

Restrictive and expansive participation in companies' activities: A case study of bricklaying and automation technology apprentices in Switzerland

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Based on qualitative research on bricklaying and automation technology apprentices in Switzerland, this paper examines apprentices' experiences of participating in their company's production activities and becoming members of their community of practice, and the influence of these experiences on the development of their occupational identity. Participation in activity and training is organised in various ways in different training companies, and expansive–restrictive participation models help in understanding the importance of workplace learning for apprentices' training experience and the development of their occupational identity.

The results show that in learning situations characterised by expansive participation, apprentices have substantial responsibility and autonomy throughout their apprenticeship, together with guidance adapted to their needs. Apprentices are highly self-confident and adopt agentic actions aimed at increasing the variety and complexity of tasks and their own autonomy. In restrictive participation, in contrast, apprentices are often poorly integrated into the community of practice and feel devalued as aspiring professionals. These apprentices primarily develop agentic actions to improve their participation in company activities and their apprenticeship, but they are largely unable to develop their skills or become independent in performing complex tasks, and they are limited in their ability to construct a vocational identity.

Keywords: Occupational identity, participation, community of practice, bricklaying, automation

Introduction

Vocational education and training (VET) is popular in Switzerland, where it is appreciated for its ability to integrate young people into the labour market quickly (Korber and Oesch 2016). Two-thirds of young people leaving compulsory education pursue such programmes (SEFRI 2017), in particular the dual-VET¹ system is highly developed in Switzerland. Participation in workplace activities has a decisive impact on apprentices' training experience and the development of their occupational identity. In practice, however, participation in workplace activities and training structures is organised very differently across occupational sectors and even among different training companies within the same sector.

Based on qualitative research with bricklaying and automation technology apprentices, this paper examines apprentices' experiences of participating in their company's production activities, becoming members of their community of practice and taking initiative at their workplace.

Learning, a process of achieving theoretical and practical knowledge, necessarily involves a transformation of one's personal and social identity and the development of an occupational identity. Several scholars (Saboya 2008, Billett and Somerville 2004, Chan 2013, Dubar 1998, Cohen-Scali 2003) have emphasised the importance of workplace activity in the construction of an occupational identity: '[...] the processes of thinking, acting, and learning at work are simultaneous [...] and include the formation of working identities and of subjectivities' (Lave and Wenger 1991). Furthermore, as Lave and

¹ Dual-VET programme in Switzerland involves theoretical education in a VET school and workplace learning at a company

Wenger have argued, identity formation is a ‘process of becoming’ through participation in a community of practice.

The apprentices in our study participate in joint activities with others at their training company and contribute to the production process. That is, they participate in a community of practice, but also in collective production. Activity thus connects the subject, the object and others (Engeström 2001, Leont'ev 1978), which is essential for the subject's work to be meaningful (Kaddouri et al. 2008, Zittoun 2006). Drawing on this understanding of workplace activity, this paper attempts to better understand learning experiences at the workplace and the conditions underlying identity development.

The paper first presents the theoretical concepts used to analyse participation in workplace activities and the influence of participation on the development of an occupational identity. It next describes Switzerland's dual-VET system and the two selected training programmes – bricklaying and automation technology – and explains the data collection and analysis methods employed in this qualitative study. It then presents eight cases to illustrate the different types of participation in workplace activities and their consequences for identity development. Finally, it discusses the results and their practical implications for VET.

Occupational identity formation and belonging to a community of practice

Identity processes in training and work have been theorised from various perspectives, including as a biographical process connected to one's life course and as a process of construction through daily interactions and relationships (Dubar 1998, Cohen-Scali 2003). Identity is fundamentally dynamic (Kaddouri 2006) and constantly evolving. Cohen-Scali (2003) considers both the relationships in the work team and the actual tasks involved to be core constituents of occupational identity. Work activity is carried out within a community of practice in which individual and group meanings are made and

people experience and shape new identities. According to Lave and Wenger (1991, 98), a community of practice consists of ‘a set of relations among persons, activity, and world, over time and in relation to other tangential and overlapping communities of practice’. Learning thus takes place through mutual engagement in a productive activity.

In her study on baking apprentices, Chan (2013) has developed a model of occupational identity formation that offers deeper insights into the association between young professionals’ workplace activities and identity work. Chan describes occupational identity formation as developing through three processes – *belonging*, *becoming* and *being*. In the process of *belonging*, novices mainly seek to become part of the workplace and the community of practice by observing and interacting with other workers. Ryan (1991, 210), discusses belonging to the workplace in terms of the fundamental need of relatedness: ‘Relatedness concerns the emotional and personal bonds and attachments between persons. It reflects our strivings for contact, support, and community with others’. *Becoming* refers to the process of acquiring the skills necessary to becoming a professional, applying acquired know-how and becoming progressively integrated into the workplace. Becoming involves being increasingly recognised for one’s skills improvement, acquiring responsibility and gaining greater autonomy. Activity is central to the process of becoming, because it serves to acquire the specific skills needed for the job. In the process of *being*, advanced apprentices plan to continue working in their trade and adhere to their occupational identities. Our discussion of our interviews with bricklaying and automation technology apprentices will demonstrate the importance of relatedness and the difficulties that a lack of relatedness creates for their professional development.

