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Journal of Education and Work

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cjew20

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To cite this article: Jonathan Tummons (2023) "I've got a mountain of paperwork to do!" Literacies and texts in a cycle technicians' workshop, Journal of Education and Work, 36:5, 381-392, DOI: 10.1080/13639080.2023.2226076

To link to this article: https://doi.org/10.1080/13639080.2023.2226076

Published online: 20 Jun 2023.

JOURNAL OF EDUCATION AND WORK
2023, VOL. 36, NO. 5, 381–392
https://doi.org/10.1080/13639080.2023.2226076

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"I've got a mountain of paperwork to do!" Literacies and texts in a cycle technicians' workshop

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ABSTRACT

Derived from an ethnography of working cultures and practices at a bike shop in the North of England, this paper rests on a critical application of social practice theories of literacy (Literacy Studies) in order to explore the complex and heterogeneous literacy practices of cycle technicians. Drawing on a series of vignettes constructed from the ethnographic data, the paper demonstrates the variety of experiences of both formal and informal learning that underpin the literacy practices of the cycle workshop. In addition to providing an account of a qualified and specialist workforce that is underrepresented in extant research literature, the paper also provides an exemplar for ethnographic research as a vehicle for exploring literacy practices. The paper also suggests that ongoing debates concerning transferable workplace skills can be enriched through considering situated, contextualised literacy events. The paper concludes by arguing that for cycle technicians, and perhaps other occupations as well, Literacy Studies can generate rich and complex accounts that unpack the textual practices found alongside the occupational expertise and competence being observed.

ARTICLE HISTORY
Received 6 October 2022
Accepted 16 May 2023

KEYWORDS
Cycle technicians; ethnography; literacy practices; situated learning; workplace learning

Introduction

In 2020, the UK cycling industry was worth £2.3 bn.[1] It is an industry that supports over 64,000 jobs, and there are over 2,700 cycle shops in the UK. As an object for academic inquiry, cycling has been explored in terms of sociological and cultural inquiry to historically-situated sociotechnological critique (Bijker 1995; Horton, Rosen, and Cox 2007), and from social history to ways of knowing in craftwork contexts (Martin 2016; Oosterhuis 2016). But as a site of technical or vocational expertise, practice, or learning, it remains entirely under-explored, in contrast to the training and learning of workers within analogous occupations/professions such as motor vehicle, engineering, or avionics – areas of work that of necessity require theoretical, technical, and practical or 'hands-on' ways of knowing that constitute a well-established body of research (Barber 2003; Brockmann and Laurie 2016; Brodie 2001).

From January to September 2022, I conducted an ethnography of a cycle workshop in order to answer two overarching questions:

(1) Becoming a bike shop worker: how do people learn how to become cycle technicians?
(2) Tools, paperwork, and workarounds: what are the cultures and materialities of the workshop?

These overarching questions align to the theoretical framework of the ethnography (discussed below) and were devised in order to reflect the long-established *emergent nature* of ethnography

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This article has been republished with minor changes. These changes do not impact the academic content of the article.

of education as a research methodology (Hammersley 2006; Mills and Morton 2013). In this paper my specific focus is on the *literacy practices and events* of the workshop (discussed below), speaking primarily to my second research question. That is to say, the data that I discuss and the conclusions that I draw in this paper are intended to be seen as contributing one element to the overall aim of the ethnography. This paper is constructed as follows: first, I provide a brief description of the research site; next, I discuss Literacy Studies, the theoretical lens that this paper rests on, together with comments concerning the broader conceptual framework and the ethnographic methodology. Then I discuss three vignettes constructed from my data, before finally concluding by returning to my research questions.

Welcome to the bike shop!

The Bike Shop is a large independent retailer in the North of England.[2] It operates three different retail sites in the same city. The largest of these – where I conducted my field work – is the focus for the ethnography. It was established thirty years ago and is run by two directors, one of whom founded the business as a sole trader. They employ eighteen members of staff, some full-time and some part-time. The Bike Shop sells a range of cycles – town bikes, sports bikes, e-bikes and folding bikes – and also offers servicing and repairs. Some of the older members of staff left compulsory schooling at 16, whilst others elected to stay at school or college until the age of 18. Other staff aged 16 or younger in 2015 completed a further two years of education and/or training (following a change in legislation in 2015 which raised the participation age in education/training to 18, either through school or college, or an apprenticeship or traineeship). And some members of staff studied at university and have degrees in subjects ranging from fine art to engineering. Some are designated as technicians, others as retail staff: these are primary roles for the purposes of designing work rotas, but the majority of the retail staff are also capable of doing some of the workshop tasks, and the workshop staff in turn help with customer enquiries either in person or by telephone.

