RESEARCH

Matthias Pilz *Editor*

Informal Learning in Vocational Education and Training

Illuminating an Elusive Concept

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Matthias Pilz
Editor

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🐎 Springer VS

Editor
Matthias Pilz
Chair of Business Education and
International VET Research,
University of Cologne
Cologne, North Rhine-Westphalia,
Germany

Series Editor's Introduction

This volume presents selected papers from the 4th International G.R.E.A.T. Conference. The previous three G.R.E.A.T. conferences and volumes deal with "The Future of Vocational Education and Training in a Changing World" (Pilz, 2012), "Vocational Education and Training in Times of Economic Crisis" (Pilz, 2017) and "Comparative Vocational Education Research" (Pilz & Li, 2020). The basic principle of the conferences is the crossing from the marked to the 'unmarked state': from the past and present into the future, from equilibrium to crisis and from a local research perspective to a comparative research orientation.

This new volume follows this tradition: from visible, explicit and tangible formal learning to informal learning, which is often invisible, implicit and intangible. The systematic difficulties that arise here are summarised by the editors in the term informal learning as an 'elusive concept'. The merit of the editors and authors is that in the first part this elusive concept is first given contours. Then, in the second and third parts, the dimension of the (formal/informal) context is emphasised to shape the concept. The context dimension in particular is often neglected in educational science. The concept of informal learning, on the other hand, can be understood by looking at the context conditions. A characteristic that makes this form of learning important for vocational education and training (VET), as it is able to capture the spaces between the worlds of education and work. In other words: Informal learning is the most original and natural form of VET. Finally, the fourth part builds on the first three parts by using approaches to assessment, measurement and validation to demonstrate how the implicit dimension of informal learning can be made explicit.

The formalised science of VET research, like any scientific discipline, has difficulties in dealing with less formalised phenomena and wicked problems. It is to the great credit of the G.R.E.A.T. conferences and the research team led by

Professor Pilz of the University of Cologne that they focus especially on conceptual challenges and wicked problems of VET, combining relevance and stringency, which is why the three volumes published so far have achieved a high visibility and appreciation in VET research. Like its three predecessors, this volume is sure to be also widely disseminated and resonated.

Prof. Dr. Dr. h.c. Michael Gessler
University of Bremen, Germany

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Preface

Informal Learning in Vocational Education and Training: Illuminating an Elusive Concept

The topic of informal learning is highly relevant in educational debate, both at the practical level and in educational policy. But the topic has also been in the academic field for many years, as a number of corresponding publications show.

Discussion on informal learning also plays a major role in the context of vocational education and training (European Centre for the Development of Vocational Training [CEDEFOP], 2023). Competence acquisition for practising an occupation does not necessarily have to take place in formally structured educational institutions but can also occur informally in an unstructured and unplanned manner (Kumar et al., 2018).

Informal learning was first introduced as far back as the 1960s (Coombs, 1968) and is now promoted with minor differences in detail. The European Commission, for example, defines informal learning as follows, in line with other quite similar definitions (e.g., United Nations Educational, Scientific and Cultural Organization [UNESCO], 2012, p. 8):

> Informal learning is a natural accompaniment to everyday life. Unlike formal and non-formal learning, informal learning is not necessarily intentional learning and so may well not be recognised even by individuals themselves as contributing to their knowledge and skills. (European Commission, 2000, p. 8)

In recent times, informal learning has also been increasingly associated with transversal skills and competencies (CEDEFOP, 2023, p. 50).

Beyond these distinctions, we shall not be exploring discrepancies in definitions and approaches here (see Organization for Economic Co-operation and

Development [OECD], 2007, pp. 3–8; Livingstone, 2001; Werquin, 2016). The research literature repeatedly points out that informal learning is highly dependent on external conditions (Marsick, 2009). Engeström (2001), for example, in his well-known activity theory for the field of work, has highlighted the fact that learning is shaped by contextual factors.

Well known is also the work of Eraut (2004) who deals explicitly with informal learning in the workplace. In addition to the strongly individual "learning factors", the author describes three important areas that constitute the contextual factors for informal learning in the workplace (p. 269). These are (pp. 269–271): the allocation and structuring of work, expectations of performance, and encounters and relationships with people at work (for details and empirical findings, see Eraut et al., 2004). Furthermore, the more psychologically orientated empirical research on work-based learning shows that the particular conditions or context are closely related to informal learning (Decius et al., 2021). The role of external factors has been explored extensively from different scientific perspectives. However, literature reviews also indicate that the focus is often limited to single occupations, companies or even country approaches (Manuti et al., 2015; Jeong et al., 2018).

