some written re-configuration is also individual, based on each learner’s interpretation of their experiences and situations. In this way, the completing of the document is part of the learner’s personally meaningful learning narrative, rather than just an account of that narrative. The WBA therefore represents a complex and protracted meaning-making process.

The creation of the document and the experience it records are separated in time. Other workplace and non-workplace activities continue and fill this time. These activities might be directly, indirectly or un-related to a particular WBA, but
regardless they continue relentlessly. In this way, the learning milieu is continuously evolving around the learner, and as the learner continuously engages with it, they either develop on previously established narratives or generate new learning narratives. As narratives develop, the learner makes new meanings of their working world around them. When, at some point, they look back at a particular clinical experience and try to articulate it after some time, their understanding of those events will be different. In other words, a learner's ongoing engagement with their learning milieu shapes and influences how the learner refers back and makes sense of a particular WBA experience when they tried to articulate that experience. In this way, the relationship between a learner's clinical experience and the document about it is not a static one, but is different each time and for each learner.

The analysis in this chapter has provides further evidence for my assertion that learners construct personally meaningful learning narratives to make sense of their experiences. In chapter 6, I showed how learning narratives were taken forward from clinical experiences into textual formats, either unchanged, kneaded in some way, or omitted. In this chapter, I have shown that some learning narratives, rather than being projected forwards from clinical experiences, are driven, retrospectively, by the WBA document itself. In this way, the WBA document can be seen to influence how learners develop learning narratives about their previous clinical experiences. In other words, the proforma also shapes the experience, rather than the experience leading to the content, style and appearance of the final document.
Summary

In this chapter, I have explored the WBA proforma that learners populate as part of their WBA as they attempt to record some previous clinical experience. I have shown how learners re-configure their clinical experiences into a textual format – how a learner’s experience of their clinical activities is *resemiotized* as a written institutionally-driven WBA document.

Through this chapter, I have demonstrated the highly varied ways that learners engage with this WBA document, despite its appearance as a highly structured, prescriptive proforma. However, despite this variation, there appears to be a way of completing these documents, and learners demonstrate an awareness of *what* to include in them. In this way, learners are aware of, and appear to adhere to, a set of unwritten rules that govern how they present themselves within these WBA documents. Learners appear to be participating in a tacit ‘game’ in relation to the conduct of WBAs in the surgical workplace. In recognising, engaging with, and playing by the rules of this game, learners are able to successfully manipulate and massage the way they present their experiences through their WBA proformas. I explore these rules that govern how learner’s present themselves through the WBA process in the next chapter.
Introduction

In previous chapters, I have laid out how WBAs are heavily embedded in a learner’s working practice. I have argued that learners sculpt their own learning narratives to help them make sense of their workplace experiences. As learners engage with the WBA process, I found that they can record their clinical experiences and learning retrospectively by populating the WBA document, but also, by completing this document, they also develop new narratives, or re-shape/mould previously constructed narratives. In this chapter, I maintain my focus on the creation of the WBA document and its importance in shaping the meanings made by learners of their lived experiences. In particular I focus on my fourth research question to explore why WBA documents are completed in the way that they are.

The data I use in this chapter was generated mainly from the interviews that were carried out with the learners. Through my analysis of this data, it became apparent that the act of writing was different and separate from the clinical experiences that learners wrote about. In contrast to the clinical settings in which their clinical experiences were shaped, when completing the WBA proformas, learners were sat at their laptop, or had their mobile phone in hand. Furthermore, this was taking place at some point after the clinical activity that they were attempting to record using the proforma on the screen. In front of them, on the screen, was a blank, unpopulated WBA proforma. What would they write? How is the learner remembering, thinking back to, reflecting on, (re)constructing, and re-presenting their experience of the clinical activities to which this document should refer?
Ways of seeing

In what follows, I identify and describe what learners consider when they are, as Saira termed it, “doing a form.” By doing this, I rationalise a learner’s way of seeing their clinical experiences (Hill 2009), analysing how a learner’s personally constructed narratives are used, or not used, to populate their standardised proformas. I explain how a learner considers what they need and might gain from the process (for example learning or improving through reflection, building their identity/reputation or complying with bureaucratic demands), and what the costs and constraints of realising that potential are.

I have stated that the proforma acts as a semiotic prompt. Learners respond to it, re-telling their clinical experiences in a way that they deem appropriate. This re-telling represents their current interpretation of their prior experiences at the time of populating that proforma. In this way, learners re-visit, interpret and re-present their clinical experiences, but now in a very particular, and different, context to the one where those experiences were generated. The resulting product is not a replication of the clinical activity or a regurgitation of their experience of the clinical activity. Instead, it is a translation (Bezemer and Kress 2016), where learners create something with a new meaning, prompted by, rather than reflective of, that prior experience. In other words, in creating the WBA document, they are creating a sign-of-learning (Kress 2013). But this sign-of-learning is not one solely based on the activity to which it refers, but also demonstrates what sense they have made of the world around them at that particular moment in time. So, rather than assuming a direct link between what learners write on their documents and their prior experience, my focus here is on the act of documenting itself and the ways of seeing that it prompts, and is informed by.

I recognised patterns in learners’ ways of seeing, and I considered a number of different theoretical constructs to help me to describe these patterns. At first, I considered a lens metaphor, drawing on ideas around the reflective lenses outlined by Brookfield (2002) in his work in the field of critical reflection. He described a
framework to aid teachers to critically reflect on and improve their teaching practices. The four lenses he described were related to i) a teachers’ own autobiographical experience as a learner, ii) a teacher’s students, iii) the perceptions of their peers, and iv) the lens of educational literature. Brookfield proposed that teachers could discover and confront the assumptions that framed how they taught by re-examining their practices through these four lenses. In a later work, Brookfield (2009) described that critical reflection must have as its explicit focus, “uncovering, and challenging, the power dynamics that frame practice and uncovering and challenging those assumptions we embrace as being in our best interests when in fact they are working against us” (p298). Such a focus has led to calls for critical reflection to be used to help improve practice in medical education (Wittich et al. 2010).

One of the intended purposes of WBAs is to offer an opportunity for reflection. That being said, my analysis of populated proformas in the previous chapter and the comments made by learners in their interviews about their proforma entries, made it clear that learners in this study were not engaging with WBA proformas in the critically reflective way that Brookfield described. As such, borrowing Brookfield’s term was inappropriate. Furthermore, in a metaphorical sense, a lens brought to mind something pre-determined, of fixed shape, passively sitting between the experience and the experiencer, re-shaping that experience according to the type and shape of the lens. My data suggest that learners take a more active role in how they construct their re-presentations. Therefore, I ultimately rejected the lens, and Brookfield’s application of it, as a theoretical construct to describe the way a learner sees their WBA experiences.

I also considered Foucault’s notion of “gaze,” as he first described in The Birth of the Clinic (1973), to help me understand the different ways that learners might look at their experiences for the purpose of completing their WBA documents. According to Foucault, the medical gaze with which the medical practitioner perceives and understands the patient is fundamentally different from the way other individuals might perceive that person. Doctors, for example, have a different way of seeing certain things. Misselbrook (2013) wrote that the “gaze was an act of selecting what
(they) consider to be the relevant elements of the total data stream” (p312). At one level, it explains how doctors take notice of, modify or disregard the various information they are told or that they elicit through examinations and investigations of a patient to fit with their way of seeing as a medical professional.

This notion of gaze could partially account for the different ways that a learner notices, modifies, or disregards certain elements within their WBA experience. However, the Foucauldian gaze, as developed in The Birth of the Clinic and through his subsequent works, arises not solely from the individual, but it also relates to the anonymous bodies who gaze through that individual. As such, the term has inevitable connotations and associations with power systems, knowledge and governmentality. Foucault's gaze took me away from seeing these as highly individual, context-specific, unique events and towards looking at the governing systems that operate through the gaze. While these are no doubt important, they are tangential to the fundamental questions in my thesis, which centre around how an individual learns through a particular experience. As such, I was reluctant to incorporate this term into my analytic framework.

I saw learners acting purposefully and actively as they transcribed their clinical experiences into written documents. The metaphor I found most useful to articulate this was an artistic one. Artistic metaphors have previously been used in qualitative interpretivist research, where their framing of the familiar in unfamiliar light has been proposed as a way to “jolt readers into new perspectives” (Hatch and Yanow 2008, p36). To this end, the idea of an artist’s palette resonated with what I saw in my data.
Palettes

One definition the Oxford Dictionary gives for the word palette is “the range of colours as used by a particular artist or in a particular picture” (Oxford English Dictionary 2005). Artists use different palettes, by which I mean collections of colours, to give paintings particular appearances. The colour palette chosen therefore strongly influences the look of the final image, and thus the impression the artist is trying to convey. Just as an artist’s painting fixes their subject in a way that is dependent on how that artist uses that particular palette of colours, a learner creates a fixed version of their interpretation and presentation of the clinical happenings they were involved with through their WBA document.

I preferred this idea to that of a lens (for example Brookfield’s lenses) because it highlighted the active role played by learners in their dynamic re-imaging of their experiences. Lenses, on the other hand, intimate a sense of something fixed or static. I do acknowledge however, that I am using an artistic metaphor in a manner that breaks somewhat with social semiotic theory. In such theories, colours and paints tend to be regarded as resources for the expression of meaning – as modes (Kress and Van Leeuwen 2002). My use of the term palettes is more conceptual. I use the term as an organisational tool to group together the ways that learners are interacting with their blank WBA proforma, in their own real-life contexts, to make material their versions of their own experiences.

Learners make entries in their proformas as free-text comments or by selecting pre-existing options from a drop-down menu. In making these entries, learners are exhibiting themselves – they are in effect painting self-portraits. Through my data analysis, it appears they do this by asking themselves two questions:

**Question 1:** How can I complete this proforma to help me learn something?

**Question 2:** How can I complete this proforma to give it its appropriate appearance?
Here, it is important to recognise the separated nature of clinical experience and proforma. As shown in the last chapter, the blank proforma serves as a reflective prompt. The two questions above are answered as learners interact with the proforma, not their prior clinical experiences. In other words, these two questions that learners are asking themselves are not related to what they learnt from their clinical experience, although there is overlap. Instead, these two questions are situated in the “here-and-now” of creating the document (Martin and Ertzberger 2016). Therefore, in the context of populating their proformas, there is meaning-making potential (and with it scope to contribute to the earlier constructed, or newly constructed, learning narratives) in-that-moment of creating the WBA document.

Question 1, above, relates to the notion that the act of populating the proforma is useful for the learner’s own clinical development. This is different to previous research, where the assumption was that the ‘real’ learning has taken place already during the clinical activities themselves. That research implies that what has been learnt is then simply recorded on a WBA proforma. Data in this study suggest learners’ entries into the proforma are more nuanced. Learners used the WBA document, albeit only partially and without the rigour of a critically reflective approach, to;

i) refine their thoughts,
ii) formalise the informal and
iii) perform self-critique.

I conceptualised these ideas using the palette metaphor, as complementary paints on an artist’s palette. This palette of colours is used to create and shade the experiences that the learner is giving a written account of. Because learners used these ideas to create a document that has helped them learn something (whatever that something might be), I have called this collection of paints the educative palette.

In answering Question 2, learners realise that it is important for their completed proformas to look a certain way. Therefore, they populate their proforma to
i) meet administrative demands,
ii) avoid the ramifications of not completing the document and
iii) manufacture a typical learning experience.

Again, these ideas serve as different, but complementary paints that a learner uses to colour their experiences to give them the appropriate *bureaucratic* appearance. They exist on a *bureaucratic* palette.

Using these two different palettes, learners make their experiences material - shaping them and giving them form as they are reified in the WBA document. However, unlike the blank canvas of an artist, the WBA proforma does have pre-existing constraints, such as the questions to structure the feedback and the various checklists, as described in the earlier chapter. Learners are therefore required to work within, or around, these constraints to give their document its final appearance.

How learners use the palettes is flexible. They are not limited to one specific colour. Rather, colours can be used individually or mixed together, and in various proportions. Or they can be applied with various degrees of heaviness, styles and brush strokes. Furthermore, the palettes are different, and by using different palettes, learners are attending to the two different questions as they populate their proformas. However, learners don’t exclusively use one palette or another, but can use both, and not necessarily equally, to create the final appearance of their proforma – thus asking themselves both questions at once. In answering both questions, learners combine ideas, drawing from different palettes and the colours within them to actively portray themselves, constructing new, unique, highly unstandardized representations of their understanding of their worlds at the time the proforma is completed, despite its relative constraints. These ultimately impact the appearance of the final document. In the following section, I use my data to illustrate the use of these palettes in more detail, drawing attention to the complex, subjective and highly personalised nature of WBA documentation.
The educative palette

In this section, I describe the educative palette that learners use to help them learn through the act of creating the WBA document. The ideas and themes that served as the paints on this palette were;

i) refining thoughts,
ii) formalising the informal and
iii) performing self-critique.

Refining thoughts

Learners reported little intention to ever re-read the entries they made on their proformas. Neither had they looked back at previous ones they had completed before:

“I’ve done about 500 now and I don’t think I’ve gone back through my (WBAs) to see what comments I made two years ago or anything.” [Vinay]

They had their differing reasons for this. Sometimes, they related it to time pressures caused by busy work schedules:

“I don’t really have time to look through my old forms or anything.”
[Vinay]

Some felt that the digital interface of the online portfolio was not conducive to re-visiting old proformas. Others thought these WBA documents were simply not an effective way to capture their vivid, rich experiences:
“If you go back to my (early) ones, the first few, they are literally so long, with references and papers. But it’s rubbish. You can go back and look at it but the layout is rubbish. If you put bullet points, the formatting just goes, so it looks like continuous text. Utterly useless. So it’s not put in a way that’s going to make it useful. I don’t go back and look at it.” [Sam]

“I think, when I came back to do (the procedure) again, my memory would be quite vivid of that experience, rather than actually going to look at the form.” [Luke]

Because learners realised they would not be looking back on their completed proformas, they were keen not to “waste their efforts” [Saira]. By this, they meant they didn’t spend time and energy populating these documents in a way that would make them re-readable in the future.

“In fact, one of my colleagues told me to put it down as private and in fact, no one can even see it so you don’t have to fill it out! No one looks at it anyway. It’s a waste of attention.” [Jatin]

This idea that proformas were not referred to again by learners does not, however, make them meaningless, because:

**Myself:** So would you ever look back at these reflections?

**Saira:** No… but the act of recording it is useful. The act of writing.

Here, Saira felt that the actual creation of the WBA document was important, rather than creating a record of an experience that she might find useful to look back on at a later date. In this way, it appeared that it was the process of writing/recording that was of benefit to her. Ivanic (1997) wrote “each word we write represents an
encounter, possibly a struggle between our multiple past experience and the demands of a new context. Writing is not some neutral activity” (p181). Such a definition emphasises the active processes that learners go through in populating their WBA proformas. These were not passive replications of clinical happenings, they were active reconstructions, generated in a different context – resemiotizations (Iedema 2003). Even though, as I showed earlier, what learners wrote was often limited to two or three short statements, they were obliged to re-visit their experiences and were prompted “to have a think about the procedure again.” [Luke]

In another example, Vinay explained that writing helped to “synthesize”, “work out” and “refine” his thoughts. As such, he explained, he wrote differently when he encountered something new or difficult.

“If it’s a new procedure, I’d be very specific about the things I’ve gained from it or not. Or if something went particularly well or badly. Most of the ones that went badly, I write a bit more.” [Vinay]

There were contrasting views though. Here, another learner felt differently about the process of writing about his experiences:

“For me, I just try to remember (the learning points). I don’t generally write things down... So I just generally see what people are saying and try and remember it.” [Omar]

Unlike Vinay, Omar appeared not to find writing about his working practice useful for learning. Instead, he articulated his own strategy – listening to what people say and trying to remember it. That these are not written down does not mean that the clinical activity was not an educationally useful experience. My argument is instead that, because all of such a lived experience can’t be represented in this written way, learners actively selected and deselected what to write (or even what to try and remember). As shown in earlier chapters, some of these selections (and omissions) would be informed through the narratives that emerged during the clinical activity.
itself and are then shaped, kneaded and moulded into some presentable form. Others are stimulated by what is recordable on the form, while others are manufactured or drawn out of a learner’s memory of that experience at the time of writing the document.