An ethnographer in the workshop: methodological and theoretical matters

From January to September 2022, I was a participant observer, and I observed and recorded the everyday work of staff at The Bike Shop, going to the shop on different days during the week and at different times, moving between the workshop and retail areas of the building, writing field notes and taking photographs, and collecting and/or photographing (that is, reproducing) and/or perusing other text-based documents (Atkinson 2017; Hamilton 2000; Jackson 2004). The data on which this paper rests consists of transcribed notes from observations [$n = 47$; approximately 142 hours], photographs of tools, components, equipment, shop fixtures, signage and paperwork [$n = 263$], and documents, including worksheets, webpages, and technical manuals [$n = 24$]. I used Atlas-Ti for storage and management of all of the data (Tummons 2014). I undertook an iterative process of thematic analysis of the different data [field notes, documents, photographs] in order to establish a series of code families that I applied to the data as a whole (LeCompte and Schensul 2013). For example, the code family 'literacy artefacts' constituted a series of sub-codes that reflected the different genres of texts that I observed being used (screen-based, paper-based, handwritten, printed, diagrammatic, and so forth). The vignettes that I draw on in this paper (see below) represent the reflexive and analytical stages of ethnographic writing that follows the transcription and analysis of fieldnotes, where paradigmatic events observed in the field are gathered together in order to exemplify specific practices or actions of salience to the inquiry as a whole (Coles and Thomson 2016; Jeffrey 2018; Walford 2009). Obtaining consent to conduct the research took a six-month period, culminating in a meeting with the two directors and all of the employees at which I outlined my research interests and answered their questions. Subsequently, I received institutional approval from my university in December 2021.

I situate my ethnography within a three-part theoretical framework, all three components of which are themselves derived from and situated within ethnography and anthropology more broadly.[3] Two of these are only of ancillary interest for this paper but because they contribute to the conceptual framework of the ethnography as a whole, they require a brief mention. The first is *Communities of Practice* (CoP) theory as established by Lave and Wenger through their respective studies of workplace practices including tailors and call-centre workers (Lave and Gibson 2011; Lave and Wenger 1991; Wenger 1998). Analogous applications of CoP theory have included studies of bricklaying and automation apprentices (Felder, Duemmler, and Caprani 2021), hairdressing apprentices (Billett 2007), modern apprentices in the UK steel industry (Fuller et al. 2005), the UK fire and rescue service (Brooks, Grugulis, and Cook 2020), and teachers of floor and wall tiling (Boud and Middleton 2003). These prior studies demonstrate the ways in which CoP theory can generate rich descriptions of learning as a social practice within specific bounded contexts defined in terms of occupational and/or institutional context and this is in turn a key element of my own research. Elsewhere, I have already demonstrated how Communities of Practice theory can be applied to The Bike Shop to account for the different learning trajectories followed by the technicians as well as to technical and vocational learning more broadly (Tummons 2022a, 2022b). The second is the sociology and anthropology of Bruno Latour (Latour 2013). Of particular relevance to this paper are Latour's explorations of technology and technological objects, exemplified in his earlier work in science and technology studies (Latour 1987), as well as in the more familiar *actor-network theory*. Latour's philosophical anthropology provides a rich framework for the study of the tools and machines of the workshop that augments CoP theory (Fox 2000). The third, and the lens of focus for this paper, is Literacy Studies, to which I now turn.

Workplace literacies and workplace learning

Staff at The Bike Shop use, read or inscribe different texts, forms, work orders, documents, web pages, manuals and so forth, as part of their everyday practice. These are understood through social practice accounts of literacy, *Literacy Studies* (Barton 1994; Barton and Hamilton 1998; Hamilton 2000), derived from earlier ethnographic studies of literacy (Heath 1983; Street 1984). Literacy Studies posits literacy as a series of social practices, inferred from observing the use of texts within *literacy events*. There are many literacies associated with different areas of life (work, family, leisure pursuits, schooling, and so forth). *Literacy practices* change over time: new ones can be learned and others set aside. A Literacy Studies account foregrounds: the mediating work of written texts of different formats and structures; the heterogeneity of literacies across social domains; the power relations between different kinds or genres of literacy; the cultural practices within which literacy events are embedded; and the mutability of literacy practices that in turn require learning. Literacy is therefore to be understood as a cultural practice and as a practice bound up in material forms, thus speaking to the focus of my second overarching research question (as previously discussed).