It is striking that even though informal learning has such relevance, the number of researchers in the field seems quite small, especially when it comes to training and development. Although the topic has been discussed for quite some time, we still do not know a lot about how learning takes place in different working situations, about long-term results, or how learning conditions and surroundings influence informal learning in private life, in companies and more generally in the local labour market. Moreover, the interactions between the formal education system and the procedures of informal learning are largely unknown.

The problem with the scientific examination of the concept of informal learning, however, begins with conceptual delimitation. In the academic field, it is customary to explain phenomena by means of definitions. Definitions are characterised by their clarity and ability to delimit. The concept of informal learning (in contrast to formal learning) is characterised by openness and flexibility. So, there is a paradox here. The 'learning' itself is not sufficient for a definition in this case, because learning can include very different forms and goals. The term 'informal' in turn refers to the context, but only distinguishes it from formal (and nonformal) learning processes. The 'informal' itself is open and indefinite. Informal learning varies greatly from individual to context and can therefore hardly be clearly defined.

This dilemma ultimately led to the title of the book. Informal learning still seems to be an elusive concept. The term 'elusive concept' in the title of the book was taken from the description of another concept, namely "employability". Our colleague Roger Harris used the term in a joint research project (Pilz et al., 2020,

p. 295) and takes up this term again in his contribution to this book, but now with reference to the concept of informal learning.

This book, therefore, was initiated in order to fill this important gap in understanding informal learning in the context of training and development. The papers published here were selected from the large number presented at the '4th International G.R.E.A.T. Conference' on 'Informal Learning in Vocational Education and Training' in September 2022 at the University of Cologne, Germany. These papers cover a wide range of aspects of informal learning and include different country contexts as well as different levels, goals and places of informal learning.

Structure of the Book

To provide the reader with a systematic overview of the various contributions in this book, the following structure was developed, and the corresponding contributions assigned to four individual parts. The editor acknowledges, however, that there are overlapping areas and that not all contributions can be assigned to a single part.

The first part of the book contains papers that deal with conceptual perspectives and informal learning at the systemic level.

The second part of the book contains papers dedicated to informal learning in the formal (vocational) education system.

The third part contains papers that deal with informal learning in the informal environment/sector.

The papers in the fourth part then address questions of assessment, measurement and validation of informal learning.

These four parts are bookended by two overarching chapters from keynote addresses at the conference. The opening chapter by Alison Fuller takes up the theme of her keynote presentation and uses the '3Cs', 'Context', 'Characteristics' and 'Capacity', for understanding and analysing workplace learning/work-related learning in the context of formal and informal learning. The closing chapter by Kenneth King picks up on his keynote presentation and takes a very personal look at informal learning in a global context. The contribution places particular emphasis on the development of vocational training in the global south.

This global dimension, along with the many diverse and multi-perspective viewpoints, showcase the innovative character of the book. The chapters focus on countries and regions from different parts of the world. And it is precisely this global perspective that is at the centre of interest of the German Research Center for Comparative Vocational Education and Training (G.R.E.A.T.).

Acknowledgements

I would like to thank all those who presented conference papers and chaired sessions but also all those who attended the conference and, especially, the authors who have contributed to this book. They have been disciplined in submitting their rich and enlightening contributions on time and in incorporating feedback from international reviewers. I would like to give special thanks to the reviewers for their detailed scrutiny and invaluable additions.

I would also like to express my particular gratitude to Janine Tögel, Uwe Fassbender and the entire team of the G.R.E.A.T., who not only managed the smooth running of the conference but also put an enormous amount of work into organising the event. I am very grateful to Annabell Albertz and especially Julia Regel that this book could come into being. Without their excellent organisation and coordination of the book contributions, this publication would not have been possible.

Finally, thanks are also due to the University of Cologne and its Faculty of Management, Economics and Social Sciences for financial support to run the conference.

Prof. Dr. Matthias Pilz
University of Cologne, Germany

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Contents

Informal Learning in an Informal Sector/ Environment

Assessment, Measurement and Validation of Informal Learning

Opening Chapter

Context, Characteristics and Capacity: The 3 Cs for Understanding and Improving Workplace Learning

Alison Fuller

1 Introduction

The conference theme addressing: "… current issues and findings within the context of Informal Learning in Vocational Education and Training (VET)" provided an important opportunity for researchers to focus on learning for occupational expertise, particularly that which occurs outside specialist educational settings like schools and colleges. The contributions to this book illustrate how the topic has been tackled from a range of perspectives and through exploring different occupational, institutional and national contexts. The arguments and insights being put forward not only deepen our individual and collective knowledge and understanding about learning, but also provide an inspiration for the development of future research agendas. One tile in this mosaic of viewpoints, and the one I have chosen to explore, is workplace learning.