Extracts from my interview with Saira further illustrate this. Here, when we spoke about why she chose to include certain information in her WBA document, she spoke at length about documenting the clinical and technical knowledge that she contributed to the discussion she was part of. Referring to an entry that she made in her WBA document that read:

“Able to discuss the local anatomy and the options for reconstruction”

she explained:

“So that’s the stuff I already knew and bought to the discussion, even though I hadn’t learnt every type of lip reconstruction, all the eponymous designs, I felt that I was able to have that conversation with (my supervisor), based on my previous knowledge.” [Saira]

Similarly, what Saira felt she learnt from that discussion with her supervisor was also technical in nature.

“What I remember is that I need to go learn more about different kind of lip reconstructions… just things like, that I kind of already knew before.” [Saira]

Importantly, from these extracts, what she thought she brought to the discussion, what she recorded about the discussion and what she learnt from the discussion followed the same pattern. They all resided within the same codified clinico-technical domain – and importantly were expected and acceptable for a learner to be learning.
Also in that interview, Saira reported that the WBA discussion with her assessor had raised a number of other, perhaps less typical, but powerful learning points such as performing procedures on elderly patients, understanding the three-dimensional impacts of the movement of tissues from one area of the face to another and the practical use of photography in planning operations. Interestingly, despite her acknowledgement that these were key learning points for her, instead of trying to document them she focused her written comments on the more conventional topic of lip reconstructions. When I asked why this was the case, she replied:

“but it’s really difficult to write about those things. To articulate and write.” [Saira]

Vinay communicated similar challenges in trying to articulate ideas that were difficult to write in a slightly different way. He explained how he was aware that he made entries his WBA proforma knowing that it will be read by his assessor (who also supervised him on a regular basis). As such, he found it easier to write certain things (such as those things that appear on a syllabus), compared to others:

“Yeah. But those things are difficult to write down. I guess also you are kind of writing to the syllabus… It’s hard to explain about how you feel about certain things. Also, I know the person I am sending the form to for sign off is that person that I may have the feelings about.” [Vinay]

Both Saira and Vinay ended up writing what was both possible and acceptable to write about. In essence, they kept to script - a script that was centred around a codified, accepted knowledge base. Saira, for example, phrased what she brought to the discussion, what was discussed and what she took away, in terms of a codified discourse centred around “lip reconstruction.” This was captured from an angle that she was comfortable presenting, because it was difficult to write about things that were not on that accepted script. In this way, what learners report they learn, is, as Saira herself stated, what they “kind of already knew before.”
As they adhere to a script, learners make explicit those ideas that are effable and acceptable. In this study, they were made real and substantive as they were materially realised as permanent and fixed words on the proforma. So, while learners reported the act of writing refined their thoughts, what they were refining was simply that which was presentable. Other “unacceptable,” but potentially powerful, learning points may have arisen as narratives through everyday working practices, but these remained unrefined and unrealised, or had to be moulded into alternative versions that are acceptable.
Much of the learning that takes place in the workplace is informal (Cheetham and Chivers 2001, Eraut 2011). This lack of formality often takes the form of everyday social communication that may not even be recognised as learning at the time (Bezemer and Kress 2016). Learners in this study used the WBA document to make explicit, and therefore preserve, the passing conversational tips, guidance and contextual instruction that had become personally meaningful to them during their engagement with their clinical activities. Learners drew together their thoughts about what they experienced (for example what had been said to them, what was said by them, and what was done for or by them) to populate WBA proformas. This is illustrated in quotes from two learners as they explained how they received feedback both during and after their observed clinical procedures in this study:

“Even if the person doesn’t say a single word to you, there’s still always feedback, you know in gestures and lots of ways. But obviously they mostly talk to you…. There’s a little bit of chat before, there’s talking during, there’s talking afterwards and it seems all informal, but actually I’m listening and taking in what they say.”[Saira]

“So, basically, we were in the lift and had discussions about a few patients, discussions about this case and stuff and he just reiterated the things he said (in theatre). You will always have informal discussion. Not necessarily formal sit-downs.”[Jatin]

Through formalising the informal, learners were able to “cement” their learning, a term used by Luke during his interviews. The various stages in the process of carrying out the WBA – the activity, the discussion around it, writing it up, submitting it, provided each learner with repeated, but different, perspectives on their own prior experiences – opportunities for the learner to re-view and re-interpret those
experiences. This repetition helped learners to chisel and shape learning narratives in their own minds:

“It’s reinforcing it to a point and because of the repetition, it becomes routine and habit. That’s the value, you reinforce things.” [Sam]

“In my mind, more of it is from the debrief after, the condensed, tight chat. What did you do well, what do you think about next time…” [Luke]

These repeated, but differently weighted perspectives onto a developing learning narrative not only affected learners within an individual WBA, but worked to aid learning longitudinally across sequential learning experiences. Here, pausing and reflecting on an experience as a WBA seemed to allow some learners to mentally tag those experiences – perhaps because learners had done the work to bring together what would have been otherwise informal and nebulous concepts into a congruent narrative. This made them more accessible should the learner have to recall/utilise that learning sometime in the future.

“Often, I find when I do the procedure again, perhaps in a different scenario, maybe by myself or with the boss the next week, those points would come back into your mind again a bit more kind of vividly.” [Vinay]
Self-critique

WBA proformas contained allocated spaces for learners to enter their own reflections on their experiences. As shown in the previous chapter, learners engaged variably with that specific section of the proforma. However, through my analysis, it became apparent that the entire WBA document represented each learner’s own reflections and interpretations of their recollections of events, real-time discussions and post-event feedback. Part of that interpretation involved making judgements about their own performance. Interestingly, learners often adopted WBA language to describe and critique their own performances. In other words, even in spoken conversations during the interviews, learners described their performances in terms of WBA outcomes:

“Yeah, so 4 is appropriate for certification and 3 is somewhere in the middle. I wouldn’t put myself down as a 4 for this. 4 is something that you feel like you could do that tomorrow and not have any problems with it, whereas (this procedure), I don’t think I would be able to do that tomorrow.” [Vinay]

On other occasions, learner’s self-critique was conflicted and nuanced, as shown by Omar:

“So I think regardless of what I’ve put in the WBA, I know myself that that was a disappointing experience for me. I know. I can identify pretty confidently why it didn’t go so great for me. And that’s for me what I need to gain from it to know for the next time.” [Omar]

Here the learner saw differently what he “put in the WBA,” and what he needed “to gain from it to know for the next time.” In chapter 6, I presented one emerging learning narrative for Omar, which centred around technical difficulties encountered as he sutured two vessels together under the microscope. The detailed, multimodal analysis of the intra-operative happenings, along with Omar’s own recollections of
his experience during the interviews, made it clear that he was disappointed with the experience. Yet, what he “put in the WBA” was:

“Good attempt. Most sutures were square and flat.”

In other words, the technical learning narrative I articulated in chapter 6 was kneaded by Omar into a different kind of narrative. The original narrative might represent something important that he “knows for next time,” but he did not include that on the WBA document. These things might have included how much guidance was received, how he struggled to find a comfortable position or how he dealt with a slight tremor. But as he said, it didn’t matter whether he had actually written it, because he could “identify why it didn’t go so great” and what he was going “to do differently.” While both the written reflections in his WBA proforma, and his own thoughts, were stimulated through the reflective prompt offered by the WBA, the tension between what he “knows for next time” and what he felt he was allowed to write needed to be negotiated and accommodated. This is because only certain kinds of self-critique – those that adhere to a set of implicit rules - are deemed appropriate to “put in the WBA.” This acknowledgement of WBA rules influences how learners work to give their proforma particular outward appearances. They suggest learners are also aware of the bureaucratic needs that the WBA serves, in addition to the pedagogic ones. I discuss these bureaucratic influences in the next section.
The bureaucratic palette

At the time learners populate their document, they also give consideration to how they can complete it to give it an appropriate appearance. This question relates to the perceived expectations of those who might read the completed WBA document and in answering it, learners accept the proforma as a bureaucratic tool.

Although the term bureaucracy usually has negative connotations (Blinman 2017), bureaucratically organised institutions aim to operate fairly and to “function under impersonal rules and procedures” (Cocco 2012). In larger organisations (such as surgical training programmes), elaborate systems of rules and policies, lay out objectively determinable objectives and measures. To function they rely on extensive documentation as a means to demonstrate that work is done (and done appropriately). This documentation also provides evidence that justifiable and defensible decisions and judgements are made (Gunderman and Mullins 2012). This often leads to impersonalised, verifiable targets (whatever form those targets take). Such targets are often deemed onerous, but nevertheless taken seriously by those who monitor and are monitored through such systems, because they are aware of the consequences of not meeting them. An excessive bureaucratic focus has been reported as one of the drawbacks of WBAs (Bindal et al. 2011). Learners in this study were acutely aware that these assessments were part of a large institutional system:

“I think that the portfolio is not my private learning experience.”

[Saira]

The explicit rules and regulations that are set out for learners to follow by their training programmes influence how learners interact with their blank WBA proformas. Learners have to operate, and importantly be seen to operate, within these rules, so it was unsurprising that they were alert to the rules and the need to operate within them. To this end, learners painted their experiences using a bureaucratic palette, populating their proforma to meet administrative demands, avoid the ramifications of
not competing the document and trying to manufacture typical, acceptable learning experiences. I expand upon each of these three ideas in the following section.
Administrative details

Learners foregrounded certain administrative details of their WBAs – the total numbers of assessments, the numbers of each type of assessment and achieving scores that are expected of them. The key driver for achieving these was to meet the yearly targets as assessed at their ARCPs. Prior to an ARCP, learners made sure they were in line to meet their target, while the pressure a learner felt to complete them diminished after a (successfully) completed appraisal:

“…there’s lots of influences in terms of why you have to do them. It’s an ARCP requirement.” [Vinay]

“the fact the ARCPs is done and the pressure if off in terms of doing them, otherwise you are a bit more on it.” [Jatin]

Achieving the required numbers appeared to be critical for learners, such that it impacted how learners decided upon what to upload and not upload to their portfolio as a WBA:

**Myself:** Might you not have recorded that as a WBA?

**Omar:** Probably not… well actually I would have recorded it for the numbers

Learners realised that WBAs were a mechanism through which their practice was being monitored. They carefully controlled the appearance of their educational portfolios. This is exemplified by two comments made by one learner as he discussed how he documented his clinical experiences.

“Yeah, I think it is just about numbers really. If you’ve got 40 or 80 to get, you don’t want too many of one type or they’ll say why haven’t you done this or that.” [Jatin]
“I try to keep an overview of what are the ones I haven’t done, from what I remember previously. So, if I haven’t CBD for a while, I would have put it down as a CBD.” [Jatin]

In these examples, the emphasis was on completing the proforma rather than the clinical experience itself. The WBA became the task that learners simply “have to do” [Vinay]. The achievement was in completing the form, rather than the learning that stimulated it:

“I don’t think about the WBAs. The WBAs are purely, purely, an administrative exercise.” [Sam]

As explained earlier, learners did not create these documents with any intention to re-read them. They served as a documentary exercise, a simple record that something has been performed to a certain level. Drawing from principles put forward by Latour and Woolgar in their exploration of how experiments become scientific reports (1979), learners in this study attempt to de-couple their personal experiences from the form-filling aspects of the WBA. As part of the bureaucratic process, they bracket off their lived experiences, striving to meet what they see as an institutional expectation for impersonal, formalised and administratively focused outcomes. In this way, learners strive to control the outward appearance of the proforma - how it looks to any external reader who is removed from the actuality of the unstructured, messiness of the real-world experience of the learner. The learners create a bureaucratic veneer, one which a viewer can’t see through, which overlies and covers a different set of messier reflections that lay under it.
Ramifications

Learners still recognised the need to take these administrative exercises seriously. They were aware of potentially significant ramifications if they were not completed. One learner spoke of an occasion where he did not meet the bureaucratic requirements:

“They are tick box exercises. If we don’t get them done. Like I have seen just now, and I am going to have to go back now and sort this out.” [Sam]

Aside from making their own educational journeys smoother by adhering to institutional rules and guidance, framing experiences for this purpose also allowed learners to protect themselves from potential future harmful situations. A number of learners were aware that written comments may be used in future medicolegal situations. This influenced the content of their documentation. In this extract, Sam outlines the careful selections he makes and the language he uses when he populates a WBA proforma:

“I often think medicolegally what should I write. I want something that has quite explicitly stated that this person was confident and competent. Those kinds of words. I need to be quite mindful in recommended actions and development needs, not to write something, that showcases your ignorance. To be like development needs, avoid, you know, harming patients or something. Something that later in the day, they turn around and they say, well hang on a minute, you did this procedure and we went back to your CBD and it says something bad. (The WBA) puts me quite early into that way of thinking. For example, I wouldn’t want to put something like, ensure you don’t miss the obvious cancer. Things that are too critical almost.” [Sam]
Manufacturing “typical” experiences

To make these documents look as they are expected to look, learners keep to an acceptable script. In doing so, they shape and mould the experiences they portray in their WBA documents. For example, as shown in chapter 5, on the morning of my observation, Saira engaged with a number of micro-events that were related to a single patient. One of these was a WBA discussion about an upcoming procedure. Immediately after that discussion, she assisted her supervisor during the procedure itself. About the discussion that day and the proforma she completed that related to it, she said:

“I think it is good to have some time between (the discussion and the completing the form), to mull over my thoughts, see the patient a few days afterwards and actually you end up having further chats about the case and see what else comes up.” [Saira]

She then went on to describe what happened during the procedure and in the few days afterwards:

“So, I guess when it came to performing the procedure, I knew how to do it… the basic principles. I didn’t know about the fine details. Seeing it in action is useful. And then, I saw the patient in hospital for a few days afterwards. It really interesting to see how the patient was eating and drinking, the next day, despite all of this. And we put some bandages on to reduce like sagging and swelling and that worked really well.” [Saira]

She also explained how she interacted with her assessor during that period:

“We went everyday together to see that patient on the ward. We’d be like ‘oh he’s doing really well, eating and drinking.’ We didn’t have another sit-down chat, but I would go and see him and let her
know. I would say that to my supervisor, ‘he’s doing really well’ and she would say ‘yeah, he’s doing fantastic,’ and that reinforces my thoughts about that particular procedure.” [Saira]

To summarise, Saira discussed this patient and the procedure at length with her assessor on the morning, a discussion which then became a WBA. She then assisted in the procedure itself, where she saw in-action what was considered earlier that day – i.e. the application of the surgical principles that she had just spoken about. She saw directly the positive consequences of the actions taken during the procedure, as she saw the patient for a few days afterwards on the ward. This positivity that was echoed and reinforced by her assessor through their own conversations about the patient’s post-operative recovery. Saira then created her WBA document three weeks later. These experiences are mapped on the timeline in figure 8.1:

![Timeline](image)

Figure 8.1: Timeline depicting Saira’s experiences as described in her interview

These ongoing reflections thus extended the learning narrative that Saira was constructing to make sense of what she was experiencing in the workplace. This process was echoed by Jatin:

“While you are doing (the procedure) you are reflecting then after you are reflecting in the WBA and on the way home and for the
“next few days and even when you do the same operation again, you know.” [Jatin]

But, importantly, the powerful learning narratives that Saira highlighted during the interview were not included by her in the final WBA document. Instead, as shown earlier, the technical, easy-to-write-about narrative around the types of lip reconstruction featured prominently. The reason, she reported, (and returning to an earlier quote) was that:

“It didn’t occur to me to record that stuff. I guess, I thought of the assessment as that conversation. I didn’t think about the whole patient care.” [Saira]

It seems that Saira, through her experiences in relation to this patient, built a meaningful narrative that related those experiences together into a coherent story – a story which she articulated during the interview. However, her experience was presented in a very different way on her WBA document, where she applied the bureaucratic palette to make it look the way she thought it should look. She fragmented her learning narrative, bypassing some of those meaningful experiences, as she presented just the assessment – “that conversation” (Fig 8.2). Furthermore, as seen earlier in this chapter, and through earlier data, even within “that conversation,” only certain acceptable narratives made it onto the final WBA document.