There is already much empirical work resting on ethnography that has explored the textual cultures of everyday working lives and practices, ranging from 'traditional' occupations such as supermarket workers to modern contexts such as the gig economy, and from 'blue-collar' workers in textile factories to 'white-collar' workers in health clinics. This heterogeneous array of *ethnographies of workplace literacies* has both drawn on and expanded social practice models of literacy. The variety of texts explored has expanded to encompass not only more straightforward dichotomies such as 'paper-based' and 'screen-based' collections of text and image, but also texts as diverse as supermarket packaging (Hastwell, Strauss, and Kell 2013), mobile phone applications (Corbel, Newman, and Farrell 2022), cattle grazing records (Joly 2010), and housekeeper's records from a large urban hotel (Hunter 2004). Some are read and receive nothing more than annotations or check marks to indicate that some kind of reading has taken place whilst others prompt specific and tightly-bound responses such as a few words or a sentence in a text box (Martin and Wall 2011). Some reify nothing more than routine work practices that might be found in a variety of settings, whilst others are more

closely framed within more specialised and sophisticated workplace practices, generating and demanding agency from the reader/inscriber (Black, Yasukawa, and Brown 2015; Karlsson 2009). Some are indigenous to the context being explored, mobilising and documenting different kinds of work. Others are external, travelling into the workplace in question bringing instructions or information. These different explorations exemplify a common theme: the ubiquity of texts, irrespective of format or genre, as tools within organisations around which different kinds of activity are drawn together and put into moment-by-moment activity, and become visible to the ethnographer within literacy events (exemplified below in a series of composite vignettes) from which literacy practices can then be inferred (Winsor 2000).

Vignette one: folders stuffed with forms. 15 March 2022

> I am sitting behind the retail counter and am being shown how the different filing systems work by Peter (one of the directors). The counter is laden with texts of different kinds – there are maps, cycling-themed greetings cards, niche cycling merchandise with hand-written point-of-sale (POS) information, and books. But my main interest today is in the shelf of folders that is behind the desk. There are 28 different A4-sized folders – big ones – all doing different things. 23 of them contain *universal build sheets* (UBS). The UBS is the form that is used to both record and script the building of a new bike that has arrived from a manufacturer. Bikes are not 'ready to ride' when they arrive at The Bike Shop: they need to be built. This always involves the same core tasks, irrespective of the bike model in question: checking wheel alignment and installation, setting brakes and gears to the correct tolerances, securing components, adjusting handlebars, and so forth. One side of the UBS records the build process for the bike, initially completed by one technician and then checked by a second after the bike has been purchased. On the other side of the UBS are text boxes for filling in the cycle brand, part number, serial number, customer details, notes about accessories that might also have been purchased and therefore need to be installed, and so forth.
>
> The UBS journey starts in the workshop when the bike gets built. Once the build is completed, the bike goes on display, perhaps waiting for a test ride, and the UBS goes into the appropriate folder. Folders are arranged by manufacturer, and then by whether or not the bike has been collected, or is allocated to a customer. So as the bike moves from place to place within The Bike Shop – from unbuilt new arrival to built and ready for display, to ready for test-riding and finally to being allocated and then purchased – the UBS follows a parallel trajectory from folder to folder, before reaching a final resting place in the appropriate 'built' folder. The UBS might get updated after the application of correcting fluid, or with some post-it notes added in, till receipts, handwritten notes, and so forth, punctuating the different stages of the journey. Once the bike has been collected by the customer, the UBS gets filed away once all of the customer and bike details have been added to the database. At the back of The Bike Shop, some storage space has been improvised and all of the Universal Build Sheets, going back to when the shop was first opened and the sheet was a simpler A5 document, are stored there.
>
> And what about the other few folders? These contain a mixture of things. There's a folder for courtesy bikes (although these are only relatively rarely supplied to customers), another containing publicity materials for one of the brands, another with materials from a trade fair. A rather random collection that feels like they have been shelved here simply because there was a bit of space left.