My core proposition is that in the contemporary, complex and dynamic context of paid work and employment, conceptual and analytical *tools* are required to understand the relationship between work and learning, skill formation and the development of occupational expertise at all levels, including intermediate, craft, technical and professional occupations, and for new entrants and more experienced workers alike. I utilise my own and others research on workplace learning and on apprenticeship to support this argument.

A. Fuller (✉)
IOE Faculty of Education and Society, University College of London (UCL),
London, United Kingdom
e-mail: alison.fuller@ucl.ac.uk

The discussion is organised in five sections. The first outlines some theoretical starting points and assumptions about learning that have facilitated and guided research on workplace learning and apprenticeship over the past 30 plus years, including engagement with, and critique of, the notion of informal learning. I identify two enduring research questions and argue that effectively addressing these requires not only the theoretical orientation to learning outlined, but also a wider set of ideas. In this regard, the ensuing Sects. (2, 3 and 4) explore each of three lenses, 'context', 'characteristics' and 'capacity', in turn. I suggest that taken together these dimensions form a framework (the 3 Cs) that can helpfully provide an holistic and integrated structure for understanding the relationship between work and learning, in diverse organisational settings. I make the case that adopting such an approach can also be generative of normative insights in to how and in what ways learning for occupational expertise might be enhanced for more experienced workers as well as new entrants and apprentices. I suggest that there is a particular value for those interested in the field of VET, skill formation and occupational expertise in identifying the policy and practice implications of research, as well as on theorising and exploring conceptual underpinnings and empirical findings.

2   Theoretical Starting Points

Imagine a student, let's call her Jenny, at the beginning of the third year of her five-year degree in medicine. Having excelled first at school, and then as an undergraduate medic, Jenny has an established identity as a student feeling confident and accomplished in the learning and performative practices associated with this mode of participation. After two years entirely based in the university, attending lectures, writing up notes, reading papers and textbooks, completing written assignments, revising with friends, and taking exams to test her acquisition of codified knowledge, she starts her first work placement. Jenny is allocated to a general medical ward located in a busy hospital environment. She experiences the transition from the university to the hospital as a shock, finding herself at a loss about how to engage with the staff and patients.

Jenny doesn't know how 'to be' or what 'to do' in the hospital workplace. She feels as if she 'knows nothing' and does not understand how she can participate and make a contribution to providing healthcare and treating patients. Jenny appreciates that as a medical student she has a right to be in the workplace but senses that she is on the periphery of the activity, processes and interactions taking place on site. She is unsure how she can become a productive part of the team and how she will form an identity as a competent medical practitioner and

clinician. Over the course of several work placements, Jenny participates in different healthcare settings, engaging with diverse groups including doctors, nurses, other healthcare professionals (such as physiotherapists and radiographers), hospital porters and administrative staff. She collects the required 'sign offs' from appropriately qualified colleagues, for example, to evidence her competence in a variety of clinical skills and her ability to take effective and accurate patient histories. In the latter part of her medical degree Jenny gains capability and experience through participating in workplace practices and working with clinical and non-clinical staff in different teams. By the end of the programme, she retains an established identity as a learner but has also formed a nascent and growing identity as a doctor.

This vignette invokes well-known and powerful ideas associated with social theories of learning (Bandura, 1977; Lave & Wenger, 1991; Wenger, 1998). These include Lave and Wenger's (1991) understanding of learning as changing participation in changing social practice, captured in the notion of 'situated learning' i.e., that (all) learning is necessarily situated. The story of Jenny's experience indicates that as a medical student she was a 'legitimate peripheral participant' in the communities of practice available in each of her work placements. Through increasing and broadening opportunities to participate in multiple (communities of) practices over time, she is enabled to move from peripherality towards what Lave and Wenger (1991) term "full participation" (p. 37). They explain the integral relationship between this movement and learning as follows: "… it [partial participation] is also a dynamic concept. In this sense, peripherality, when it is enabled, suggests an opening, a way of getting access to sources for understanding through growing involvement" (Lave & Wenger, 1991, p. 37).