Figure 8.2: Timeline depicting the bypassing of Saira’s experiences to create a typical WBA document
Key Findings

The major finding that emerged through this chapter is the notion that learners make meaning at the moment they create their WBA documents. Furthermore, they use two different palettes to give the WBA documents their final appearances. Rather than documenting what they learnt from a clinical experience, learners ask themselves what they could learn from the act of completing the document. To answer this, learners used an *educative* palette to populate their proforma. This enabled them to i) refine their understanding, ii) formalise their informal workplace-based conversations/actions they had engaged with during their clinical activities, and iii) perform a self-critique. Learners also considered what the appearance of their WBA document should be, colouring the proforma using a *bureaucratic* palette. Here they take into consideration i) administrative targets, ii) the ramifications of not completing the proformas, and iii) the need to manufacture typical learning experiences. Learners combine these palettes to give their WBA documents their final appearances.
Summary

Building on my empirical findings in previous chapters, through this chapter I have shown the creation of the WBA document is a meaning-making process in its own right. The completed WBA document represents a new understanding for the learner, one that is different from, but builds on, the clinical experience to which the document refers. These documents are created in different spaces, times and contexts from the activities which have informed them. They are not reflections or regurgitations of that experience and as such are not inter-changeable with those experiences. Instead, learners actively construct these documents as self-presentations – selecting, omitting, moulding or paraphrasing various different narratives that have themselves been constructed through the learner’s interaction with their dynamic and evolving workplace milieu.

Learners present versions of themselves through these documents. They paint self-portraits using different palettes, which shape and colour the final appearance of their WBA document. The work in this chapter suggests that, in using these palettes to paint their self-portraits, these documents are not inert, objective representations of learner performance in the workplace. Instead, I have re-conceptualised them as highly individual self-presentations, that represent learners’ understanding of their working world around them at the time they are created. However, there are tensions and conflicts that learners need to overcome as they use these palettes to create their final, fixed self-presentations. In my final empirical chapter, I take a step back to explore how learners, through using these two palettes to create their documents, are recognising and enacting implicit rules with a WBA game.
Chapter 9
The WBA playbook

Introduction

In this thesis, I have argued against the positivist assumption made in previous WBA research which holds that WBA documents might accurately indicate and record a learner’s actual performance level during a given clinical activity. Instead, I have proposed that these documents serve as the learner’s own active interpretation of their own experience, rather than a reflected image of some prior performance. I have argued that the document itself captures new meanings, made by the learner, of their working world at the particular time it is created. In this way, these documents are context-specific.

The WBA document leads learners to re-image themselves. I have suggested that learners create self-portraits using two different palettes (educative and bureaucratic) which help them shape the final appearance of their WBA documents. Learners i) attempt to ask themselves how best to learn from filling out their proforma, and ii) make a judgement about what their proforma should look like for its reader. In this way, the process of completing the proforma becomes a performance – a social space for the learner to engage with their audiences. There is a social performance residing within the WBA document.

In this chapter, I build on the work in the previous chapters to articulate a set of rules that govern this social performance that learners put on through their WBA document. I examine how learners come to present themselves simultaneously to various audiences. By interrogating these performances in detail, I attempt to script the playbook which governs the final appearance of a learner’s WBA document and thus answer my final research question by articulating what meanings learners are making as they follow through with the WBA process.
WBA audiences

I have previously intimated that learners make use of certain freedoms and flexibilities that the WBA affords to them, to present themselves in particular ways through their WBA documents. For example, learners in this study had autonomy to select the learning narratives that appeared on their proformas. Because they themselves initially drafted the contents of their proformas, learners had the opportunity to set the tone of the document. They could both control and shape how their learning narratives were presented. In this way, the WBA document captures a learner’s interpretation of the world around them and their understanding, at the time at which that document is created. The WBA document is an indication of the meanings made by the learner – or is, as Bezemer and Kress (2016) put it, a sign-of-learning. Importantly, I have argued that these meanings might be partly inspired by, but are not directly correlated with the in-situ, real-world happenings that the WBA purports to measure.

Learners produce this sign-of-learning with particular audiences in mind. An audience can have an important, influencing impact on the performance of an individual during a social interaction (Blumstein 1973). The learners in this study had to simultaneously portray a version of themselves through the construction of their WBA documents to several different audiences. These included their WBA assessors, their institutional training bodies and unknown others.

The most apparent and obvious audience for the learner is their own assessor. Their awareness that their assessor is an audience appears to influence the performance given by a learner. This is evidenced in this extract from one learner, who discussed the level of attention he gave to completing his WBA document:

“(when) you know the boss will check it at the end, you pay a bit more attention and you think about what you are doing a bit more.”

[Sam]
Because assessors participate in the clinical activity with the learner, learners and assessors co-construct the activity, mutually shaping their experience of it in real-time. In this way, the assessor holds a privileged position – they participate in the activity in focus and have access to the learner’s account of that activity as a written document. In contrast, other team members who participate in the clinical activity (for example other surgical specialists, learners or healthcare professionals) never see the learners WBA document and as such are not audiences for the proforma performance. Similarly, other audiences (such as the training programme, who would carry out a learner’s ARCP appraisal) see only the WBA document itself, but have not shared in the experience that led to the generation of that document.

However, while learner-assessor workplace activity is co-produced, the proformas are not. As shown in previous chapters, learners are generally left, with varying degrees of guidance, to populate the proformas themselves. Once drafted by the learner, they are then forwarded to their assessor to validate digitally at some later time. Through the WBA document, learners give a performance intended for their assessor, while recognising that the assessor had also observed the performance that has inspired it.

Another known and predictable audience before whom learners perform is the wider institutional body, for example the learner’s training programme or deanery. Such bodies are responsible for key, summative progress decisions. This audience, unlike the assessor, is not present during the clinical activity, but interacts solely with the performance the learner gives through the WBA document itself. Their interaction with the document occurs remotely and non-contemporaneously, often in the form of yearly ARCP appraisals. Again, the version of self that learners presented in this study was affected by their awareness of what this audience might expect. For example, here Jatin remarked how he was influenced to choose one type of assessment over another:

“If you’ve got 40 or 80 to get, you don’t want too many of one type or they’ll say why haven’t you done this or that.” [Jatin]
A third audience consists of those who would not routinely view WBA documents, but who learners recognised might access them in certain situations in the future. For example, learners were concerned that information they wrote within their documents might be used in future medicolegal situations. This audience, unlike the two above, is not fixed or pre-determined but only potential. It is unknown to the learner, and in their imagining of it, learners in this study attempted to predict how it might appreciate their presented self:

“I don’t what things to bite me in the future, so I want to state the good things. Carried out competently. And so, when someone looks at it that is what they see.” [Sam]

Goffman (1959) argued that during social performances, individuals seek to stage manage their self-presentations to allow their audiences to buy into their act. A number of studies have investigated how individuals minimise the tensions that arise when performances intended for one particular audience are viewed by audiences for whom that particular rendition was not intended (Fleming and Darley 1991, Cameron et al. 2019). As a brief example which I expand on later, learners in this study were worried about over-scoring themselves. While this might look impressive on their portfolio, they feared having their scores reduced by their assessor at the time they validated their proforma. It is these conflicts that learners firstly acknowledged and then resolved as they constructed their WBA documents, as I will discuss in more detail later in the chapter.
The principles

In populating a WBA proforma, learners express a version of themselves that I believe offers insight into their understanding of their world at the time this is done. A WBA document captures learner understandings – the language and selections used by the learner to re-present their experience – which, once submitted, is permanent and unalterable. But learners are trying to perform ‘in front of’ different audiences at the same time. This includes their own WBA assessor (who is also their clinical supervisor), with whom they have a functional, day-to-day relationship and who will have their own understandings and recollections of the messy, highly contextual, clinical experiences that learners have written about. It also includes faceless virtual audiences, with considerable summative power, who have not shared that experience, and to whom learners wish to present a different, slicker, polished act.

To negotiate this conflict, namely to perform effectively before several audiences at once, requires a completed proforma that convinces all the different audiences. To achieve this, I propose that learners adhere to a WBA playbook, which I will now set out.

In order to accommodate for the expectations of different audiences, learners apply a set of tacit principles. These principles are unwritten, unofficial and emerged through detailed analysis of my dataset. By articulating them, I am proposing that learners enter into a WBA game where the messy, real-world narratives that have been constructed through their experiences, are understood, manoeuvred and presented as tidy, codified, acceptable and neatly-packaged assessment episodes. By adhering to these principles, learners are expressing their understanding of their social position in their world at that time the documents are created. These principles are outlined as follows:

**Principle 1: Maintain the impression of progression**

**Principle 2: Manage the authenticity of the individual proforma**

**Principle 3: Avoid losing face with the assessor**

**Principle 4: Complete the proforma in an effort-efficient way**
It is important to declare that I am not proposing that learners are necessarily or disingenuously attempting to deceive their audiences. But rather the notion here is of a shared actor/audience understanding of the performance, a shared conscious/unconscious understanding of this game. Furthermore, previous medical educational research has looked at barriers to using WBA instruments effectively, citing numerous hurdles. Many of these were fundamentally institutional and fiscal and so were difficult to overcome (Brazil et al. 2012, McQueen et al. 2016, Young et al. 2020). That WBAs not only still exist, but have a prominent position in the surgical education curriculum, means that learners (as performers) and assessors (as audiences) have had to find ways to negotiate these tensions to make WBAs *functionable*. Recognising that learners are obeying a set of tacit, unwritten, unarticulated, implicit principles - straying from the formal institutional regulations just enough to remain within acceptability, while allowing the audience to buy in to their performance, might go some way to justifying how WBAs have remained *functionable* despite the challenges mentioned above.
Principle 1: Maintain the impression of progression

Learners reported it was expected that those closer to the end of their training will obtain higher global outcome scores than those at the beginning. On a global outcome scale where 1 represents a novice performance and 4 represents a performance ready for independent practice, those at the start of their training might expect to be scoring 1’s and 2’s, while those at the end should be scoring 3s and 4s. Similarly, a learner with a certain amount of experience would be expected to score higher in a more straightforward procedure compared to a complex procedure. Learners described how performing to a level 4 standard is important to complete their training programme:

“At my stage, I’m probably at level 3 level for simple things. The more advanced stuff, I’m in the 2’s… for CCT, I need a certain amount of level 4 WBAs.” [Luke]

In addition to global outcomes, learners reported that the verbal feedback they expected to receive about their performance should also progress with their developing abilities. In this extract, Vinay compared comments he wrote in a WBA document for a procedure which he had comfortably performed many times (carpel tunnel decompression) with those of another procedure with which he had less experience (fasciectomy):

“(the fasciectomy) is an operation that I am relatively new to, and those are things, I mean, it’s different to the carpal tunnel. Carpel tunnel is something I am very comfortable with. So, I think my feedback (in the fasciectomy) is probably a bit more basic… rather than the refinement, which was in the carpel tunnel thing. Whereas this one was more like, can I assist the boss and can I do the sort of basic part of the procedure myself rather than anything more advanced than that really.” [Vinay]
Overtly maintaining the appearance that they were appropriately progressing seemed important to learners. For example, portraying the impression of improvement held more value than registering a high score in a single, stand-alone WBA. This was particularly so if that high score was not to be expected given the learners level of experience or the complexity of the procedure. These out-of-place high scores were actively avoided:

“But at my level, it’s more to show a bit of progression probably. If I did something complex, to get a 4 would be a bit bold.” [Luke]

Learners realised that they could have manipulated this WBA system to award themselves high absolute scores. However, that they did not, further emphasised the value they place in maintaining their idealised progression curves:

“I could if I wanted to, get signed off for level 4 for pretty much everything if I wanted to.” [Sam]

In other words, for the purposes of their learning portfolio, learners didn’t want to score at level 4 for everything. Instead, they were keen to display a managed longitudinal progression. Along similar lines, learners were also keen to avoid the ramifications of not showing appropriate progression:

“I actually didn’t do a WBA (for a particular operation) at level 4. And I specifically remember sitting down and saying well, I do loads of these. But I’m almost finished, so (the deanery) were like you’ve not got level 4 for (that operation). And I was like, how can that be. I’m doing these on-call on my own in the middle of the night.” [Sam]

Learners wanted to idealise the progression of their performances. To provide this impression, they controlled the information communicated through these proforma performances to influence how they were perceived by their audience. Their aim to fulfil the expectations of the audience required them to make active judgements
about what those expectations were. Only then were they in a position to present their idealised version of themselves - to present themselves in the best possible light for that audience. This progression management emerged through my data as learners 1) selected representative performances, 2) actively downgraded their performance scores and 3) manipulated the system:

1) Selecting representative performances.

Learners selected experiences to record because they thought that those clinical experiences epitomised what was expected of them. Conversely, as in the following extract, they choose not to write about experiences because they were not representative. Here, Saira made a defensive judgement about how her own performance matched her stage of training:

“Because it was a more difficult case than usual, it doesn’t represent my ability in treating cysts. That’s it. For someone on the outside looking at it, they might say oh, she struggled to do a cyst, whilst I think it was just a more difficult case.”[Saira]

Interestingly, within the WBA proforma, there is a drop-down menu to record whether a case was more difficult than usual. Saira was reluctant to use it. Instead it was telling that she preferred to omit the case from their learning portfolio altogether. She felt it was more appropriate not to include an experience, rather than formalise her experience as a WBA and include the mitigating circumstances that made the case, in her opinion, “a more difficult case.” Using Goffman’s terms, for her to give “expression to an ideal standard” during the performance, she wanted to “conceal the actions which might be perceived to be inconsistent with those standards.” (Goffman 1959, p26)

More generally, the performance in the final WBA document is the only visible, tangible end product of the WBA process. Learners use this to their advantage by giving an impression of infallibility. They can keep the difficult messy nature of real-
world practice hidden backstage and therefore conceal, omit and disguise features of the activities which aren’t in keeping with the self-image they want to portray.

2) Actively downgrading performance scores
Even if learners felt they performed to a high standard, they actively downgraded their performance to match how they felt they should be performing. This learner provided an illustration as he recalled the WBAs he had recently completed that related to some relatively complex procedures (thyroid operations):

“On this job, I came here being able to do thyroids, because I’ve just come from a six-month attachment, purely thyroids. But I came here and (my assessor said), you know, let’s put down a level 3 and maybe (we will) show progression to level 4.” [Sam]

Interestingly here, the learner’s use of the term “we” suggests that decisions were made jointly, between himself and his assessor. In other words, there is a degree of complicity that occurs across the learner-assessor dyad, where assessors also work to uphold these rules, thereby helping to shape the impression of appropriate progression.

3) Manipulating the system
Learners recognised certain apathies amongst their assessors. For example, learners felt that time constraints or lack of interest in WBAs meant assessors would not fully engage in reading the completed WBA proforma. As a result, with regards to assessor attitude, one learner felt that:

“Most will be like, I can’t even remember that case, and tick it.” [Sam]

For this reason, according to learners, their assessors rarely changed what was drafted on WBA documents. In this study, for example, one learner realised during the interview that he had accidently, but significantly, over-scored himself on his
WBA document. However, his assessor had not noticed and therefore not altered the score on validation:

“Is that what I put? It probably shouldn’t have been that as he was guiding me through the whole thing, even though he only took over once or twice. But it wasn’t as fluent as he wanted.” [Jatin]

Learners harnessed their assessor’s indifference for their own benefit. One way they did this was by bulk completing their WBA documents. To illustrate, Sam explained how he had saved up 30 completed WBA documents over a 6-month period, and then sent them to two different assessors all-at-once for validation. During an interview, he compared his experience with the two different assessors. He met with one assessor face-to-face, for about an hour, to discuss all the WBAs that he had submitted over coffee:

![Figure 9.1: Sam's feedback discussion with his assessor over coffee](image)

During this discussion, Sam and his assessor used the different WBA documents displayed on his laptop as prompts. The learner’s recall of each of the experiences that each document referred to was animated, as he used different tones, gestures, details, informal expressions and stories to commentate on his recollections. This in
turn, seemed to facilitate (and guide) the assessor’s memory of the case and fruitful discussions built from there.