The literacy practices discussed here are straightforward to identify. They revolve around a central textual artefact: the *universal build sheet* (UBS). It is an object that accomplishes several functions/roles, all of equal importance. The UBS coordinates work and effort. It acts as a document for the purpose of stock control (see vignette three, below). It reifies a schedule for the process of bike building and an auditable record of the build having taken place; it provides a marker for each bike as it moves through different phases or spaces within The Bike Shop – from new bike delivered from the distributor or manufacturer to built bike ready for test rides and purchase, via an intermediate stage during which it is a technological object. In this stage, the bike is the focus for a series of technical and mechanical skilled practices. These practices are inscribed, in a simplified or 'black-boxed' manner, on the form. For example, the single UBS item 'front wheel – lateral alignment' rests on several practices. First, the technician has to remove the front wheel from the bike, which may also require uninstalling the front brakes. Second, the technician has to place the wheel in the wheel truing stand.[4] If the wheel is not true, then the technician can correct it through adjusting the tension

of the spokes, using the correct spoke wrench (there are several different sizes).[5] Once this is completed, the wheel can be reinstalled. These practices, relying on specific technical expertise and competence, knowledge of correct tools and how to use them, and understanding of how a bicycle wheel is built, are reduced to a simple item on the checklist: 'front wheel – lateral alignment'. And the other items on the UBS similarly reify an array of more-or-less complex technical processes. There are over one hundred items, most applicable to every bike that arrives in the workshop for building, with some applicable only to specialist models such as folding bikes or e-bikes. The UBS is a text that concretises a series of prior conversations and decisions about how a bike should best be built for test riding and then sale: it is a text that shapes the work of the technician in very specific ways.

Vignette two: doing repairs. 24 January 2022 and 10 June 2022

> The journey that a bike makes when it comes in for repair is entirely enrolled within different forms of writing. Alex (technician) talked me through the booking process during one of my early visits to the workshop (24 January). The majority of repairs are booked in advance over the phone, and whichever technician has answered the call will open a booking using the workshop software application (there are two desktop PCs in the workshop). Existing customers will have their bike service history on the database and new customers will have a record created. Finding a time for the repair involves more on-screen reading, this time of the workshop booking schedule, which displays how many technicians are in on any given day and the workshop time slots already allocated. When the bike arrives in the workshop, a hard copy of the booking is printed off as a *workshop jobsheet* (WJS). Any additional information given by the customer on the day is either typed in before printing or handwritten onto the WJS in the space provided. When the repair is done, an invoice is printed and attached to the WJS and both are filed away after the bike is collected. The same processes are followed whether the repair is a simple one or a more complicated one. The trajectory of the bike, from arrival to departure, is framed by texts. And so is the actual work of doing the repair itself, irrespective of the complexity of the task. Replacing an inner tube (surely the most basic repair) necessitates the reading of the tyre size (embossed on the sidewall of the tyre) and the tube size (printed on a label on the edge of the box).
>
> Replacing a more esoteric component requires more specialised reading (10 June): fitting a new sprocket onto a 14-speed Rohloff Speedhub[6] (an expensive and relatively uncommon component) requires Robert (technician) to check with the websites of both the manufacturer and the UK distributor: there are two different kinds of sprocket, one with threads and one with splines, depending on the year of manufacture of the hub. Robert needs to ascertain whether the correct sprocket is in stock (having established which part he requires, he then uses the shop's inventory software application to find out if the part is in the storeroom), or needs to be ordered (in which case he has to open a new browser window, log on to the website for the correct distributor, and complete an online order form). On the distributor website, the sprockets are listed only as splined.
>
> Robert: (holding the old sprocket in one hand) 'but I'm pretty sure that the older ones are threaded?'
>
> Alex: (looking over his shoulder at the screen) 'yes, they are'.
>
> In the end, Robert speaks to one of the technical staff in the distribution warehouse: because only splined sprockets are now used, older hubs need an adapter – an additional component to be ordered.