Such a social theoretical orientation enables critical engagement with traditional, received and essentially cognitive and behavioural assumptions about learning (Beckett & Hager, 2002; Fuller, 2007), including that:

- Learning (only) happens and is recognised if it takes place in formal education settings.
- Learning is dependent on the presence of a recognised (qualified) teacher.
- Learning (always) involves a linear process of knowledge transmission from expert (the teacher) to novice (usually conceived as a child or young adult).
- Learning is conceived as a 'product' taking the form of codified/stable knowledge (e.g., textbooks) to be acquired.
- Learning is essentially an individual matter: from a cognitive perspective with changes in mental state occurring when the mind processes information; from a behavioural perspective with observable changes in someone's behaviour.

Beckett and Hager (2002) summed up the above assumptions about learning as the 'standard paradigm'. It was dissatisfaction with this approach that underpinned the development of social theories and led to what Beckett and Hager went on to term the 'emerging paradigm'. The conceptual resources offered through a social theorisation of learning facilitate understanding of how learning occurs through participation in day-to-day practices occurring in specialist education sites such as schools, colleges and universities as well as in other settings including workplaces, the home, sports and recreation centres and so on.

Once participation is seen as the central condition for learning, it follows that research should explore participation in and through practices in different sites to illuminate who is learning what, where, when, how and why. The 'emerging paradigm' facilitates researchers to break free from the idea that there are distinct types of learning that may be or may not be combined. Or that these types are positioned in a status hierarchy with 'formal learning', which takes place in specialist educational institutions leading to qualifications, 'looking down on' 'non-formal learning' associated with participation in non-certificated courses; and on 'informal learning' that takes place in non-specialist education settings such as the home or workplace (see Hodkinson et al., 2003, for a full discussion of these learning categorisations).

Instead, a social theoretical orientation to learning allows the notion that formal and more informal characteristics are ever present and inter-woven in all situations. Aligning myself with this perspective, I agree with scholars such as Stephen Billett (2001), who argue that there is no such thing as informal learning. For example, in the case of VET, learning researchers can explore the more and less formal and explicit pedagogical features that occur within participation in everyday work activities, as well as that which occurs through deliberative on-the-job training or off-the-job programmes. As part of this research tradition, workplaces have increasingly been recognised as sites of and for learning, with work and its associated activities, practices, interactions and processes viewed as resources for learning (Billett, 2001; Evans et al., 2006; Felstead et al., 2009).

As a work and learning researcher, I see the analytical challenge as uncovering the attributes of learning in different settings including workplaces and training schools and identifying the implications for issues such as the formation of occupational expertise, life-chances and organisational effectiveness. My research has drawn and built on understandings about the nature of work and learning through addressing the following kinds of questions (Fuller & Unwin, 2019).

- How can we better understand, conceptualise and enhance the relationship between work and learning?
- Why do some workplaces seem more able than others to generate the conditions in which individuals perceive that they are continuing to learn and utilise their expertise?

Armed with a social theorisation of learning to pursue these concerns across many empirical projects located in diverse sectors, organisations and workplaces, and with different kinds of research groups (new entrants and apprentices, established and older workers, employees and low and high grade jobs), has generated rich case studies and associated evidence and, I hope, useful contributions to the field (Felstead et al., 2009; Fuller & Unwin, 2003, 2004, 2005, 2017; Fuller et al., 2018; Rainbird et al., 2004). In this chapter, I will draw on examples from this body of research, using the three broad lenses of 'context', 'characteristics' and 'capacity' as a framework to develop a conceptually and empirically informed analysis of workplaces as learning environments, and the implications for the quality of workplace learning and apprenticeships for participants. I argue that addressing such questions requires the help of analytical tools to explore the relationship between work and learning and will illustrate this through drawing on some empirical examples and cases.

2.1 Context

Whilst it is important to remember that the primary purpose of workplaces is the production of goods and services, they are also always sites for learning. The regulatory and competitiveness circumstances in which an organisation is located, its ownership, its business strategy, all inform the work and learning relationship, and are key to understanding variation in workplace learning environments as they are shaped by multiple factors. It follows that workplace learning, and more broadly, VET, researchers need to be aware of this multi-faceted context.