This is in contrast to what Sam reported occurred with another assessor. There the learner recalled they were under time pressure to complete the meeting quickly and there was limited opportunity for discussion. As a result, he said:

“I did about seventeen in one go... He was like which case was this again, and I was like I can't remember. Literally!” [Sam]

So, without the added depth provided by the face-to-face, detailed, multimodal, real-time discussion, it seemed difficult for this assessor to link the clinical happenings to information on the WBA document. Furthermore, many learners reported that assessors often signed off their forms without any discussion at all.

In this way, learners were now taking advantage of the modal restrictions of the WBA proforma. I have previously suggested that learners struggled to articulate the richness of their learning experiences on their pro formas. The WBA document is modally restrictive in that there is only limited expression learners could give to their prior experiences through the modes of typing/writing on a standardised pro forma. However, these modal restrictions now became beneficial because by limiting the information that could be presented, learners recognised that, provided their documents appeared appropriate, assessors were unlikely to question what a learner had written in them about their experiences. In this way, learners made use of their assessor’s apathies, to encourage them to sign off their documents unchanged.

As such, learners appreciated that they had the flexibility to manage the impression of progression without significant scrutiny from their assessors. This was not a blank slate to indiscriminately record high scores. Instead, by adhering to the rules, learners self-regulated the scores, and entries, on their WBA document to maintain the impression of appropriate progression. In doing so, at the time of completing
these documents, they made adjustments to appear at about the right level for the right type of procedure for their own stage of training.
Principle 2: Manage the authenticity of the individual proforma

In addition to impression-managing their progression, learners made efforts to control the appearances of their individual proformas. Two aspects that they paid attention to were 1) document authorship and 2) the contents within each document.

1) Authorship

In the free-text comment boxes, learners made concerted efforts to conceal the fact that it was them making the various selections and writing the words on the proforma. To do this, sometimes learners wrote out statements as if they were their assessor:

“Jatin carried out a neck dissection under my supervision and guidance.” [Jatin proforma entry]

They also used neutral, short and agentless statements with ambiguous referents:

“Able to discuss the local anatomy” [Saira, proforma entry]

However, when learners came to completing the free-text boxes that were allocated for their own reflections, they switched to using the first person.

“I multiple times breached vessels causing bleeding but was able to arrest bleeding each time.” [Saira, proforma entry]

Learners appear to enter information into the proforma in this way for two purposes. Firstly, it provides the audience with the impression that the various parts of the document were completed by those authorised to do so. This helps the audience accept that raters made those comments written in that section. As I have shown through chapters 5, 6 and 7, what was happening was that learners were interpreting their assessor’s real-time comments, made either through formal, signposted
feedback (that usually occurred shortly after the end of the procedure – *feedback-on-action*) or through the exchanges that occur intra-procedurally (*feedback-in-action*). They drew out exchanges from their experiences, *weaving* them into coherent, personally meaningful learning narratives. In the absence of explicit comments from the assessor, some learners imagined what they might have commented. Omar’s explanation of what he wrote illustrates this:

“To be honest, it’s not anything that he said afterwards, it’s my expectation of what he would have said, but I could be wrong.”

[Omar]

Rather than being co-created with the assessor in real-time, documents were presented to an assessor who then agreed with them or not. As mentioned, drafted statements in these documents, once made, tended not to be amended.

The second reason that learners completed their proformas like this was to streamline the validation process for their assessors. By writing in this way (i.e. as if it was written by their assessor themselves), learners hoped to make it easier and quicker for an assessor to validate their WBA document.

“Everyone one is kind of busy… As with most of these WBAs, you kind of pre-fill them in and you kind of just go through it and then send it to the consultant really.” [Jatin]

It seems learners didn’t want to burden their assessors with another administrative task. Such a view is perhaps consistent with the on-going, daily, working relationship between the learner and their supervisors.

2) Content
Earlier I suggested learners selected cases to give an impression of progression. Part of this involved learners including content in their WBA document that
showcased performances that went well or highlighted interesting discussions, unusual events or new knowledge. To do this, learners often documented learning points, take-home messages and key themes somewhere on their documents.

“It went well and I knew it would be signed off with no problems really. So that’s probably why I did that one.” [Vinay]

“I think if there is a bit more of a discussion, more teaching that has gone on, or more feedback then I tend to pick those.” [Jatin]

“It put it in recommended actions or development needs. Mapping. That’s the learning point from this.” [Sam]

I have explained earlier that learners created WBAs about experiences that they felt represented what was expected of them. However, they were also reluctant to use experiences based on activities that were seen as routine. For example, when activities lacked interesting discussions or teaching moments, learners did not want to record them:

*If it's a routine thing, not much to learn, you know, that's straightforward then there isn’t really any point of picking that one up.* [Jatin]

In this way, what to write in a WBA became a balancing act between highlighting progression using representative cases and avoiding cases that lacked novelty or interesting features.

In one of the extracts above, Sam refers to the idea of *mapping*. In chapter 6, I suggested and showed how this idea was constructed into a narrative by Sam. Starting as a nebulous concept, it gained prominence through the clinical activity and was then reified in the document as a key and important idea. However, the final
extract below, from Omar, provides a different insight into how he used the WBA document.

“In some way, I’ve put comments in so I don’t leave it blank” [Omar]

So, although learners do note important themes that develop though their experience (such as, in Sam’s case mapping), Omar’s comment suggests that they still feel a need to fill up the remainder of the proforma to give it the appearance of being a thorough, well thought-through account of their performance. In other words, learners didn’t want the document to look empty, which would be unconvincing for an on-looking audience.
Principle 3: Avoid losing face with the assessor

Maintaining the trust and respect of their assessor while creating a polished WBA document was a key, but difficult balance for learners during the WBA process. As explained, the assessor was both present at the time of the clinical activity and eventually saw the completed proforma. Unlike the other audiences, assessors were part of the clinical experiences that learners wrote about in their WBA documents, while also seeing what learners have written about those experiences. Learners saw assessors as gatekeepers, before whom they had to audition. If their performance – how they had presented themselves – was deemed appropriate, it was then offered up for the review of the other audiences. Learners therefore acted to find a way to move smoothly passed these gatekeepers, and on to a performance before their other audiences.

Goffman explains that the performer (i.e. the learner) takes measures to make it possible for the audience (and outsiders) to employ protective measures on their behalf (Goffman 1959, p135). Therefore, there is a need for the performer-audience (learner-assessor) to build and then maintain the two-way social partnership that they enter into. Learners ultimately didn’t want their documents to act as a point of conflict, which may diminish the trust between them and their assessor. They did not want to make it difficult for their assessor to agree that what they have presented is acceptably truthful. The learner’s performance for their assessors, in part, relied on the negotiation of trust:

“Usually I mean, the relationship that I have built with him over the last six months, he kind of understands whatever I have said is reasonably sensible and I am not going to say anything unusual sort of thing.” [Vinay]

To avoid losing face with their supervisors, learners did several things:
1) Portray themselves as modest

Learners made efforts to portray themselves as modest and humble when they populated their WBA proformas:

“I'm always very nervous. I would never say like, that looked amazing. I'm fairly modest and fairly non... nothing too outlandish.”

[Luke]

The reason for this, learners reported, was that they didn't want their assessors to think that they have over-scored themselves. It would lead to a loss of credibility with their assessor if they overestimated their own abilities and they would feel embarrassed if they were called up on this by their assessor. They instead preferred to award themselves a lower score, thus giving their assessor the opportunity to upgrade them:

“I think I am one of those guys who will always put level 3 when the boss thinks I am level 4... it feels a bit awkward if the boss looks at it and, I don't want the boss to feel that he has to downgrade it. So, I rather they upgrade it.” [Sam]

There was a sense that learners also tried to avoid recording anything that they felt might raise suspicions or prompt assessors to interrogate this or future activities that the learner records. For example, Jatin worried that if he wrote anything that seemed overly positive, he would:

“come across as obnoxious, and then all of a sudden, someone could say no, this doesn’t reflect what actually happened... I just try and stay as neutral as possible. Not criticising too much. A couple of specific things mentioned. And then, generically, trodding along as expected.” [Jatin]

Learners found this balance difficult to negotiate,
“It’s very difficult to be critical but also difficult to be praising of yourself,” [Jatin]

Interestingly, some learners felt they could have gotten away with giving themselves higher scores. In other words, learners were aiming for the highest possible score, without appearing out of the ordinary and potentially prompting further scrutiny:

“I put level three, or whatever. I think more times than not, I’ve regretted not putting down level 4 or a higher level.” [Sam]

2) Present normal-looking documents
Learners appeared to favour presenting their assessors with generic, generalised proformas, with little to make them or the activity stand out. They aimed to stay under-the-radar, for an assessor to cast the merest of glances over their proforma, agree that it appeared as it should and then to validate it. In this way, learners actively discouraged undue interest from the assessor. They didn’t want assessors to start interrogating the proforma that the learner presented before them. Such an interrogation may draw attention to things that assessors might want altered if they choose to look at the proforma in more detail:

“So, I leave it a bit generalised and I always say to them look I’ve filled it in, feel free to amend it how you want or sign it off.” [Jatin]

To once again harness assessor indifferences, learners in this study appeared to complete the document as fully as possible. As a result, when assessors came to open, read and sign off the completed form, ideally, they did not have to make any changes to it:

“but I think he does expect me to fill them in as best as I think and he checks them and validates them as he sees fit.” [Vinay]
This serves as a further driver for the practice where learners collated, paraphrased and recorded feedback and interpretations gleaned from intra-operative discussions with their assessors. Learners then made their own entries into free-text boxes reserved for rater comments, selected appropriate checkboxes in the competency checklists and allocated themselves a suitable score. By doing so learners took this potentially arduous role away from their assessors. But, such practices also gave learners the space and power to fashion these documents in ways that perhaps they wouldn’t have been able to, had this been taken out of their control. It allowed them to reframe their clinical experiences through their own eyes, using their own way of seeing that experience. It thus gave them control over how to present themselves to their audiences.

With this control, learners were able to lead, even strongly influence, how assessors themselves looked back at learner performances during clinical activities. As touched upon earlier, learners utilised assessors limited memory, incomplete engagement or indifference to guide them and sway their recollections into ones that were favourable to the learner. To illustrate, I return to Sam’s mapping narrative:

“But he looks at that and goes oh yeah… if you ask him what did he think I learnt from that, I would be interested to see what he said. He might turn around and be like, oh, he’s a competent person and he knows how to do this. I don’t think he would say mapping. He wouldn’t remember that.” [Sam]

In this way, Sam was able to define his take home messages in a way that he felt was most useful. His assessor agreed in the large part, or at least, didn’t disagree. Although Sam suggests that his assessor may have expressed their own, different views if pressed separately, none of the learners in this study reported that any of their WBA proformas were amended by their assessors. It therefore appears that assessors largely accept and adopt the narratives as portrayed (and massaged) by learners in their documents.
Learners had to develop an understanding of how to best use these documents within the ISCP platform. They did this over time, through experimentation. This learner recalled an anecdote about this:

“The first few. They are literally so long, with references and papers. But it is rubbish. You can go back and look at it but the layout is rubbish. If you put bullet points, the formatting just goes, so it looks like continuous text. Utterly useless... Genuinely for the first 2 or 3 cases I did that and the boss was like, you've just written a bunch of text.” [Sam]

Learners aimed to avoid these mishaps, because it detracted from the ideal, smooth, uneventful recording process. It made assessors take note of what was on the proforma. They were no longer under-the-radar. Instead, learners wanted the space and anonymity to be able to create the documents to fit into their online learning portfolios.

3) Building face
As well as not losing credibility in the eyes of their assessors, learners also tried to use these proformas to try to foster a positive self-image. Learners realised that if they had performed well during a particular clinical activity, they could use the WBA to make this explicit to their assessors.

“So, if I have a very good learning experience, I say, you know what, I've had a very good learning experience and I want to record this, and most people are fine with that.” [Saira]

In other words, these documents allowed a learner to formalise their own confidence about the procedure in front of their assessor. Rather than a learner verbally explaining to their supervisor, “Oh, I think that went well,” which, as transitory
comment, may or may not be internalised by their supervisor, making this confidence explicit in a written, institutional document gave it permanence:

“And for the trainer as well, they see your confidence and knowledge coming through, then I think they will let you do even more next time around. It’s kind of a self-perpetuating thing, I think.”

[Vinay]

I have already explained that learners use these documents to avoid losing face in front of their assessors. But, they are also trying to build their standing in front of them. To paraphrase and summarise the learners’ thoughts about their assessors in this study, they appeared to be thinking:

_ I am assuming you don’t have the time, inclination or potentially the respect for this whole process, so I am going to make this as easy as possible for you by providing an account that is believable and roughly matches where I should be. Provided you or I both play our parts, you are fine to simply sign this off._
**Principle 4: Complete the proforma in an effort-efficient way**

Learners made judgements about how much effort they should put into populating these proformas. They altered the way they presented themselves through the WBA document based on judgements they made about the degree to which their assessors would interrogate it. If they felt an assessor might closely read what was written, learners made more effort when they populated their proformas. The converse was true if learners felt assessors wouldn’t engage with the WBA document:

“If you know that this person is going to tick the box, just sign you off, then you probably spend less time.” [Sam]

Earlier, I explained learners often completed their WBA proformas in bulk to make favourable use of potential assessor apathies towards the WBA process. Bulk completion also represented an effort-efficient way for learners to complete their WBA requirements:

“It won’t be a case of doing it after every single interaction every single time. I won’t just log in and do one. I’ll do 3 or 4.” [Jatin]

In other words, learners sacrificed the benefits of completing their proformas in timely fashions (earlier in the interview, Jatin had commented that it was better to complete the document while “everything is fresh in my mind”) in preference for completing several WBA proformas in one sitting. He was also worried about wasting time due to IT problems:

“The longer you spend on that work page, the more chance of it going sorry you’ve lost everything... it just logs you off.” [Jatin]

Vinay expressed a different view about one of his learning experiences. He reportedly received very little formal feedback at the time of a clinical activity and had
an assessor who was inclined to ‘tick the box.’ For him, it was more effective to spend more time, write more and use the space to reflect more on certain activities:

“I think I actually have to put more thought into it. Because if the trainer is not going to engage with it, then I have to focus more. I have to do the work and be more focused about what I am writing down. Yeah, so I write more if I can, because I know that I have to give feedback to myself… I know that the trainer is not going to write anything down themselves. It’s me who has to sort of describe the case, synthesise some sort of learning point from it myself.”

[Vinay]

Here, Vinay was not worried about losing face, or not creating a document aligned with his assessor’s expectations. He reported he knew whatever was written would be signed off. Instead he used the space in a productive effort-efficient way for him. The time spent on the document was valuable for him, as it has provided him with a space to elucidate learning points and take-home messages that he may not otherwise have been able to articulate for himself.

Learners also found efficient ways to fill the spaces in their proformas that they simply wanted to “avoid leaving blank” [Omar]. One learner explained how he thought carefully about the phrases he used in these spaces, mindful not to make unguarded comments. However, once he had constructed the statement, he could often use it generically in other WBA documents.

“I often, when I am writing it out, re-write it two or three times. Unless I have done one like it before, then I might copy and paste.”

[Sam]

This learner recognised a need to complete the blank spaces. Rather than re-writing things several times, or creating comments de novo, he realised that he could make use of his pre-existing phrases, simply lifting similar comments from other similar
WBA documents. In this way, he populated his WBA proforma in the most effort-efficient way for him.
Key Findings

There are three key findings that I developed through the course of this chapter. The first is the recognition of the WBA document as a social space, where learners engage in a social relationship with the readers of the proforma. Such a view allows me to re-frame the WBA document as a social performance. In doing so, I let go of the assumption made in prior positivist research that this document represented some transparent, volume-less covering, through which readers of the document could re-see that learner’s performance as if they were seeing the performance itself, as if the wrapper wasn’t there. Instead, I accept that these WBA documents are not inert coverings, but part of the personally meaningful narratives that learners develop through the whole WBA process. WBA proformas provide structures on which learners present themselves to their audience, using the palettes I have discussed earlier to give these presentations of the learner’s self their intended appearance.

The next key finding relates to the different audiences that learners find themselves simultaneously performing before in their WBA documents. These different audiences (either the assessor, institutional bodies or unknown others) each have different perceived requirements, which learners have to accommodate for as they populate their WBA proformas.