The *workshop job sheet (*WJS) works very differently to the UBS (see vignette one, above). The UBS is fixed, generating a procedural script for the technician to follow, allowing for only minor adaption depending on the kind of bike being built. Completing the WJS, in contrast, rests on a very different series of practices. Some of these are administrative or procedural, such as writing or typing in the customer's contact details, make and model of bike, and any brief notes as to the possible nature of the repair work as explained by the customer over the phone. Once the bike arrives in the workshop, however, more complex practices emerge, as the technician goes over the bike – testing, touching, moving, measuring, listening – in order to establish more precisely the repair work that is needed. What gets written down depends on the condition of the bike, as made sense of by the technician, and needs to be written in such a way that any other technician can understand it (the person doing the booking and the diagnosis might not be the person who does the repair in due course; the

person who returns the bike to the customer and explains the work that has been done, might be a different technician in turn). And the actual work of the repair necessitates further literacy practices: reading websites, technical manuals, or even component parts themselves (which are frequently engraved or embossed with salient information); checking stock levels; ordering components from suppliers; writing notes to say that a repair is 'in progress' if work has to stop until a replacement part is delivered. The technical expertise and knowledge required is broad, reflecting the range of possible repairs of varying levels of complexity or difficulty that might arrive. The technician might require knowledge/expertise of now-defunct components, or of new-to-market components that are now appearing in the workshop for the first time, or the capacity to be creative, to use know-how to generate workarounds for idiosyncratic problems (one such problem that I observed involved a bike trailer for dog racing, like a sled but on wheels). Repairs might be informed by service histories retrieved from the customer database, technical manuals provided by manufacturers, or YouTube videos made by other retailers. There is so much variety in bikes, in components, in the age, condition, and quality of the bikes that might come into the workshop. And yet the WJS, and more importantly those literacy practices mediated by technological knowledge and expertise that envelop it, is sufficiently permissive that it is possible to capture all of these heterogeneous elements on paper.

Vignette three: delivery day. 8 February 2022

Dutch town bikes have been delivered, and they all need to be put in the right place: some have already been allocated to customers and the rest will be for stock. Ben (shop manager) is processing the order at one of the two desktop PCs in the retail area, but it's taking time as there are several steps to follow.

(1) The bikes that have arrived need to be checked off on the delivery note. Each bike is sleeved in cardboard, and the specifications of each – model, frame size, etc. – are printed on a label.
(2) The delivery note in turn needs to be compared to the original order stored on an Excel spreadsheet, to make sure that what The Bike Shop wanted has actually been delivered. The spreadsheet contains everything that has been ordered – not everything will necessarily be delivered at the same time.
(3) All of the bikes are then added to the stock database, and each is given a *stock keeping unit* (SKU) number. The database only allows a certain number of characters to be used for each SKU: if a product name is too long, then Ben (or whoever else is doing the task) uses the *Concat* (Concatenate) function within Excel[7] to shorten the text and maintain consistent product naming across both the spreadsheet and the database.
(4) Next, Ben needs to go through the pre-orders: any bike that has been allocated to a customer will have had a *universal build sheet* (UBS) printed in advance with the customer details filled in.
(5) The UBS is updated with the bike's SKU number so that the right bike is allocated to the right customer. The UBS then goes to the workshop, to be completed when the bike is built (see vignette one).
(6) The excel spreadsheet is updated. An email is sent and/or phone call is made to those customers whose bikes have arrived – Jack (retail) is sitting at the other PC and is sending emails or making phone calls as Ben passes information to him.

The long counter that Ben and Jack are working at is covered in stuff to read, mark up, and write. They are each sitting in front of a screen, clicking between different tabs as they shuttle between stock information, order information, and customer details. Ben has the hard copy delivery note at one side and checks off each bike one at a time as it is enrolled into The Bike Shop's systems. He also has two A4 folders. As each UBS is generated or updated, it might pass from one file into another, or be passed over to Jack who, after emailing/phoning the customer, put it on a separate pile, scribbling notes such as 'customer phoned – ready to collect' onto post-it notes that then go on the front of the UBS.