In research undertaken with Alan Felstead, Lorna Unwin and Nick Jewson[1] we have used the image of the Russian Doll and the metaphor of 'worlds within

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[1] Learning as Work research programme, funded by the Economic and Social Research Council, award number: RES-139-25-0110A). The lead investigators were Alan Felstead, Alison Fuller, Nick Jewson and Lorna Unwin.

worlds' to sensitise us to, and remind us of, the need to understand workplace learning in context (Fuller, 2007; Unwin et al., 2009). To illustrate the point, let us consider companies producing women's handbags. They may have different competitiveness strategies, positioning themselves in contrasting sub-sectors of the market requiring different forms of production e.g., bespoke, small batch or mass production. It follows that the implications for VET, workplace learning and the formation of occupational expertise will also vary accordingly. Staff working in companies located in different market segments will vary, including in terms of their employees' need for knowledge about materials, their craft and technical skills, ways of working, and the degree of autonomy and discretion that staff are afforded in relation to their tasks. Each form of production and market strategy can be associated with scenarios, in terms of what occupational expertise is required by whom and how it can be developed.

It is important, then, to think about what kinds of ideas can help us understand the relationship between the nature of different workplaces and the broader contexts in which they are located. In our research, we utilised a framework from economics, known as 'productive systems', as a tool for examining the contexts in which organisations were operating, and as a way of helping to explain differences in workers' experiences and perceptions of learning (Felstead et al., 2009). We contended that very workplace in public, charity or private sectors forms part of a productive system—layer upon layer of influence, regulation, governance, ownership and organisation all informing the nature of the workplace as a learning environment. Productive systems comprise the totality of social relationships entailed in the production of goods and services. They are constituted by the multiple, interlinked social networks through which economic activity is organised and its outputs are consumed, and can be viewed as worlds within worlds. We argue that fully understanding workplace learning requires the analytical reach offered by this perspective. It enables investigation of where control of the system is located and how this has an impact on learning in particular workplaces. In other words, it helps illuminate how learning processes are influenced by relationships that exist outside the setting, company or organisation, or immediate geographical location (Felstead et al., 2009).

The concept of productive systems is useful as it provides a way of thinking about the workplace and the underpinning conditions that help shape how it is experienced by employees. Productive systems can be analysed in terms of two dimensions. Each workplace (whatever the sector and whatever the size or nature of its work) comprises two interlinked axes: a) the vertical interconnections of scale, or 'structures of production', ranging from international regulation down to the individual workplace; and b) the horizontal interconnections or 'stages of

production' through which materials and resources are transformed into goods and services. As such our attention is drawn to the vertical structures of production, for example, legal, regulatory, institutional and organisational as well as the horizontal stages of production, for example, procurement of resources, manufacture, distribution and selling, within which workplaces sit. Employing this framework helps shine a light on the labour, skills and expertise that enable the production of the relevant goods and, or services (Felstead et al., 2009).

As hinted at in the example referring to women's handbags, the nature of the productive system in which organisations are operating has an impact on the extent to which employers can plan and make decisions for the short, medium or long-term, the risks they are prepared to take, the nature of occupational expertise and skills required, and the levels of trust they are prepared to give to employees. These are all factors which affect the ability of the workplace to create and sustain itself as a learning environment. A key aspect of this is exploring how the productive system helps shape the extent to which staff have discretion and autonomy in relation to the conception, execution and evaluation of their work.

Here, it might be useful to draw on an empirical example from our research, "Exercise to Music" (ETM) (Felstead et al., 2007, 2009). This case study explored the ETM industry, where people pay to attend classes usually in leisure centres, but increasingly online. We undertook research in a range of settings (including through participant observation), which enabled us to distinguish between two broad approaches to providing ETM classes. Put another way, we identified two distinctive productive systems. In the former, 'freestyle' productive system, ETM instructors devised all aspects of the sessions they taught, whereas in the latter they delivered pre-packaged classes that minimised their decision-making. This distinction has major implications for the discretion that instructors were able to deploy over music selection, choreography, and the image and style of their provision, with consequences for instructor learning and the development of their expertise.

Much of the knowledge which instructors could have gained through their ETM training and qualification e.g., sourcing their own music, breaking it down and adding appropriate moves was not needed to deliver pre-choreographed classes. In the pre-choreographed system, instructors' workplace learning tended to consist of rote learning each of the tracks in the session via repetitive viewing and drills associated with the script so producing a standardised ETM product. These instructors were part of a productive system organised and managed by the owners of a concept that is duplicated in multiple settings (globally), with no variation allowed. In contrast, in the freestyle system, as one of our research participants said: "It's [learning] stimulating, it gets you to places where you've never been before and you learn it yourself, therefore it's not mechanical."