The final finding in this section relates to what I have termed the WBA playbook. This consists of four principles which govern how learners complete the WBA process by creating their WBA documents. These principles relate to maintaining an impression of progression, managing the authenticity of an individual proforma, avoiding losing face with their assessor and completing the proforma in an effort-efficient way. As a tacit set of social rules, they articulate what meanings learners are making as they follow through, and complete, the WBA process.
Summary

WBAs are not simply real-world clinical experiences, objectively and inertly measured. Neither are they just a proforma, detached and analysable in isolation. In previous chapters, I have examined the WBA in its wider workplace context, framing it as part of, rather than an assessment of, a learner’s workplace practice. Rather than existing as distinct, defined events, WBAs emerge, hazy-edged, from a diverse and nebulous learning milieu. As learners engage with their learning milieu, they construct their own personally meaningful learning narratives. When learners transcribe their clinical experiences into formal, written formats, they do so by populating a standardised proforma. In this way, through this thesis, I have framed WBAs as neither solely the clinical experiences, nor solely the WBA document. Rather, I have seen the WBA as the protracted process of meaning-making (and therefore learning) involving both.

In other words, the creation of the WBA is a process involving the contemporaneous and real-time, although sometimes retrospective, construction of personally meaningful learning narratives, that learners mould, manoeuvre and manipulate to present through a WBA document as they deem appropriate. When complete, this document captures a learner’s interpretation of their working world around them at the time at which that document is created – it is a sign of the meanings made, or as Bezemer and Kress (2016) call it – a sign of learning. Through this chapter, I have presented my analysis of that sign of learning. I have argued that it represents a carefully negotiated social performance, where learners present versions of themselves by adhering to a tacit set of rules – a playbook which ultimately governs the final appearance of the learner’s WBA document.
Chapter 10
Conclusion

Introduction

I began this research with the aim to explore how postgraduate surgeons-in-training learnt through WBAs. I have viewed learning from a constructivist perspective – where the learner is a meaning-maker and constructor of their own knowledge. I began by articulating a set of research questions to help me investigate the learner’s journey as they engaged with a WBA. Through my research, I have come to understand the learner’s resemiotization of their lived experience into written documents as developing learning narratives, which allow learners to make sense of the world around them in real-time. As Goodson (2010) suggests, the construction of such narratives is central to the learning process, and learning happens in and through their narration.

In this chapter, I draw together and summarise the assertions I have made from my empirical work. These assertions represent the meanings that I have made from conducting my research, analysing my data and articulating my research findings during this research project. I put forward my claims on the trustworthiness of this research, paying close attention to the reflexive approach I have adopted throughout. Finally, I focus on the implications of my research findings for policy and practice in surgical, and broader, education.
Key findings

In this study, I have adopted an approach based on naturalistic inquiry. I developed a theoretical framework built using constructivist principles, which I have used to better understand how postgraduate surgeons-in-training learn through their use of WBAs. The emphasis I placed on learning as meaning-making and learners as constructors of knowledge led me to devise a set of research questions to explore how learners make sense of the world around them when they participate in a WBA. These questions helped me to understand what these WBAs look like as they are happening and how WBAs are embedded in the learner's everyday working practice. I sought to explore how certain clinical activities that learners carry out, are selected and then transcribed into a written, formal document - the WBA proforma. Finally, and importantly, I explored why those documents are presented in particular ways, ways which elucidate the meanings made by the learners as they follow through with the WBA process. Addressing these questions led me to better understand how learners make meaning, i.e. learn, from the WBAs they undertake as part of their routine practice.

To answer my first question – how WBAs arise in the learner's everyday working practice – I analysed how learners engage with the clinical activities that they later write about in their WBA documents. Through this analysis, I showed that the clinical happenings, and a learner's experience of those happenings, do not unfold as a single, discrete, congruent, pre-determined activity awaiting transcription and transfer into written form in some controlled, standard way. Instead, the clinical happenings occur as fragmented, messy micro-events. Each of these micro-events is one of many that occur during the learner's working day. Each is separated from, punctuated by and interspersed with the numerous other workplace micro-events – flowing into and/or overlapping with what went before and what comes after. Importantly, it is the learner who selects and relates together different micro-events (and their own experiences of them), forging them into personally tangible narratives as a way to understand what is happening around them. Through these learning narratives, learners are making sense of what later become WBA experiences.
To explore my second question - what these clinical activities look like, *in-situ*, and importantly what is happening to the learner during them, I applied an analytic framework based on the principles of multimodal social semiotics. Using this framework, I demonstrated how learners dynamically and simultaneously construct multiple, personally meaningful learning narratives as they make sense of these happenings in real-time. I found that learners pull apart, manipulate and mesh together these different micro-events into meaningful stories. These narratives are not pre-determined, but emerge through, and are then consolidated upon, by the learner’s multimodal actions and interactions that take place between themselves, their assessors and the outside world around them.

My third and fourth questions relate to the documenting of these clinical events as learning experiences in written proformas. The awareness that a certain clinical activity has potential to become a WBA influences the learner’s experience of those activities – it alters the learning milieu. Yet, the actual creation of the WBA document is separated by time, space and modality from the clinical experiences they relate to. When learners create these documents, they interpret prompts and make use of aspects of the proforma in a variety of different ways. There are restrictions in how learners can record their own experiences on the proforma – such as in the fixed sections for narrative comments, the checklists and pre-set choice of global outcomes. Despite these restrictions, the data in this study demonstrates that learners have individual and varied ways of engaging with this document as they attempt to re-configure their prior experiences in a way suitable to populate these standardised proformas. In this way, the WBA document is both reification and a *resemiotization* of the learner’s personally meaningful learning narratives into some written, formal re-configuration.

Some learning narratives are transcribed into WBA proformas largely unchanged. Others are omitted entirely and not taken forward at all in the written record of the learner’s experience. As such, they remain un-presented by the learner in any reified form. Others are *kneaded* to appear, in the eyes of the learner, more presentable.
Importantly, I came to see the production of WBA document itself as part of an individual learner’s learning narrative. The content of the completed WBA proforma is influenced by the way learners relate and arrange what they have previously experienced, but it also helps to shape the way that learners arrange, construct and reify that prior experience. The *resemiotization* process therefore appears to be part of the learner’s personally meaningful learning narrative, rather than, or perhaps in addition to, a straightforward account of it.

To answer my final question, I sought explanations for why learners presented their experiences in WBA documents as they did. I saw the creation of the WBA document as a meaning-making process in its own right, inspired by, but not necessarily reflective of, the clinical performance that the document purports to capture. The WBA document represents a way for learners to see, not only their clinical experiences, but also their working world at the time these documents are created. I have argued that learners use two different palettes – which I have called *educative* and *bureaucratic* – to portray their interpretation and understanding of their working world through these documents. Furthermore, having understood that these WBA documents are not inert replications of some prior clinical performance, but part of the personally meaningful narratives that learners develop through the whole WBA process, I conceptualised the WBA proforma as a structure on which learners present themselves to their various audiences. To perform appropriately before their audiences, I found that learners adhere to a WBA playbook consisting of four tacit principles that apply to the entirety of the WBA process. By delineating these rules, in answer to my final question, I described what meanings learners made of the working world around them through the intricate and complex processes of the WBA.
The trustworthiness of this research study

Although I express my claims on the trustworthiness of this research here, establishing trustworthiness was a continual process that spanned the entirety of this research project. It began as the research ideas were conceived, and then permeated through its design, the generation and analysis of the data and with the assertion of the research findings. As a framework to assess the trustworthiness of my qualitative research, I used the four overlapping elements proposed by Guba (1981) - credibility, transferability, dependability and confirmability. My use of these terms represents a contrast with much of the previous WBA research, which has sought to assess the scientific rigour of studies investigating WBAs using terms like objectivity, validity and reliability. However, as I conducted a naturalistic inquiry, I believe Guba’s terms created a more appropriate framework through which to critique the trustworthiness of this research.

Credibility

Guba explained that when research is credible, plausible information has been drawn from the participants’ original data and findings are based on an appropriate interpretation of the participants’ original views (Lincoln and Guba 1984, Korstjens and Moser 2018). According to Stenfors (2020), this occurs when “there is alignment between theory, research question, data generation, analysis and results” and when “sampling strategy, the depth and volume of data, and the analytical steps taken, are appropriate within that framework.” (p598)

There were a number of features within the design of this research study that contributed to its credibility. Lincoln and Guba (1986) explained how prolonged engagement and persistent observation are important. My data was generated over a nine-month period (Appendix B), representing a prolonged engagement at my research site. Over this period, I built an extensive catalogue of observations and audiovisual recordings. Furthermore, rather than view the number of study
participants or length of observation as markers, I adopted a view put forward by Morse (2000), who proposed that the amount of useful information obtained from each participant contributed to the adequacy of any field work. I met with learners several times over the course of their involvement with this project, for example through recruitment, informal conversations, periods of observations and subsequent interviews. I observed some learners on more than one occasion, or doing several different WBAs.

On some occasions, because of the nature of this research study, I observed some learner’s clinical work that they chose not to take forward as, or in, their WBAs. As such, the data that I generated about WBAs was multifaceted. It was, firstly, generated in a number of ways – audiovisual data, observations and field notes, WBA documents and interview data. However, secondly, it also offered different kinds of insights into the WBA. For example, exploring why a learner did not take forward learning narratives into WBA documents contributed to my understandings of WBA processes, alongside my analysis of those narratives that were. This triangulation of data, my ongoing and persistent observations, and my repeated interactions with participants in the field helped me to understand the views and practices of the learners in the study and therefore their actions around their WBAs.

Throughout my analysis, I actively searched for, and acknowledged, those instances where findings did not appear to match, or even contradicted, my developing ideas or theories. I consciously sought to incorporate these into my developing theories – moving iteratively between data and theory - rather than excluding these as outliers and ignoring any potential impact they may have had on my findings. This negative case analysis was another technique that Lincoln and Guba proposed to enhance the plausibility of research findings. Importantly, these negative cases initially informed and sometimes, re-directed my analysis. Over the course of my research, what began as negative cases, I found had actually become integrated into my analysis and emerging theories, and had therefore contributed the final set of assertions that I made. They were a key part of my analytic workings, and represented one of the ways through which I made sense of my data.
Lincoln and Guba also stressed the value of regular peer debriefing. This occurred explicitly through structured PhD supervisory meetings, allowing me to develop “working hypotheses, develop and test the emerging design and obtain emotional catharsis” (Lincoln and Guba 1986, p77). However, also of value were the frequent and regular seminars, presentations and workshops that were facilitated by the academic institution and environment where this research was conducted. Through these debriefings, feedback from a variety of disinterested professional peers (ibid, p77) became valuable in shaping the direction of my analysis.
Transferability

The theoretical framework for this research places emphasis on the significance of the context in which learners make meanings from their WBA experiences. In other words, learning from WBAs is context-bound. For example, each learner would interact differently at a different time as they and their learning milieu are constantly and dynamically changing. In the same way, the generalisation of my research findings in the traditional sense would always be problematic. Therefore, establishing how these findings might be transferred to another setting or group is difficult for me to assess.

However, in keeping with Guba (1981), it was not my intention to create generalisable theory, but rather to study a phenomenon within a particular context and in a particular set of individuals. By explicitly delimiting my study (for example to the subject of WBAs, within a particular group of learners) and by providing a thick, detailed description of these research study contexts, and how they shaped the findings, I aimed to provide any reader with the information with which they could compare these findings to those from other contexts. That being said, WBAs are part of a national system, and are used by all UK surgical trainees. Similarly, my own sample of learners and the study site are not atypical. As such, the practices and principles that I have revealed during the course of this research are probably not unique to my research site.
Dependability

This term relates to the extent to which the research could be replicated in similar conditions (albeit with differing results) (Stenfors et al. 2020). To this end, I mapped out and documented my own decision trail during this research. I kept an up-to-date research diary, making explicit the timeline by which the research data was gathered, and the process by which it was analysed (Appendix B and G). The study protocol was recorded and approved via both the Health Research Authority (Appendix E) and the UCL Institute of Education approval committees. Data was sequentially analysed using software (NVivo 12, as one example) which allowed the development of my ideas and theories to be charted and digitally stored through the course of my research. In this way, I have ensured my research process is auditable (Nowell et al. 2017)

Furthermore, as a researcher, I acknowledge the central role I have played in the research. I, myself, did not remain unchanged through the research process. To keep track of my changing views, and to provoke my own reflexivity, I made regular entries into a research diary (Nadin and Cassell 2006). This was particularly useful during the early part of my research and during the data generation phase, where it encouraged me to write contemporaneously about my research. As I began to articulate my thoughts in this thesis, I found the thesis itself took over the role of my research diary.

This reflexivity allowed me to see key parallels between my own research journey and the process that learners in this study were going through as they participated in WBAs. I came to see learners trying to make sense of a complex, dynamic reality. They had an awareness of their experience in real-time, but at some later date, they looked back on, and tried to record in some structured way, what they thought happened by drawing upon various resources. This documentation was not an inert replication of some facts of lived experience, but a learner’s own interpretation of that experience produced as a particular kind of document. In a similar way, I was trying to do the same. My observations and other empirical data was complex, vast and
dynamic. And, just as learners did, I tried to make sense of it in real-time, and through multiple retrospective analyses. Furthermore, I was reifying these findings in a particular kind of document. In this way, this thesis represents my own performance – my own interpretation and understanding of my own current situation in my world at this time.
Confirmability in research occurs where there is a clear link between the data and the findings, although there are considerable overlaps with the three other terms above. Through this work, I have tried to demonstrate the links that I have made explicitly, by providing rich descriptions of the context in which my observations took place, using verbatim quotes and extracts from audiovisual and interview data and using meaningful photographs/images from my dataset. Furthermore, through the empirical chapters, I have also tried to make explicit why I have included these and what meanings I have personally made from them. In this way, I have tried to make clear my thought processes through this research.
Study limitations

During this research, I have noted several challenges and obstacles that have impacted the design, data generation and analysis. In this section, I acknowledge these limitations – some of which have been discussed reflexively through this thesis in previous chapters. I categorise my reflections on the study limitations as theoretical, methodological, ethical and analytical.

With regards to limitations in theory, this research has used a different approach to explore learning through WBAs, one with a strong sociocultural grounding. I have framed WBAs as highly complex, social interactions, taking place in both a real-world, clinical space but also an online environment. While my approach is novel and has offered new insights into learning, one of the drawbacks was the lack of an existing cohesive theoretical literature on which to base this study. To mitigate against this, I integrated a number of related, relevant theories – namely workplace learning theories, sociocultural learning theories and Goffman’s notions of presentation of self – into a suitable theoretical framework which then allowed me to explore my research questions. However, the lack of a single, coherent, underpinning theory was challenging to negotiate, particularly at the early phases of the study as I sought to understand how learners were engaging with, and learning from, WBAs. Going forward, I hope the work done in this thesis to draw together, and apply, those theories to better understand WBAs, should provide future researchers with a theoretical framework to use in other studies of workplace assessment.

There were several challenges during my data generation, which I classify as either methodological or technical limitations. One methodological shortcoming, which I discuss in chapter 4, relates to my use of naturalistic inquiry and how a learner’s awareness of their participation in the study might impact upon their actions – how natural was my naturalistic inquiry? I considered this limitation using the idea of participant reactivity, and designed my study protocol to help minimise its impact upon my data, while recognising that avoiding such a phenomenon in my study was probably impossible.
A further area which could be improved relates to my study sample. This ultimately consisted of six different learners from three different specialties. Although I don’t feel that that this sample detracts from the trustworthiness of this research, and am confident my analysis logically explores the experiences of this particular group of participants, I would have preferred to study the experiences of six learners, each from a different surgical specialty, to ensure the data generated represented a broad spectrum of opinion across different surgical specialties. However, because I was limited to those who volunteered to participate in this study, my recruitment was restricted to those learners who consented to be part of it. Perhaps future studies may be able to amend recruitment protocols in an attempt to increase the heterogeneity of the study sample. That being said, I also acknowledge the strengths of my final study sample, which allowed me to compare and contrast different learners within the same specialty or different learners working with the same assessor, which would not have been possible with a sample that consisted of one learner from each specialty.