The literacy events described here and the practices that support/surround them – generating tasks for the workshop technicians, contacting customers who will need to travel to The Bike Shop for test rides, organising stock levels, reconciling orders – are typical of many workplaces. The bikes could be substituted for different consumer durables (consumer goods that are expected to have a relatively long user life[8]) such as washing machines, and the generic processes of checking orders, stock

control and contacting customers would remain entirely recognisable. The multimodality of the different texts being read, manipulated, checked and annotated, is likewise commonly found. These are texts that record information (the number of bikes delivered, and what make and model they are), correlate information (linking pre-orders to customers; which ones have been ordered but not yet delivered; which have been dispatched, according to the invoice, but have not arrived in the consignment), and coordinate workplace activity (which bikes need to be built and which can wait; which will go onto the shop floor and therefore need point of sale (POS) information and which will go into storage).Texts such as these might be easily found mediating the practices of other workplaces, in electrical goods stores or hairdressing salons. That is, these literacy events and practices, in and of themselves, are in a way not 'about' bikes at all, even though they are to be found within a bike shop and are being mobilised entirely through the presence of bikes, as objects that require different kinds of activity which are captured within texts.

Discussion: the textual worlds of the bike shop

As in many workplaces, The Bike Shop is suffuse with texts of different formats and genres. It is possible to frame these texts within a loose series of categories, but these are far from discrete. For example, the distinction made between customer documentation and service documentation by Sprague, Martin, and Koomen (2011) in their ethnographic study of document authoring for corporate clients does not translate to The Bike Shop because, in this context, the same documentation is used for both customer-facing and service-facing purposes. Instead, from the perspective of a social practice account of literacies, it is in the act of reading and activating meaning from the document that a distinction in use is found. The document stays the same as a material object, but is read and therefore acted on differently by two different audiences. The distinction between the literacy requirements of routine technical work practices on the one hand and specific, sophisticated work practices on the other as identified by Black, Yasukawa, and Brown (2015) in their ethnographic study of different manufacturing workplaces and the ways in which tasks are written up, likewise does not translate to The Bike Shop because, here, distinctions between 'routine' and 'specialised' are nebulous, certainly subjectivised, and relational. This is because they are dependent on the experience and expertise of the technician. Different technicians have different specialisms as well as areas of interest alongside shared or common pools of 'core' skills and competences, but these are not straightforwardly reflected in the writing of these practices. The different complexities of the writing task depend not on the complexity or otherwise of the actual task, but more precisely on the extent to which the technician doing the writing has acquired the specialist discourse – the terminology – of The Bike Shop and specifically of the task at hand. With this caveat in mind, we might therefore propose that in The Bike Shop, we can infer several practices at work within the literacy events that can be observed during the working day, that can be grouped together in three distinct, though overlapping, ways:

Texts as mobilisers, organisers, and recorders of activity

Texts mobilise, organise and record the *everyday practices* of The Bike Shop (Barton 1994; Belfiore 2004). Some of these texts are imported, and travel alongside other material objects or people, whilst others are generated within The Bike Shop itself. For example, a delivery of new cycles is accompanied by a delivery note and an invoice, two documents that record the action of the delivery – and the prior action of the order having been made, which in turn rests on earlier evaluative judgements on the part of the directors of the shop as to required stock levels, and so on. These two documents also trigger some new practices such as bike building, storage, shop-floor display, and test-riding. All of these actions will then go on to generate other literacy events such as the completion of job sheets, the creation of point-of-sale information for customers, customer invoicing, and so forth. They will also to varying degrees require the enrolment of other texts: bike building may require

a technician to consult a technical manual, either on paper or on screen, and the creation of shop-floor display materials may require consultation of manufacturers' catalogues and websites. Some of these texts will eventually be filed away and only referred to very occasionally, for example if there is a problem with a customer bicycle and the technician responsible for the initial build needs to be identified to resolve an error. Others will be discarded once they have been used, such as delivery notes. And others will go back on a shelf, literally or figuratively, until the next time they are needed, such as a technical manual. The technicians read, respond to, annotate, and create a variety of literacy artefacts, on paper and on screen: their technical knowledge, or, better, their *technical/mechanical expertise, experience and know-how* (Winch 2010) is entirely accompanied by, and recorded through, texts. Their practices are situated within and around bikes, spare parts, components and so forth as *technological objects of varying degrees of complexity and sophistication* (Latour 2013) and equally around *symbolic representations* of these in textual form (Scribner 1985).