The freestyle productive system relied on the abilities of the instructor to select appropriate soundtracks, and to map and choreograph moves. This involved both crossing multiple boundaries and developing rich in-depth knowledge, skills and practices related to music, physical movement and coordination, which casted these individuals in the role of recipe creators rather than users. The two productive systems accorded instructors different levels of trust, discretion and autonomy and affordances for workplace learning.

2.2   Characteristics

This chapter is arguing for the importance of utilising conceptual and analytical tools that can aid researchers to unpack the different levels and kinds of influence that contribute to understanding the workplace as a site for learning. As discussed above, utilising the productive systems framework is one such resource that helps illuminate the wider circumstances in which workplaces and, by extension workplace learning, are located.

Turning to another resource, building on our earlier research in apprenticeships and workforce development, Lorna Unwin and I have developed the expansive—restrictive framework. This is a tool for analysing the characteristics of different workplaces in terms of their (more or less expansive and restrictive) features, and associated affordances for learning. We have suggested that there are two broad inter-related categories of characteristics involved, organisational and pedagogical (Fuller & Unwin, 2004). First, there are those arising from organisational features such as how the work process is organised, how jobs are designed, the control and distribution of knowledge and skills, and whether this is fragmented, taylorist or relational and distributed across time and space—sectors, disciplines. Second, there are those pedagogical characteristics relating to understandings about how people learn through varying kinds of participation in and across different communities and forms of practice.

The expansive-restrictive framework not only enables researchers to identify and explore the features of workplace environments in terms of their organisational and pedagogical characteristics, it also facilitates understanding of the extent to which they offer more or less expansive opportunities for learning through participation in single, or multiple communities of practice and their associated activities, relationships and processes. Such insights are central to understanding the affordances for workplace learning on the ground. Research undertaken across a range of workplace and sectoral settings has shown that every workplace can be analysed according to its characteristics, enabling its qualities

as a learning environment to be identified (Evans et al., 2006; Felstead et al., 2009; Fuller & Unwin, 2003, 2004, 2005, 2017; Fuller et al., 2018; Rainbird et al., 2004).

Unpacking the expansive-restrictive concept in a bit more detail, at the expansive end of the continuum we find employers (of all sizes in all sectors, public and private) who understand the importance of workforce development and occupational expertise for the health of their businesses or organisations. Hence, they conceive all staff as (always) having dual identities as workers and learners. This includes those who are new entrants or apprentices involved in substantial induction and training programmes, as well as more experienced employees participating in specialist training or ongoing continuous professional development (CPD). The framework does not represent a binary model—workplaces will shift along the continuum as a result of the internal and external pressures, emanating from the wider productive system, commercial or service context and regulatory environment, in which they sit.

To further illustrate how the framework can help with the analysis of the characteristics of workplaces as learning environments, I will return to the ETM case. Instructors located in a pre-choreographed productive system are discouraged from participating in communities of practice that might cause them to alter or change components of the classes they deliver. The recipe following nature of teaching classes in this way means that the instructors only have a shallow engagement with what Harry Braverman (1974) would have viewed as the contents of the product (in this case the ETM class). In contrast, instructors working within a freestyle productive system with no set routines to follow can roam freely identifying resources and operating as recipe writers or creators rather than followers or users. Individuals located in the former category are working and learning within more restrictive conditions than those in the latter who are working and learning in a more expansive learning environment.

In a more recent case study, I undertook research in a charity dedicated to supporting the health and social well-being of homeless people. The organisation comprised a multi-disciplinary team involving doctors, nurses, drug and alcohol abuse workers, social workers and others working in and across secondary care (hospitals), primary care (GPs and community medicine), social care, and other sectors including housing and immigration. The findings indicated that the charity had created a learning environment with many expansive features (Fuller et al., 2018). These were illustrated through the diverse backgrounds of the staff and the associated practices of working and learning identified in the data collected via interviews and workplace observations. Participation involved staff crossing boundaries between sectors, working in multiple communities of practice and

learning with, and from, colleagues from diverse backgrounds and with different kinds and levels of expertise, in the course of their engagement in day-to-day work activities.

Creating and managing an expansive learning environment and approach to workforce development based on a shared expansive ambition, places demands on the actors involved (particularly managers). This involves: having trust in and respect for employees' expertise and capacity to make informed judgements; involving employees in decision making; and, organising work (including physical spaces) that are generative of practices that support the sharing of knowledge and skills across job boundaries, disciplinary/occupational specialisms and beyond the immediate workplace. Looking through the prism of practice enables researchers to ask key questions about the extent to which the nature and scope of workplace activities generate opportunities for diverse and rich forms of participation, and hence facilitate and foster individual and organisational learning (Brown & Duguid, 2001).