Some technical problems arose through my data generation, which could be improved upon in any future research. The battery life on my portable hand-held camera was limited, and these required changing several times during longer observations. This led to short gaps in the audiovisual record as batteries were changed. Also, there were problems with connectivity between the lapel microphones used during the study and their base units, with interference when certain equipment was used (for example diathermy machines to stop bleeding vessels). This interference made interpreting some sections of the audio data difficult and small sections of the audio record were lost. Any future researchers working in these environments may wish to conduct a short pilot to ensure these technical problems can be resolved prior to any formal data generation.

My use of audiovisual recording drew out an important ethical limitation, in that I was not always in control of who would appear in my audiovisual footage. Despite my best efforts to brief those who would be present in the area where I was filming, and
to gain their consent to do so, there were times when other members of staff would enter the theatre and appear briefly in the footage, or the lapel microphones would pick up conversations that were not related to the study. These unintended appearances or conversations were anonymised or deleted from the audiovisual footage.

To better streamline my analysis of the WBA proforma documents, which became an important set of data in this study, I would have liked to be clearer with how learners should forward these completed documents to me. Learners sent their documents to me in highly varied ways. Sometimes I was only sent parts of the document – for example screen shots of sections of their completed WBA proforma, for example, a few of the narrative comment boxes. On other occasions, I was sent sequential screen shots of larger sections of the proforma. Other times, learners would download the entire proforma, in variable formats, and forward this to me electronically. I believe that specifying that learners should send me their entire WBA document (including areas which were left blank) would have made it easier to familiarise myself with the learner’s use of the document as part of my analysis. However, again, as I progressed with my analysis, I began to see what learners chose to forward to me as a representation of what they felt was important within the WBA proforma.

In this section, I have outlined the theoretical, methodological, ethical and analytical limitations of this research study. As a researcher, encountering these challenges during the study led me to think adaptively during the research process and to carefully consider various workable solutions to overcome them. Furthermore, acknowledging these limitations should help guide and streamline further work in this field, aiding the development of future research protocols and study designs.
The impact of this research on me as a practitioner

Throughout this thesis, I have remained sensitive to my reflexivity as a researcher. In addition, I have also reflected upon how this research has impacted me as a clinician. As someone who regularly undergoes WBAs within my own working practice, I entered into this research journey with my own frustrations with these exercises. This research has helped me to articulate those frustrations, to explore them in a structured, logical way and to express new ideas, theories and concepts that account for those frustrations. In doing so, I have realised that I am playing the very WBA game that I have described in this thesis and this recognition has helped me to understand my own drivers and motivations behind how I engage with WBAs as part of my own learning milieu.

I also have a role in assessing others as they undergo WBAs. This research therefore also provides me with a better understanding of how other learners engage with, and learn from, WBAs. In this way, as a WBA assessor, rather than accepting that these exercises are simple documentary exercises that faithfully represent a learner’s real-world competence, I have developed a nuanced sensitivity to the WBA process that will help me in the future to better understand why those I am in a position to assess are presenting themselves in particular ways through their own WBA performances – both live and through their documentation. As a result of the work done during this research, I am better placed to appreciate the complexity of these WBAs - how clinical experiences relate to WBA pro formas, and how these represent a learner’s own constructed self-presentation. This awareness will make my own interactions with other learners richer and I hope will improve me as a teacher and supervisor.

Finally, on a broader note, this research has changed my own view on knowledge and learning, as my own theoretical perspectives shifted during the course of my studies. Although I acknowledge that I entered into this research already questioning the largely positivist paradigm that much of the surgical profession is aligned to, the theories that became increasingly prominent in this thesis, and meaningful to me
personally, were based within constructivism. As a result, my own ideas of knowledge, and the learning of that knowledge, not only within this research space, but also within the wider world, have unquestionably changed and developed through the course of this research.
Implications of this research

WBAs have remained controversial in surgical education despite a decade of their use in surgical training, and in broader medical education pathways. On the one hand, opinions have supported their role in surgical education pathways as a standardised mechanism for measuring performance and monitoring progress. At the same time, WBAs are regarded by others as redundant within the complexity of surgical learning - overly bureaucratic and of limited value. This research has shed light on the complexity of WBA practices and has valuable theoretical, methodological and practical implications.

One key impact of this research is in its theoretical contribution to the field of WBA use and research in medical education. In particular, it has expanded on the existing, but narrow, positivist research perspective to analyse the WBA using a different, constructivist approach. Such an approach stimulates insights which are better aligned to understand how these exercises promote learning - insights which have not been available to the surgical education community through prior research. I have suggested that much of that existing work exploring WBAs had been under-theorised. Therefore, through the application of constructivist theories (drawing in particular on socio-cultural learning theory, workplace learning theory and Goffman’s notions of presentation of self), this piece of research represents an important contribution to the understanding of how and why WBAs have come to be as they are.

My research has positioned the learner as central to their own learning. I have conceptualised the WBA as a part of the learner’s working practice, rather than as an instance of assessment of some element of the learner’s practice. It has shown how learners have interpreted and enacted the institutional policies and formal processes to create the WBA practices that they follow. Understanding how polices have become practice provides insights into the meanings learners have made from their clinical experiences. Through this research, I have explored what is happening as learners participate in WBAs in the real-world, clinical setting. Such an exploration of
what learners are doing when they engage with WBAs has not been articulated in previous research. The insights derived through this approach, such as the understanding that learning through the WBA occurs through the construction of highly individual, unique, personally meaningful learning narratives, may help explain why the previous attempts to explicitly prove WBAs as robust, valid or reliable tools in a positivist framework have been futile.

This research also makes a number of methodological contributions to the field of surgical education. It successfully harnesses an approach based upon naturalistic inquiry (using both video ethnography and multimodal social semiotics), applying it to a hitherto under-theorised field. Using this approach, I have generated empirical evidence that has not existed previously. This evidence highlights the intricate relationship between a learner’s working practice and a WBA – how one becomes another. It describes how WBAs come to be - interwoven with every day, real-world, normal situations, such as in the vignette I described to begin this thesis. Applying a constructivist framework, I removed myself from the assumption made by previous research that proforma and lived experience were one and the same. Instead, I determined how these served as protracted, multimodal processes and led to the construction of personally meaningful learning narratives, through which learners made sense of their working world around them.

To draw conclusions and meaning from my research data, I have found novel ways to represent the happenings of the various different clinical activities and relate them to what learners have documented in WBA proformas. These novel representations of complex real-work actions have taken the form of timelines, plots and detailed multimodal transcripts, while the study has also introduced conceptual models such as palettes and playbooks, to help explain how and why learners generated their WBA documents to appear the way they have done. My methodological and analytic approaches demonstrated, and emphasised, the value of naturalistic inquiry to highlight, explore and understand how WBA policies are enacted as WBA practices in the real-world. As a surgeon and future educator, I hope my use of such methodological approaches and techniques will provide a framework for future
researchers in the field of surgical education who are looking to better analyse the interactions within the surgical learning environment and understand the complexity of the surgical workplace.

This research has implications for policy and practice. Understanding how learners engage with WBAs as practices embedded in everyday life provides useful insights into how policies are interpreted, and how they influence the practice of the learners that are mandated to use them. Such analysis has been lacking in WBA research to date but this study shows its value in understanding the complexity of the surgical (and potentially wider) workplace. Importantly, new educational interventions will continue to be introduced as medical education evolves, improves and expands. Researchers however, have tended to adopt well-rehearsed techniques to evaluate them, such as analyses of outcomes (for example what is recorded on a proforma) or user perceptions of the interventions. I propose that the naturalistic approaches employed in this study should also be a key part of monitoring the integration and use of future surgical educational interventions and progress monitoring tools.

The findings support a fuller acknowledgement that WBAs cannot be accepted as objective windows into learner performances. These cannot be regarded as straightforward, standardised and transferable assessments that can be superimposed upon learner activities. Instead, they are learner-centred, learner-driven, meaning-making phenomena. They change the nature of the learning milieu and different learners incorporate the WBA into their practice in different ways. This implies that WBAs are, and should be recognised as diverse, heterogeneous and giving rise to different learning in different learners and at different times.

Understanding that WBAs are not standalone instances of assessment is important for the surgical education community. That they might emerge from a complex learning milieu, pieced together by the learner as they make sense of what is happening to them in real-time, but are also a retrospective sense-making process, where a learner's recollections and interpretations of events are altered by the very structure of the WBA, may in fact be liberating for both learners and surgical
educators. Their meaning – truth – lies not in their role as a tool for objective assessment of performance, but as a representation of a learner’s understanding of their working world – their experiences and context – which become fixed as they are reified in some written document. In this way, a further implication of this research is in its recognition that, as a record of interpretation and meanings, the subjective nature of the WBA process is a strength to be harnessed, rather than a weakness to be glossed over.

At present, the surgical education community has struggled to know whether WBAs are useful, what insights they can provide about the learner and how best to use them. This perhaps is manifested in the introduction, albeit with mixed reception, of numerous potential alternatives, such as the *supervised learning event* or *entrustable professional activities*. Although this research has used the WBA as a vehicle to gain insight into workplace learning, the tacit rules that govern how learners construct their learning narratives and subsequently present them may also account for the difficulties encountered with other formalised windows onto working practice. This study represents different avenues by which researchers can analyse practice that arises through the use of other workplace assessment and learning tools, to allow for new insights into how policies are enacted in clinical, and other workplace, environments. In this way, the assertions made through this thesis may well be applicable, not only to the medical environment, but also to a wider field of assessment in the workplace.
Closing remarks

When I began this research, I viewed a WBA through the eyes of the community of postgraduate surgeons-in-training of which I was part. However, what drove my decision to undertake this research was to better understand something that had become so routine to me, yet seemed muddled, confused and divorced from the purpose it was claimed to have. Over the course of my research, I have come to understand WBAs, and more importantly, the learning that they stimulate, differently, but more fully and deeply – in a way that was probably beyond my comprehension when I first started.

I was lucky to have found sympathetic colleagues, who both believed in and shared my frustrations. They helped me articulate these frustrations, allowing me to find means to explore them in productive, insightful ways. In turn, I found the challenge of investigating these practices academically intriguing, from the perspective of both a surgical learner and an educator. I found this research offered avenues to develop my own worldview and position on education, both in the workplace and beyond. The process I have gone through has deepened my own personal notions of learning. I have changed as a surgeon, student, teacher and person.

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Appendices

Appendix A:

An example of a structured WBA proforma (available at www.iscp.ac.uk). This figure provides an example of a hard copy of a proforma, but in reality, these documents are completed digitally online, where the formatting of the document is altered, although its content remains the same.

---

**Direct Observation of Procedural Skills (DOPS)**

<table>
<thead>
<tr>
<th>Trainee</th>
<th>Assessor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name / GMC/GDC/IMC number:</td>
<td>Name / GMC/GDC/IMC number:</td>
</tr>
<tr>
<td>Assessment date:</td>
<td>Hospital DOPS took place:</td>
</tr>
</tbody>
</table>

**FEEDBACK:**

Verbal and written feedback is a mandatory component of this assessment.

**General**

**Strengths**

**Development needs**

**Recommended actions**

**TRAINEE REFLECTIONS ON THIS ACTIVITY (optional)**

What did I learn from this experience?

What did I do well?

What do I need to improve or change? How will I achieve it?

**RATINGS**

Your ratings should be judged against the standard laid out in the syllabus for the trainee’s stage of training.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Describes indications, anatomy, procedure and complications to assessor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2: Obtains consent, after explaining procedure and possible complications to patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3: Prepares for procedure according to an agreed protocol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4: Administers effective analgesia or safe sedation (if no anaesthetist)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5: Demonstrates good asepsis and safe use of instruments and sharps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6: Performs the technical aspects in line with the guidance notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7: Deals with any unexpected event or seeks help when appropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8: Completes required documentation (written or dictated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9: Communicates clearly with patient and staff throughout the procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10: Demonstrates professional behaviour throughout the procedure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GLOBAL SUMMARY**

Level at which completed elements of the PBA were performed on this occasion

<table>
<thead>
<tr>
<th>Level</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: Insufficient evidence observed to support a summary judgement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a: Able to assist with guidance (was not familiar with all steps of procedure)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b: Able to assist without guidance (knew all steps of procedure and anticipated next move)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a: Guidance required for most/all of the procedure (or part performed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b: Guidance or intervention required for key steps only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3a: Procedure performed with minimal guidance or intervention (needed occasional help)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b: Procedure performed competently without guidance or intervention but lacked confidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4a: Procedure performed confidently to a high standard without any guidance or intervention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4b: As 4a and was able to anticipate, avoid and/or deal with common problems/complications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DOPS DETAILS**

Name of Procedure:

No. times procedure previously performed:  
Emergency / Elective (please circle)

Performed in a simulated setting  
Description of the simulation:

DOPS performed while on a course  
Yes / No  
If yes, please give details:

Difficulty of procedure:  
Easier than usual  
Average difficulty  
More difficult than usual

Trainee’s signature:  
Assessor’s signature:
Appendix B:

This timeline maps key dates during this research study including the details of my data generating process. Participants are denoted by number. Letters denote different clinical activities that each learner engaged with. Only those activities which learners completed WBA proformas about were ultimately regarded as WBAs in this study.

<table>
<thead>
<tr>
<th>Research start date</th>
<th>16th October 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health research authority/ethics approval process started</td>
<td>31st Jan 2018</td>
</tr>
<tr>
<td>Pilot study carried out and analysed</td>
<td>16th August 2018 – 5th November 2018</td>
</tr>
<tr>
<td>HRA/ethics approval granted</td>
<td>24th Oct 2018</td>
</tr>
<tr>
<td>Upgrade completed</td>
<td>21st Jan 2019</td>
</tr>
<tr>
<td>Data generation phase</td>
<td>28th Jan 2019 – 5th Dec 2019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learner</th>
<th>Date recruited</th>
<th>Date of observation</th>
<th>AV file created</th>
<th>Transcribed</th>
<th>Date proforma received</th>
<th>DI interview done</th>
<th>DI interview transcribed</th>
<th>FU interview done</th>
<th>FU interview transcribed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>28/01/2019</td>
<td>01/03/2019</td>
<td>01/03/2019</td>
<td>06/03/2019</td>
<td>-</td>
<td>22/03/2019</td>
<td>22/03/2019</td>
<td>16/04/2019</td>
<td>16/04/2019</td>
</tr>
<tr>
<td>1B</td>
<td>01/03/2019</td>
<td>01/03/2019</td>
<td>01/03/2019</td>
<td>06/03/2019</td>
<td>21/03/2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td>01/03/2019</td>
<td>01/03/2019</td>
<td>12/04/2019</td>
<td>21/03/2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1D</td>
<td>04/03/2019</td>
<td>05/03/2019</td>
<td>14/04/2019</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A</td>
<td>01/03/2019</td>
<td>02/04/2019</td>
<td>02/04/2019</td>
<td>05/04/2019</td>
<td>28/05/2019</td>
<td>Combined with F/U interview</td>
<td>-</td>
<td>25/06/2019</td>
<td>28/06/2019</td>
</tr>
<tr>
<td>2B</td>
<td>02/04/2019</td>
<td>02/04/2019</td>
<td>05/04/2019</td>
<td>28/05/2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2 F/B</td>
<td>28/05/2019</td>
<td>28/05/2019</td>
<td>28/06/2019</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3A</td>
<td>07/06/2019</td>
<td>14/06/2019</td>
<td>14/06/2019</td>
<td>31/06/2019</td>
<td>21/06/2019</td>
<td>30/06/2019</td>
<td>23/07/2019</td>
<td>22/08/2019</td>
<td>04/09/2019</td>
</tr>
<tr>
<td>3B</td>
<td>18/06/2019</td>
<td>18/06/2019</td>
<td>-</td>
<td>-</td>
<td></td>
<td>01/07/2019</td>
<td>23/07/2019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3C</td>
<td>18/06/2019</td>
<td>18/06/2019</td>
<td>31/07/2019</td>
<td>21/06/2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>15/06/2019</td>
<td>18/06/2019</td>
<td>24/06/2019</td>
<td>01/08/2019</td>
<td>01/07/2019</td>
<td>02/07/2019</td>
<td>25/07/2019</td>
<td>09/08/2019</td>
<td>09/08/2019</td>
</tr>
</tbody>
</table>

Analysis + write up | 1st Mar 2019 – 16th Apr 2021
Appendix C:

The following is an outline of the topics discussed in each of the post-WBA interviews conducted with each learner.