Texts as conduits for translating expertise/experience

Texts allow for the transfer of instructions and information in lots of ways. One of the ways in which this can be observed in The Bike Shop is in how technical knowledge is circulated. That is, technicians' knowledge is not only a resource on which they draw when making meaning from texts (as described above) but also a resource capable of being made concrete or reified in particular, limited ways, so that this same knowledge can be passed around through texts as well as through voices (Wenger 1998). The impetus behind this is pragmatic: The Bike Shop employs a number of both full-time and part-time technicians and bike builds and repairs are often scheduled days, sometimes weeks, in advance, depending on workshop capacity. Routine repairs and building tasks, such as replacing a chain and rear-wheel sprocket, or rewiring a front brake, can be captured on paper in relatively unproblematic ways, but more complex repairs and building tasks add complexity to this process of documentation. For example, a bike might be brought in for repair without the cause of a mechanical or electrical fault being clearly identified. The diagnosis might involve experimentation (replacing one part, then another, and so forth) or might require a response more based on know-how than on expertise: some problems might only be diagnosed after test-riding, or after carefully observing and listening to the bike as it is ridden or operated in a work stand. Alternatively, a fix might depend on the model of bike being repaired, such as if a specific model from a specific manufacturer has previously displayed the same mechanical fault. On these occasions, the written instructions that need to be left behind by one technician for another to read and then act upon will need to encompass a range of possibilities and variances, providing explanatory comments and permissive guidelines. On these occasions, the job sheet will have to act as a conduit, standing in for the first technician who may not be physically present when the second technician begins work, transferring not only knowledge and expertise but also flexibility as part of the technician's repertoire (Karlsson 2009).

Texts as cultural artefacts

As a Community of Practice (Tummons 2022b), it is unsurprising to see The Bike Shop criss-crossed with texts in the manner that I have described above: the textual mediation of work is well-established within a broader sociocultural tradition as well as within Communities of Practice theory more specifically (Brown and Duguid 2000). The texts that I have described above are all examples of the *shared repertoire* of The Bike Shop (Wenger 1998), cultural artefacts that are as necessary for the practices of the community as are the bikes themselves, the specialist and sometimes esoteric tools, the specialist discourse of the shop, and so forth. A novice mechanic needs to learn how to use specialist tools, instal specialist parts, and carry out specialist techniques. They also need to learn the jargon that accompanies these, a specialist vocabulary that will be both spoken and written. For the novice, reading the words 'cones adjusted' on the Universal Build Sheet may not carry meaning

whilst the experienced technician will understand exactly what this requires – the task, the tools, the time it may take, and so forth. A handwritten addition to a booking sheet for repair that states 'replace front mudguard blade' will be straightforward for the novice; a note that states 'freehub knocking' will require greater expertise to make sense of as this may entail one of several possible mechanical remedies. In fact, all of the texts and documents in The Bike Shop, and not just the paperwork being read and noted on by the technicians, take time to learn how to use: how to read them, how best to annotate them, where to file them, and so forth. This is because depending on who is doing the writing and who is doing the reading, the texts, as artefacts, may be more or less transparent. Here, transparency is not an inherent and fixed quality of an artefact but instead a relational one that '"refers to the way in which using artefacts and understanding their significance interact to become one learning process"' (Lave and Wenger 1991: 102–103). Simply put, learning to use all of the texts and documents, all of the forms and pieces of paper, and all of the web-based resources and computer applications, necessitates *the same kind of learning* as is required for learning how to use a fourth hand tool (a tool for tensioning brake or gear cables), how to lace up spokes when building a new wheel, how to service a hub gear, and so forth. They are all equally important aspects of the practices of The Bike Shop.

Conclusions: learning about bikes and tools, and learning about words and documents