Figure 1 provides illustrative examples of the kinds of practices that are indicative of more or less expansive workplace learning environments (Fuller & Unwin, 2011), and signal how the continuum can be used to shine a light on, as

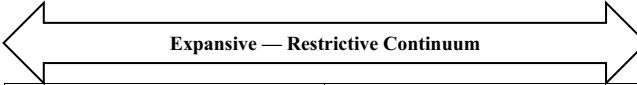| Expansive ⬅————————➡ Restrictive	
1. Discretion to make judgements and contribute to decision-making is widely available	Discretion limited to key managers, others have little involvement in decision-making
2. Participation in different communities of practice is encouraged, boundary crossing is facilitated	Participation is restricted to immediate team, boundary crossing is discouraged
3. Planned time off-the-job for reflection and deeper learning beyond immediate work tasks	All training is on the job and limited to immediate tasks and role
4. Managers given time to support workforce development and facilitate workplace and professional learning	Managers restricted to controlling workforce and meeting targets

Fig. 1 Illustrative practices. (Author's own compilation)

well as analyse, the extent to which the organisation is creating conditions which support or inhibit workforce development as well as early career learning.

The first characteristic reflects the extent to which the organisation trusts its workforce, drawing attention to whether staff can exercise their judgement and discretion. The second invokes the nature of opportunities to expand learning through facilitating participation in a broader range and variety of communities of practice. The third is associated with the availability of time and space for colleagues to reflect on their expertise and how this can be deepened in support of individual and organisational development and alignment. The fourth relates to the way the function of management and the role of managers are conceptualised and practised. To what extent is coaching, developing and mentoring integral to the manager's job?

Taking note of these ideas, the discussion now focuses more specifically on new entrants and understandings of apprenticeship as a model of work-based learning for occupational expertise. It is important to appreciate that not all apprenticeships are the same. Research findings show that there are diverse types reflecting differences, for example in terms of the sector, occupation and organisational settings, in which apprentices work and learn (Brockmann, 2010; Brockmann & Laurie, 2016; Fuller & Unwin, 2003; Lahiff et al., 2019; Li et al., 2020). This prompts another enduring question: Why and how do some approaches to apprenticeship seem better than others in maximising and integrating the resources of both the workplace/work and the classroom/workshop, to stretch apprentices' learning above and beyond the basic requirements?

Lorna Unwin and I have deployed the framework to explore variation in apprenticeship quality in terms of those offering more expansive or more restrictive learning experiences. Crucially, to be expansive, apprenticeships need to be located in workplaces and off-the-job training settings that also have expansive features. As noted above, in these environments all employees are given opportunities to develop their skills and knowledge. This means that more experienced employees understand the importance of passing on their expertise to novices. Figure 2 below, outlines 11 characteristics illuminating approaches to apprenticeship. Employers and providers can evaluate their own apprenticeships against these features and identify the changes that would be required to shift towards the expansive end of the continuum. In the case of apprenticeships already characterised by expansiveness, the tool can be used to highlight the aspects that need to be monitored to ensure that high quality can be maintained.

Expansive — Restrictive Continuum

1 Apprenticeship develops occupational expertise to a standard recognised by industry	Apprenticeship only develops skills for a limited job role
2 Employer and provider understand that apprenticeship is a platform for career progression and occupational recognition/registration	Apprenticeship doesn't build the capacity to progress beyond present job role
3 Apprentice has dual status as learner and employee: explicit recognition of, and support for, apprentice's status as learner	Status as employee dominates: limited recognition of and support for apprentice as learner
4 Apprentice makes a gradual, structured transition to productive worker and is stretched to develop expertise in their occupational field	Fast transition to productive worker with limited knowledge of the occupational field
5 Apprentice is treated as a member of an occupational community with access to the community's rules, history, knowledge and practical expertise	Apprentice treated as extra pair of hands who only needs access to limited knowledge and skills to perform job
6 Training planned to ensure apprentice participates in different communities of practice inside and outside the workplace	Training restricted to narrowly-defined job role and work station
7 Apprentice's work tasks and training are mapped onto the occupational standard and assessment requirements to ensure they become fully competent	Weak relationship between workplace tasks, the occupational standard and assessment procedures
8 Apprentice gains qualifications that have labour market currency and support progression to next level (career and/or further and higher education)	Apprentice doesn't have the opportunity to gain valuable and portable qualifications
9 Off-the-job training includes time for reflection and stretches the apprentice to reach their full potential	Supporting the apprentice to reach their full potential is not seen as a priority
10 Apprentice's existing skills and knowledge recognised and valued and used as platform for new learning	Apprentice is regarded as a 'blank sheet' or 'empty vessel'
11 Apprentice's progress closely monitored and involves regular constructive feedback from range of employer and provider personnel who take a holistic approach	Apprentice's progress monitored for job performance with limited development and feedback