Debriefing Interview schedule

Realness of the WBA event
- In what ways was the WBA encounter similar to others you have experienced?
- In what ways was the WBA encounter different to others you have experienced?
- How affected were you by the presence of the audiovisual recording?
- How did the presence of the non-participant observer affect you?
- How similar or different was your assessors approach compared to other WBA experiences?

Investigating the links between real-life assessment and recorded feedback
- How well do you think the feedback on the proforma reflects the WBA as it happened?
- If it is different, how is it different and why?
- Why did you/your assessor choose to record certain phrases on the form and how did you/they decide they were relevant?
- Is there anything you will take from the WBA that you haven’t included in the form and why?

Follow up Interview Schedule

Reflections on WBA event
- How well do you recall the events of the WBA that was observed?
- Have you thought about/reflected on any feedback given to you verbally at the time and the feedback that was recorded?

Impact of the WBA on subsequent practice
- Have you encountered similar situations since the assessment?
- How has the assessment helped/not helped you on a day-to-day basis since then?
- How have you put the feedback you were given into practice?
- How has the WBA changed/impacted the way you approach these situations?
- How useful a process was that assessment?
Appendix D:

Here I demonstrate the process by which I mapped the clinical happenings during a WBA activity using data generated from a study participant. To build a picture of what was happening during this event, I began by identifying different interactions and exchanges that the learner was involved in, and how they fit into the context of the procedure as a whole. This would then form the backdrop to any contemporaneous and subsequent interpretation of the situation by the learner. In the first instance, I represented the 20 minutes of this procedure as the following timeline:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|

In the first instance, I segmented the procedure into (blue line) pre-operative (1), operative (2) and post-operative (3) phases, and then (red line) into smaller segment within the event. The key is given below the figure:
<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation period and set-up</td>
<td>Period after the start of my recording up until the insertion of the camera by the learner to visualise the tumour as the theatre team prepared their instruments.</td>
</tr>
<tr>
<td>2</td>
<td>Intra-operative period</td>
<td>From the end of the preparation time through to the final removal of the scope.</td>
</tr>
<tr>
<td>3</td>
<td>Post-operative time</td>
<td>The period after the removal of the equipment from the patient by the learner, during which time they are continuing to complete theatre activities and speak about the patient while they are in the operating theatre.</td>
</tr>
<tr>
<td>4</td>
<td>Timeout</td>
<td>The team carry out the WHO pre-operative checklist, which is a standard part of the procedure within the institute. It consists of all members of the team (surgical team, anaesthetic team, theatre/scrub team and myself) and represents the final formal safety check while the patient is asleep on the operating table but the procedure is yet to begin.</td>
</tr>
<tr>
<td>5</td>
<td>Scrubbing</td>
<td>The learner washes his hands in line with the requirements of this particular procedure and puts on sterile gloves. Note: this is not the usually surgical scrubbing up procedure as this is not required for these types of endoscopic procedures.</td>
</tr>
<tr>
<td>6</td>
<td>Draping</td>
<td>The scrub nurse hands the learner the drapes for him to place over the patient in preparation for the start of the procedure.</td>
</tr>
<tr>
<td>7</td>
<td>Equipment checklist</td>
<td>The learner double checks that all the requested equipment is present prior to beginning the equipment set up.</td>
</tr>
<tr>
<td>8</td>
<td>Equipment set up</td>
<td>The learner sets up the standard (dedo) scope, secures it in the correct position and has his first glimpse of the tumour down the scope prior to placing the camera.</td>
</tr>
<tr>
<td>9</td>
<td>Visualising tumour</td>
<td>The learner places the camera down the scope, as which point the rest of the team is able to see the view down the scope. From now on, the team, including the learner as main operator, are able to share the view as seen on the screen.</td>
</tr>
<tr>
<td>10</td>
<td>Cleaning area</td>
<td>The lesion is cleaned by the learner using a swab to ensure the team can view it appropriately and they make sure they biopsy the correct area.</td>
</tr>
<tr>
<td>11</td>
<td>Biopsy 1</td>
<td>The first biopsy is taken using the forceps that are open on the current set. However, they appear to be the incorrect shape and size to obtain a suitable biopsy so the team ask for a different set of forceps.</td>
</tr>
<tr>
<td>12</td>
<td>Biopsy 2</td>
<td>The theatre team open a different set of equipment and hand the forceps to the scrub nurse, who in turn passes it to the learner. He then uses it for the biopsy.</td>
</tr>
<tr>
<td>13</td>
<td>Biopsy 3</td>
<td>A final bite of tissue is taken.</td>
</tr>
<tr>
<td>14</td>
<td>Haemostasis</td>
<td>Using another swab, a small and expected amount of bleeding from the site of the biopsy is stopped down the scope, under camera visualisation, using another swab.</td>
</tr>
<tr>
<td>15</td>
<td>Viewing other areas</td>
<td>As the scope and camera is being removed, the remainder of the surrounding tissues are examined to make sure that there is no evidence of tumour in these areas.</td>
</tr>
<tr>
<td>16</td>
<td>Examining dentition</td>
<td>At the end of the procedure, the learner examines the patient’s dentition for loose teeth.</td>
</tr>
<tr>
<td>17</td>
<td>Discussing findings</td>
<td>The team briefly discuss various aspects of the findings, patient and potential management options after they have removed their gloves.</td>
</tr>
</tbody>
</table>
Segmenting the task in this way was a useful orientation to the activity, to understand and familiarise myself with the sequence of events and when things occurred. However, in order to better understand the event from the point of view of the learner, I identified the utterances, conversations and dialogues that the learner was part of. Mapped onto the same timeline (with the key below), the following represent:

- i) exchanges between learner and assessor (dark blue),
- ii) group discussions, where the learner was part of a larger discussion with multiple people (beige)
- iii) exchanges with the anaesthetic team (yellow)
- iv) exchanges with the scrub nurse/team (brown)
- v) any exchanges between others that were relevant/appeared to be overheard by the learner e.g. between the assessor and helper (red)
- vi) exchanges with the helper (light blue)
<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Feel of neck</td>
<td>The assessor verbalises his thoughts during an on-table examination to the learner just at the end of the timeout</td>
</tr>
<tr>
<td>19</td>
<td>Observation of top end</td>
<td>The assessor quizzes the learner as he is washing his hands in preparation for putting on his sterile gloves</td>
</tr>
<tr>
<td>20</td>
<td>Why am I doing this</td>
<td>The assessor introduces his point about what the purpose of this particular operative activity is, i.e. mapping and planning for the next stage of treatment</td>
</tr>
<tr>
<td>21</td>
<td>Equipment set up</td>
<td>The learner (seemingly directed at the assessor) runs through the equipment that he needs. The assessor seems to be mentally checking these things off also, counting them on his fingers</td>
</tr>
<tr>
<td>22</td>
<td>Thought process of next stage</td>
<td>The assessor again speaks to the learner as he sets up the remainder of the kit to explain the importance of using this procedure to help to plan for future operations</td>
</tr>
<tr>
<td>23</td>
<td>Laser</td>
<td>Prompted by something in the previous conversation, the learner speaks to the supervisor to ask if they have a particular piece of equipment on standby (the laser) which the assessor reports they do, but he doesn’t think they will require it</td>
</tr>
<tr>
<td>24</td>
<td>Initial report</td>
<td>As the equipment is being secured, the learner is able to get a view of the tumour/surgical site down the scope and feeds back to the assessor, who responds accordingly. While doing this the equipment slips slightly and so requires re-adjustment</td>
</tr>
<tr>
<td>25</td>
<td>Getting your view</td>
<td>The assessor acknowledges the readjustment of the equipment and explains that it is important to get a good view of the tumour</td>
</tr>
<tr>
<td>26</td>
<td>Trying to do too much</td>
<td>As the learner deals with these problems, the assessor then advises him against trying to do everything himself (implying he should perhaps look at who is around him), although acknowledges that learner is a dextrous surgeon.</td>
</tr>
<tr>
<td>27</td>
<td>Adjust scope</td>
<td>The assessor reacts to the learner’s utterances suggesting that the scope is a bit tight and adjusts some components to make things easier</td>
</tr>
<tr>
<td>28</td>
<td>Worrying</td>
<td>As the learner displays the tumour on the screen through the camera, the assessor verbalises his thoughts, explaining that the lesion looks worrying for a recurrent cancer</td>
</tr>
<tr>
<td>29</td>
<td>Not suitable for the laser</td>
<td>The assessor again verbalises his thought process, explaining that given the appearance of the lesion on the screen, he does not think that he will be able to excise that lesion, if it proves to be cancerous, using a laser (and therefore the patient will require a larger procedure to remove all or part of the voice box).</td>
</tr>
<tr>
<td>30</td>
<td>Using assistants</td>
<td>The assessor directs the learner’s assistant to hold the scope in a particular position to help him with the part of the procedure he is trying to do. He then comments again about the learner (in the third person, but kind of directed to him as a learning point) for him to make use of the resources around him so he can do what he needs to</td>
</tr>
<tr>
<td>31</td>
<td>There isn’t it</td>
<td>The learner reports again (cf 24 and 28) that he has the tumour in view on the screen, and voices that he thinks it looks suspicious for cancer. The assessor verbally agrees. The learner asks for the biopsy forceps but as the scrub nurse hands over the instrument, the assessor questions the learner as to whether they will be suitable. While the learner continues with the procedure, the assessor continues to speak to him about the type of procedure that might be possible for this patient. At the end of this comment,</td>
</tr>
<tr>
<td>Line</td>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>32</td>
<td>Meat into it</td>
<td>The assessor here explains why a different shaped biopsy forceps would be more appropriate.</td>
</tr>
<tr>
<td>33</td>
<td>Specimen naming</td>
<td>Here, while waiting for the new forceps to be opened, the assessor and learner exchange comments about what the name (anatomical location) of the tumour specimen will be.</td>
</tr>
<tr>
<td>34</td>
<td>That’s meaty isn’t it</td>
<td>Once the learner has the new forceps in his hand, the assessor comments, in a joking manner, that these are much larger and jokes that the learner may be able to remove the entire voice box with them. The learner laughs. As the tip of the forceps appears on the screen, the assessor says that the learner needs “that” i.e. cricoid pressure to make the tumour more easily visible. Once the learner has taken the biopsy, the assessor expresses his satisfaction, before commenting that it is important for the learner to use the people around him to give himself the best opportunity to perform the procedure as best as possible.</td>
</tr>
<tr>
<td>35</td>
<td>You got pressure</td>
<td>The learner decided to take one more biopsy, which the assessor agrees with. As the learner does this, when the assessor sees the tip of the forceps on the screen, he asks whether someone is applying the same cricoid pressure as earlier. The assessor moves as if to apply it, but then realises that the helper is already applying it, so move back again.</td>
</tr>
<tr>
<td>36</td>
<td>On the way out</td>
<td>Having taken all the biopsies, the assessor asks the learner to have a look, as he withdraws camera, at the other neighbouring structures. He reports to the learner that he doesn’t think they will be involved. They also have a discussion about the safest way to handle the swabs (neuro-patties) that the learner is using to stop the bleeding.</td>
</tr>
<tr>
<td>37</td>
<td>No post biopsy picture</td>
<td>The assessor explains to the learner that he doesn’t require a post biopsy picture, but the learner should have a look and check for no further bleeding. He adds that he trusts the learner’s judgement.</td>
</tr>
<tr>
<td>38</td>
<td>Other structures</td>
<td>As the learner is visualising the different areas, the assessor gives a verbal commentary, reinforcing that there is no need for pictures, but just for them as the surgeons to be aware of what the areas look like. The assessor directs the learner to look for a particularly difficult area to visualise in this patient, which he manages to find after looking. The assessor reports there is no disease there, but also that it is important to see that area because that is where the cuts would be made during the next procedure. Once this point has been made, the learner confirms whether he should remove the scope and the assessor agrees.</td>
</tr>
<tr>
<td>39</td>
<td>Dentition</td>
<td>The learner comments to the assessor that the patient has some dental problems.</td>
</tr>
<tr>
<td>40</td>
<td>Future options</td>
<td>The learner and assessor discuss possible surgical management options based on these findings.</td>
</tr>
<tr>
<td>41</td>
<td>Pt context</td>
<td>The conversation then discusses these findings taking patient factors into consideration.</td>
</tr>
<tr>
<td>42</td>
<td>Surgical options</td>
<td>Further discussion about which procedure would be best in this particular patient.</td>
</tr>
<tr>
<td>43</td>
<td>Group timeout</td>
<td>The team perform the standard WHO checklist, time out procedure, of which the learner is part of and actively contributes to.</td>
</tr>
<tr>
<td>44</td>
<td>Opinion to group</td>
<td>The assessor appears to make a generalised comment about the appearance of the tumour, but not to anyone in particular.</td>
</tr>
<tr>
<td>45</td>
<td>Specimen name</td>
<td>This conversation starts as the learner verbalising thoughts of the specimen name out loud to no one in particular, but then becomes (as above) a conversation with the assessor</td>
</tr>
<tr>
<td>46</td>
<td>Sending</td>
<td>Here the learner calls to the rest of the theatre team to send for the next patient on the list, as they are approaching the end of the procedure</td>
</tr>
<tr>
<td>47</td>
<td>What was appearance</td>
<td>The learner asks the anaesthetist what the appearance of the vocal cords were when they were placing the breathing tube down as the patient was going to sleep. The anaesthetist replied that there were not significant abnormalities noted.</td>
</tr>
<tr>
<td>48</td>
<td>Change airway</td>
<td>Learner and anaesthetist co-ordinate an important part of the procedure where the breathing tube that was placed by the anaesthetist initially is replaced by the equipment that the surgeon will use, which both functions as a breathing tube and a device that enables the surgeons to visualise the tumour</td>
</tr>
<tr>
<td>49</td>
<td>Scope slipped</td>
<td>Here the learner asks the anaesthetist to stop the oxygen flow because the scope has slipped and needs to be repositioned. The anaesthetist comments that he had noticed that the ventilation had stopped.</td>
</tr>
<tr>
<td>50</td>
<td>You ok</td>
<td>The learner asks the anaesthetist, at around midway through the procedure, if they are happy</td>
</tr>
<tr>
<td>51</td>
<td>We’re coming out</td>
<td>The learner comments for the anaesthetist to stop the oxygen as they are about to remove the equipment, indicating they are near the end of the procedure</td>
</tr>
<tr>
<td>52</td>
<td>Equipment set up</td>
<td>The learner asks the scrub nurse for a mouth guard</td>
</tr>
<tr>
<td>53</td>
<td>Suspension on</td>
<td>The learner asks the scrub nurse for a piece of equipment to help hold the scope in the correct position</td>
</tr>
<tr>
<td>54</td>
<td>Equipment set up</td>
<td>The learner asks for the camera and then the light to be fixed to it. He clarifies with the theatre team exactly where the cord needs to be attached</td>
</tr>
<tr>
<td>55</td>
<td>Biopsy forceps</td>
<td>The learner asks for the biopsy forceps</td>
</tr>
<tr>
<td>56</td>
<td>Different equipment</td>
<td>The learner tells the scrub nurse to send off the first sample that is in the biopsy forceps and to get a different set of forceps</td>
</tr>
<tr>
<td>57</td>
<td>Pictures</td>
<td>The learner explains to the theatre team that he needs the pictures that were taken using the camera, and that he will give them his electronic storage device</td>
</tr>
<tr>
<td>58</td>
<td>Hoarse voice</td>
<td>The helper here speaks to the assessor commenting that he felt this patient had a very hoarse voice</td>
</tr>
<tr>
<td>59</td>
<td>How to hand over equipment</td>
<td>The assessor speaks directly to the scrub nurse explaining that prior to handing over a piece of equipment, she should have prepared it in a certain way</td>
</tr>
<tr>
<td>60</td>
<td>Equipment set up</td>
<td>The scrub nurse is trying to hand a piece of equipment to the learner but hasn’t realised that the learner is doing something else. The assessor tells her he is not ready for it yet</td>
</tr>
<tr>
<td>61</td>
<td>Suction</td>
<td>The assessor asks the helper to place the suction tube down the scope</td>
</tr>
<tr>
<td>62</td>
<td>Suction</td>
<td>The assessor verbally directs the helper to suction over an area (as visualised on screen)</td>
</tr>
<tr>
<td>63</td>
<td>suction</td>
<td>The assessor asks the helper to suction over a particular area by pointing to a region on the screen</td>
</tr>
<tr>
<td>64</td>
<td>Specimen name</td>
<td>The helper, as the learner is handing the biopsy sample to the scrub nurse, gives further instructions about the specimen name</td>
</tr>
</tbody>
</table>
and that they can include the specimen in the same pot they have used for the previous sample.