We can now problematise aspects of the ongoing arguments that can be found relating to literacy skills in the workplace, literacy as a transferable skill and, in turn, the transferable skills – or otherwise – of servicing and building bicycles. Social practice theories, including literacy studies, tend to be chary of notions of generalisability and transferability of skills and instead stress situatedness and context, although this parochialism has been challenged (Brandt and Clinton 2002). At the same time, the unproblematic assumption of transferability of skills that has long characterised policy discourse, is insufficient (Papen 2005). Here, instead, I draw on the notions of transferable skills as skills that *might* be transferable should working conditions require it, but that would need further development or adaption to make them so: 'the degree to which a skill is transferable cannot be settled *a priori* but needs empirical confirmation' (Winch 2010, 51). From this standpoint, we can propose that the workplace literacies of The Bike Shop, learned and practiced equally and without meaningful differences in usage by all of the technicians whom I observed *irrespective of their prior formal education and qualifications*, are indeed contextualised and situated, but they are not in a silo. Other workplaces also have work orders, job sheets, and delivery notes, and require workers to solve problems through access to online resources, technical manuals, operator instructions, and so forth – they are just a bit different, that's all. Arguably one of the most powerful of the insights derived from Literacy Studies is that of *ruling passions*, an emotional dimension to literacy (Barton and Hamilton 1998). The employees and directors of The Bike Shop are enthused by and devoted to mending and servicing cycles of all kinds as well as riding them for leisure, to solving workshop problems and instilling their commitment to cycling as a sport but also as an everyday mode of transportation. Consequently, the literacy practices of the workshop become enfolded within these wider passions, facilitating their adoption and easing their learning. As the Organisation for Economic Co-operation and Development takes up the often-rehearsed argument for skills to be tailored to workers' vocational contexts (OECD 2020, 26), the empirical research presented in this paper supports the argument made by Winch (2010) for transferability through further development and adaption, as well as the argument made by Barton and Hamilton (1998) for the efficacy of ruling passions in encouraging literacy learning.

A focus on literacies – events, practices, texts, multimodality – generates insights that allow me to posit answers to my overarching research questions from a Literacy Studies perspective. In approaching my first question, 'how do people learn how to become cycle technicians?' the answer

is that they become cycle technicians in part through an increasingly rich engagement with a variety of textual artefacts that capture different aspects of the work at hand. Simply put, becoming a cycle technician involves literacies as much as it involves using specialist workshop tools and learning specific mechanical and technical procedures: being a member of this community of practice requires both (Tummons 2022a). The work of being a cycle technician necessarily also requires the reading and writing of a variety of forms, documents, webpages, and so forth. Relatedly, in responding to my second question, 'what are the cultures and materialities of the workshop?' it is clear that the materialities of the workshop are equally technology-based (tools, components) and text-based (forms, documents). I distinguish these here in order to again foreground texts as the focus of this paper, mindful of the fact that texts are also invariably embedded in or created through the use of technological objects: they are not separate from each other. The accomplishment of the work of The Bike Shop or, better, of the practices of the community, relies on both. Texts and technologies are of equal importance. The paperwork is not 'inferior' to the tools and mechanical and technical expertise; rather, it is a collection, a genre of community artefacts that occupy a different modality or register to the workshop tools that more conspicuously embody, represent and reflect the practices of the workshop. Texts and technologies come together to make the practices of the work shop happen, to mediate and to record them. The technicians, enrolled in all of these practices, move from work bench to paperwork, from desktop computer to tool board. In just the same way that actor-network theory posits 'the principle of symmetry' to theorise an equal relationship between human and non-human social actors (Latour 2005), here we can see an analogous symmetry at work between the technology and the texts: at first look, it might seem that this community of practice is 'about' the technology (that is, the doing of cycle mechanics is the *joint enterprise* of the community (Wenger 1998)), but this is a mistaken conclusion to draw. The community is about the doing of cycle mechanics, and draws equally on both technologies and texts to get the cycle mechanics done.

Notes

1. https://bikebiz.com/uk-cycling-market-valued-at−2−31-billion-in−2020-reports-ba/amp/ [date accessed 26-9-2022].
2. 'The Bike Shop' and other staff names used in this paper are pseudonyms.
3. In this paper I draw on examples from both ethnographic and anthropological literature although I subscribe entirely to Anderson-Levitt's statement that 'many non-anthropological ethnographers define ethnography more or less as anthropologists would' (Anderson-Levitt 2011, 13).
4. https://www.parktool.com/en-int/product/professional-wheel-truing-stand-ts−4−2?category=Wheel+Truing+Stands [date accessed 26-9-2022].
5. https://www.parktool.com/en-int/search?q=spoke [date accessed 26-9-2022].
6. https://www.rohloff.de/en/products/speedhub [date accessed 26-9-2022].
7. https://support.microsoft.com/en-us/office/concat-function−9b1a9a3f−94ff−41af−9736-694cbd6b4ca2 [date accessed 26-9-2022].
8. https://www.oed.com/view/Entry/39978?redirectedFrom=consumer#eid [date accessed 26-9-2022].

Disclosure statement

No potential conflict of interest was reported by the author.

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