Fig. 2 Approaches to Apprenticeship. (Fuller & Unwin, 2016)

Investigating apprenticeships through the characteristics included in the expansive-restrictive framework illuminates the extent to which apprentices are being supported organisationally and pedagogically so that they can fully develop and demonstrate their capabilities and potential. Two contrasting examples can be used to illustrate this point (see Fuller & Unwin, 2003, for an account of the case studies associated with this research and its wider conclusions).

Company A—is a medium sized manufacturer of bathroom showers and valves. It has a well-established apprenticeship programme which has been used to develop successive generations of skilled staff in engineering, accountancy, and steel production and processing. Many of the company's ex-apprentices have progressed to senior management positions. Participation takes place over time and in many internal communities of practice, via three-month long secondments in different departments including new product development, engineering, testing, sales and marketing, finance, shopfloor production. Apprentices follow a workplace curriculum in each department, with regular feedback and assessments from more experienced colleagues to develop their occupational and workplace expertise. Outward boundary crossing happens when they participate in residential courses to develop team-working, through the company's apprentice association where they get involved in charity activities in the local community, as well as through participation in courses at college.

Company B—is a small family run company which provides steel polishing services to other businesses. The majority of employees work on the shop-floor as machine operatives. The firm employs apprentices in steel production processes. They are primarily members of one community of practice which centres on the operation of steel polishing machines in a shop floor environment. Apprentices learn their role from more experienced employees and become full participants (fully productive) in under one year. Access to participation in communities of practice within and beyond the workplace is highly limited. Apprentices pursue competence-based National Vocational Qualifications (NVQs) at work with the help of a workplace supervisor, and an external assessor who makes occasional visits to monitor progress and assess that the evidence they have collected demonstrates fulfilment of the criteria specified in the occupational standard.

Distinctive differentiators between these two examples include a) that apprentices in the first company have a strong dual worker-learner identity whereas in the latter, apprentices quickly develop a strong worker identity but retain only a weak and limited learner identity throughout their programme; b) that the apprentices in the former participate in multiple communities of practice in and beyond the workplace forming diverse and broad-based occupational and workplace relationships, in comparison with the latter who are primarily located in a single

community of practice; and c) that the former experience gradual and the latter swift progression to becoming full participants in communities of occupational expertise.

As noted, the primary goal of the workplace is to produce goods and services. This means that from time to time the conditions for apprenticeship can be put under pressure. For example, if the time apprentices have for learning and reflection is squeezed, apprentices lose the chance to fulfil their potential and the organisation loses the chance to make the most of their abilities. When this happens, the environment and therefore also the apprenticeship become more restrictive. I would argue that a strength of the expansive—restrictive framework is that it can be applied to all organisations, big and small, regardless of sector. It enables employers and providers to identify the pressure points and helps them think more creatively about strategies for overcoming them. In short, the workplace itself offers affordances for learning, and is generative of practices through which workplace learning can be more (or less) expansive or restrictive. The chapter now turns to discussing 'capacity' as the third of the 3Cs.

2.3   Capacity

Capacity of teachers and trainers is an important theme which emerges from analysis of the two apprenticeships outlined above as well as wider workplace learning research. The availability of colleagues with pedagogical capabilities and occupational expertise to support skill formation and workforce development, is an integral component in assessing the capacity of the workplace to enhance learning. Variance in capacity helps to explain key differences in the quality of apprentices' learning, lived experience and outcomes, as well as the development of expertise of more experienced employees. It follows that analysis of the resources the workplace needs to move towards becoming a more expansive learning environment is important. Crucially, it is helpful to explore the extent to which the employer has staff whose capability includes understanding occupational knowledge, how it is developed and applied, and how the organisation of work and production, the way jobs are designed, and workplace practices all shape the conditions for learning and the quality of the workplace as a learning environment for all workers. As Lorna Unwin and I have recently argued (2019), improving workplace capacity is a pre-requisite for improving work-based and workplace learning.

Exploring the notion of capacity, prompts questions about vocational teachers and trainers including their presence in the workplace as well as in off-the-job