<table>
<thead>
<tr>
<th>Point</th>
<th>Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>Adjustment of equipment. The learner asks the helper to adjust a piece of equipment that supports the scope.</td>
</tr>
<tr>
<td>66</td>
<td>Suction. The learner asks the helper to suction in a particular area.</td>
</tr>
<tr>
<td>67</td>
<td>Cricoid pressure. The learner asks the helper to apply some cricoid pressure, which the helper acknowledges.</td>
</tr>
<tr>
<td>68</td>
<td>Support equipment. The learner asks the helper to hold and help stabilise the equipment that is securing the scope in the correct position.</td>
</tr>
<tr>
<td>69</td>
<td>Cricoid pressure. The learner again asks for the helper to apply cricoid pressure.</td>
</tr>
<tr>
<td>70</td>
<td>Holding camera. As the operation is nearing completion, the learner asks the helper to hold the camera so he can direct the scope to visualise the different areas of the region to examine them for cancer.</td>
</tr>
</tbody>
</table>

While I tried to isolate spoken interactions in the descriptions above, in some cases (for example point 35), in order to provide a sensible meaning, it was virtually impossible to extract the spoken from the gestural actions, which further emphasised the need for multimodal evaluation of these events. So, as well as looking at verbal exchanges between the learner and those around him, I also identified episodes of actions that frequented this event. These are mapped onto the same timeline in the figure below, and represent:

i) actions performed by the learner (grey).
ii) actions performed by the helper (white).
iii) actions performed by the assessor (black).
iv) actions performed by the scrub nurse (pink).

Importantly, the actions (ii, iii and iv) noted are those that are done in response to, or as a prompt to some kind of engagement by the learner, thus keeping at the forefront the analysis of this event as it unfolds for the learner, rather than as an event in itself.
<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>71</td>
<td>Gloving up</td>
<td>The learner is washing his hands and donning his sterile gloves in preparation for the procedure</td>
</tr>
<tr>
<td>72</td>
<td>Draping</td>
<td>The learner is applying the sterile drapes over the patient</td>
</tr>
<tr>
<td>73</td>
<td>Setting up scope</td>
<td>The learner is handed the scope, holds it and applies lubricating jelly prior to insertion. He checks the suction is on, and takes the mouth-guard, dampens it, ready to place into the patient’s mouth</td>
</tr>
<tr>
<td>74</td>
<td>Placing the scope</td>
<td>In a co-ordinating with the anaesthetist, the learner awaits the removal of the breathing tube, prior to placing the mouth guard and then the scope</td>
</tr>
<tr>
<td>75</td>
<td>Stabilising scope</td>
<td>The learner gets his first view of the tumour (which only he can see as the camera is yet to be inserted). A device is positioned by the helper but then tightened by the learner in the final position. At this point, the learner realises the scope is too low and needs to be re-adjusted. He loosens the supporting device, re-adjusts the scope and re-tightens the supporting device. He motions for a supporting table to be re-positioned to help the correct placement of the scope</td>
</tr>
<tr>
<td>76</td>
<td>Camera</td>
<td>The learner places the camera down the scope. It requires some manoeuvring to get into position, which others assist with, but he advances it and begins to visualise the tumour - the image is shown on screen. The learner visualises various different regions before re-focusing on the tumour</td>
</tr>
<tr>
<td>77</td>
<td>Dabbing with swab</td>
<td>The learner continues to hold the camera, is given a neuro-patty (small swab on a length of surgical string) in his other hand and cleans the tumour with the swab, while looking at the screen. He removes the neuro-patty and hands it back to the scrub nurse.</td>
</tr>
<tr>
<td>78</td>
<td>Biopsy 1</td>
<td>He takes the forceps, looks at the tips, then inserts them down the scope with his right hand, again with the scope in his left hand. He takes a biopsy as best he can with that pair of forceps, removes the forceps, gives the specimen to the scrub nurse and hands the forceps back to the nurse</td>
</tr>
<tr>
<td>79</td>
<td>Biopsy 2</td>
<td>He is given the next set of forceps and places them down the scope. He takes the biopsy, then removes the forceps from down the scope, allows the scrub nurse to take the specimen.</td>
</tr>
<tr>
<td>80</td>
<td>Biopsy 3</td>
<td>He replaces the forceps down the scope and takes a further biopsy. He gives this to the scrub nurse then places the forceps on the scrub trolley</td>
</tr>
<tr>
<td>81</td>
<td>Haemostasis</td>
<td>He takes the neuro-patty, already loaded on in an instrument, from the scrub trolley, looks at the swab, the places it down the scope and, via the camera, onto the biopsy site to stop the bleeding. When the bleeding has stopped, he removes the swab and gives the instrument back to the scrub nurse</td>
</tr>
<tr>
<td>82</td>
<td>Cleaning camera</td>
<td>He removes the camera, cleans it and places anti-fog on it before replacing it down the scope and handing it to the helper to hold</td>
</tr>
<tr>
<td>83</td>
<td>Unscrewing clamp</td>
<td>The learner unscrews the clamp that has been holding the scope and hands it back to the scrub nurse, while holding the scope in position manually</td>
</tr>
<tr>
<td>84</td>
<td>EUA</td>
<td>The learner directs the scope (with the helper supporting the camera which is still placed down it) at the various different regions to check there is no disease there. Once this is done, the learner removes the scope and camera and hands it back to the scrub nurse</td>
</tr>
<tr>
<td>85</td>
<td>Dental examination</td>
<td>The learner checks the patient’s dentition once the procedure is complete</td>
</tr>
<tr>
<td>86</td>
<td>Setting up</td>
<td>The helper takes a piece of equipment handed to the learner by the scrub nurse and unscrews it so it can be appropriately applied. He positions it and fastens it until the learner takes over</td>
</tr>
<tr>
<td>87</td>
<td>Setting up</td>
<td>The helper moves the supporting device closer to the scope to help hold it in the correct position</td>
</tr>
<tr>
<td>88</td>
<td>Suction + cricoid</td>
<td>The helper places the suction down the scope as the learner is holding the camera. The learner directs him where to suction. He also applies cricoid pressure when requested to do so by the learner</td>
</tr>
<tr>
<td>89</td>
<td>Taking equipment</td>
<td>The scrub nurse motions for the learner to take a piece of equipment that she has prepared, but the learner is not yet ready/appears not to have seen her holding it. The helper takes it and inspects the tip of it.</td>
</tr>
<tr>
<td>90</td>
<td>Holding equipment</td>
<td>The learner asks the helper to hold onto the equipment to stabilise the scope and takes the kit that the helper was holding. The helper continues to stabilise the equipment while the learner has both hands occupied</td>
</tr>
<tr>
<td>91</td>
<td>Holding camera</td>
<td>Towards the end of the procedure, the helper is asked to hold the camera while the learner aims the scope at different areas</td>
</tr>
<tr>
<td>92</td>
<td>Scope adjustment</td>
<td>The assessor makes some adjustments to the scope as the learner is struggling to advance it appropriately</td>
</tr>
<tr>
<td>93</td>
<td>Cricoid</td>
<td>The assessor applies cricoid pressure to help visualise the tumour site</td>
</tr>
<tr>
<td>94</td>
<td>Moving to screen</td>
<td>The assessor moves towards the screen to point out an area he would like to be more closely, directing the helper to suction there</td>
</tr>
<tr>
<td>95</td>
<td>Pictures</td>
<td>The assessor presses a button on the stack to take a picture of the onscreen image</td>
</tr>
<tr>
<td>96</td>
<td>Points to screen</td>
<td>The assessor points directly to the site that he is concerned about, and explains that that is the area of concern that he wants to check if it has cancer</td>
</tr>
<tr>
<td>97</td>
<td>Moves to picture</td>
<td>The assessor is watching the learner clean the area and moves back to the screen to take a picture</td>
</tr>
<tr>
<td>98</td>
<td>Deciding forceps</td>
<td>The assessor peers over the learner’s shoulder when he is looking at the tips of the first pair of forceps to see if they would be appropriate.</td>
</tr>
<tr>
<td>99</td>
<td>Meat into it</td>
<td>The assessor emphasises the need for a particular shape of forceps using his hand to demonstrate the action required to take the required biopsy</td>
</tr>
<tr>
<td>100</td>
<td>Cricoid</td>
<td>The assessor applies cricoid pressure to help the learner visualise the tumour to take the biopsy</td>
</tr>
<tr>
<td>101</td>
<td>Cricoid offer</td>
<td>The assessor moves to give cricoid pressure but then retracts hand once realised it is being provided by the helper already</td>
</tr>
<tr>
<td>102</td>
<td>Entry point</td>
<td>The assessor moves back to the screen to demonstrate where the surgical cuts might be during a further operation. He points to the areas on the screen and then uses hand motions to emphasise his points</td>
</tr>
<tr>
<td>103</td>
<td>Prepares trolley</td>
<td>The scrub nurse brings in her trolley and begins to set out her equipment</td>
</tr>
<tr>
<td>104</td>
<td>Helps with drapes</td>
<td>She hands the learner the drapes and helps place them</td>
</tr>
<tr>
<td>105</td>
<td>Hands learner equipment</td>
<td>She begins to hand the learner the first pieces of equipment</td>
</tr>
<tr>
<td>106</td>
<td>Prepares next equipment</td>
<td>As the learner sets up, she prepares the next bit of equipment</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>107</td>
<td>Hands the stabilising kit</td>
<td>She responds to a specific equipment request and passes it to the surgical team</td>
</tr>
<tr>
<td>108</td>
<td>Tries to pass equipment</td>
<td>She tries to pass them the camera but the learner is not ready for it yet so she waits with it in her hand</td>
</tr>
<tr>
<td>109</td>
<td>Passes camera</td>
<td>She passes the camera when it is asked for</td>
</tr>
<tr>
<td>110</td>
<td>Passes suction</td>
<td>She hands the suction to the helper</td>
</tr>
<tr>
<td>111</td>
<td>Prepares next equipment</td>
<td>She prepares more equipment</td>
</tr>
<tr>
<td>112</td>
<td>Gives neuro-patty</td>
<td>She hands the neuro-patty to the helper</td>
</tr>
<tr>
<td>113</td>
<td>Takes back swab, gives forceps and re-loads the neuro-patty</td>
<td>She takes back the neuro-patty and hands over the first set of biopsy forceps, before reloading the neuro-patty and placing it back on her table</td>
</tr>
<tr>
<td>114</td>
<td>Receive specimen</td>
<td>She receives the first specimen from the learner and leaves it on the table</td>
</tr>
<tr>
<td>115</td>
<td>Hands new forceps</td>
<td>She passes a different set of forceps to the learner</td>
</tr>
<tr>
<td>116</td>
<td>Receives next biopsy</td>
<td>She receives the second biopsy and leaves it on the table</td>
</tr>
<tr>
<td>117</td>
<td>Places all three biopsies into pot</td>
<td>She places the first two biopsy specimens into the specimen pot that a colleague is holding. While she is doing this, the learner places the third specimen on the table which she also places in the pot</td>
</tr>
<tr>
<td>118</td>
<td>Holds the neuro-patty string</td>
<td>She holds the neuro-patty string while the learner is placing it down the scope</td>
</tr>
<tr>
<td>119</td>
<td>Receive the camera and scope back</td>
<td>She receives the camera and scope back form the learner at the end of the procedure</td>
</tr>
</tbody>
</table>

Combining these different timelines enabled me to create a plot-diagram depicting the broad segments of the procedure, the verbal exchanges and actions between the learner and other personnel during this particular activity.
Key:

- **Blue**: Pre-, intra- and post-procedure events
- **Red**: Segmented actions of procedure
- **Orange**: Verbal exchanges between learner and assessor
- **Purple**: Group discussions, where the learner was part of a larger discussion with multiple people
- **Yellow**: Verbal exchanges between learner and the anaesthetic team
- **Green**: Verbal exchanges between learner and nurse/theatre team
- **Dark Red**: Verbal exchanges between others that were relevant/appeared to be overheard by the learner
- **Light Blue**: Verbal exchanges with the helper
- **Orange**: Actions performed by learner
- **Green**: Actions performed by assessor
- **Dark Red**: Actions performed by helper
- **Orange**: Actions performed by scrub nurse
Appendix E:

Front page of Health Research Authority Approval letter

Professor Jeff Bezemer
Professor in Learning and Communication
UCL Institute of Education
UCL Knowledge Lab
23-29 Emerald Street
London
WC1N 3QS

24 October 2018

Dear Professor Bezemer

Study title: How do postgraduate surgeons-in-training learn through the use of workplace-based assessment? (Student study)

IRAS project ID: 237304
Protocol number: 18/0162
REC reference: 18/LO/1816
Sponsor University College London

I am pleased to confirm that HRA and Health and Care Research Wales (HCRW) Approval has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.
Appendix F:

The following pages document the context for the third multimodal transcript in chapter 6. Omar’s experience was generated within a complex context, which was relevant to the development of this particular narrative. There was a single patient on this operating list, who required a lengthy operation to treat a large cancer on their tongue. The operation required two consultant surgeons (supervisors A and B), one of which (B) became the assessor. There were two learners (Jatin and Omar) and a team of more junior surgical staff, in addition to the other health professionals usually present in theatre.

The procedure took 12 hours and consisted of removal of the lymph glands in the neck (a neck dissection), removal of the tongue cancer and a reconstructive procedure using tissue taken from the patient’s own forearm. In order to do this, blood vessels from the forearm tissue were detached from the blood vessels in the arm and re-attached to different blood vessels in the neck under a surgical microscope. During this activity, Jatin performed the neck dissection, under supervision of supervisor A. This procedure took about two hours. After this was completed, he then assisted his supervisor to excise the tumour from the tongue. During this time, supervisor B was harvesting the tissue from the forearm with the help of one of the junior team members. Once this tissue had been harvested and the tumour had been removed from the tongue, Jatin assisted supervisor B (who was now his WBA assessor) as he prepared to reconstruct the large defect left by the excision of the tongue cancer.

During this time, Omar, who had clinical obligations earlier that day at a different hospital, attended the theatre list to assist in the reconstructive part of the procedure. There were three blood vessels to be re-attached (one artery and two veins). Supervisor B (the assessor for the WBAs) sutured the artery, assisted under the microscope by Jatin. Jatin then sutured one of the veins, assisted under the microscope by this assessor. Omar then sutured the final vein, also assisted under the microscope by the assessor. Supervisor A, Jatin and Omar then completed the remainder of the procedure. The neck operation performed by Jatin earlier in the day was not recorded as a WBA, although both Jatin and Omar documented their activities under the microscope as WBAs. This is depicted in the following timeline:

The experiences of Jatin and Omar, who both performed clinical activities at different stages of the same procedure to give rise to separate WBAs.
Omar’s experience during his engagement with the clinical activity took place amidst a complicated physical and social learning environment. I present the layout of the operating theatre in the figure below, which highlights the different activities and personnel that were involved and present at the time this learning experience was generated.

A bird’s eye view of the physical layout of the operating theatre for this learner. L = Learner (Omar), A = Assessor, 1= Scrub nurse, 2= Microscope, 3= Patient, 4= Screen showing microscope view, 5= Second team (inc. Jatin, closing the arm donor site), 6= Anaesthetist and anaesthetic machine

Therefore, present in the operating room at the time, was another learner (Jatin), who can be seen working adjacent to the assessor, in position 5 above. Jatin is performing a different part of the procedure (suturing an extensive defect in the patient forearm, extending from their wrist to elbow). From time to time, the assessor and Jatin also engaged in dialogue related to the task that that Omar was completing.
Appendix G:

Conceptual map of study protocol