Being a member of a community of practice by participating and exchanging with other members of the work team helps fulfil the need for relatedness. Nevertheless, training

relationships must possess certain characteristics to be effective. According to (Swager et al. 2015), effective learning requires ‘guidance’ that is proportional to the learner’s needs and involves ‘psychosocial support’ and ‘structure-providing interventions’. This guidance involves setting realistic goals, selecting feasible tasks, providing instruction for new tasks and offering feedback. According to Swager et al., this support should decrease as the apprentice gains experience.

While this section has focused on the relational aspects of participating in activities, the next discusses the different characteristics of this participation.

Participation, development of occupational identity and agency

Participation in company’s activities is essential for the development of an occupational identity, but the modalities of participation differ across companies, as Fuller and Unwin (2003) and many others (Baumeler and Lamamra 2019, Goller and Billett 2014) have shown.

Fuller and Unwin’s (2003) model of restrictive and expansive learning considers three different dimensions. The first is the specific institutional arrangement involved. In Switzerland, institutional arrangements regarding learning opportunities at school and the workplace, and apprentices’ formal status as learning employees are regulated at the national level. The second dimension concerns personal development regarding career opportunities and future projects that strongly varies between occupations. The third dimension – and the most important for our purposes – is related to participation in the company’s activities.

Fuller and Unwin define *restrictive* participation as involving a narrow conception of participation that does not reinforce occupational identity formation. The apprentice participates in a limited number of tasks, acquires little knowledge and remains confined to a single learning place. Participation is typically linked to a community of practice that

shares little of its know-how with the apprentice. The apprentice must learn the essential tasks quickly in order to become efficient and fully participate in the company's activities without becoming an expert in their trade.

Expansive participation, in contrast, reinforces occupational identity formation because it encourages both broad participation in the company's activities and in multiple teams, on the one hand, and joint reflexion on the apprentice's contribution to the trade, on the other. This is what Wenger (1998, 59) refers to as *reification*, 'a wide range of processes that include making, designing, representing, interpreting, using, reusing, decoding, and recasting. [...] Reification shapes our experience'. The apprentice's participation is guided to promote practical learning and support meaning-making processes. Full participation develops more gradually in expansive participation, giving apprentices time to develop into 'rounded experts' (Fuller and Unwin 2003, 411).

Echoing Fuller and Unwin's understanding of expansive participation, Goller and Billett (2014, 8) argue that 'extensive engagement in domain-specific work activities is necessary for developing expertise at work. Both the variety and the complexity of activities individuals experience at work shape the form of that development'. But as Goller and Billett also argue, this participation depends on various factors, including the particular skills needed for the trade, but also the company's specific structure and work organisation. Thus, 'not all workplaces provide access to the range of domain-related practices required to be learnt for effective performance. In this case, employees might be constrained in their development process' (Goller and Billett 2014 14).

This is where apprentices' agency comes into play, in that it can generate more learning situations: 'Exercising agency at work, therefore, means taking initiatives and seizing opportunities as well as taking control over work situations and resisting external forces' (Goller and Billett 2014 , 10). Goller and Billett identify different forms of agentic

behaviour: participating in or rejecting certain work practices, deliberately changing workplace descriptions, seeking feedback about one's performance and seeking information. By taking such initiatives, employees can influence their own progress. But whether apprentices engage in such behaviour also depends on the learning context the company provides (Bishop 2017). In this article, therefore, we examine whether participation at the apprentices' employing firms is expansive or restrictive, and how the nature of this participation influences apprentices' opportunities to develop their agency and self-confidence.

Bricklaying and automation technology dual apprenticeships in Switzerland

Workplace activity always takes place in a socio-historical context – the techniques and materials used (Leont'ev 1978) and the specific professional environment involved (Clot 2006). In our case, this context includes the way in which both Switzerland's VET system and participating companies are structured. On the one hand, the dual-VET system is nationally regulated: it consists of a formal curriculum that involves theoretical learning at VET schools, practical training in workshops and workplace learning at the company in which apprentices are formally employed. On the other hand, companies have significant leeway in how they implement the curriculum and are not always sufficiently supervised by cantonal apprenticeship commissioners, who are responsible for ensuring the quality of training. Consequently, the learning culture companies develop coupled with the economic pressure they face strongly influence the support, guidance and transmission of know-how they provide to apprentices (Negrini et al. 2015).

A large majority of Switzerland's 230 distinct VET programmes are dual apprenticeships. The bricklaying and automation technology apprenticeships each train only one per cent of all apprentices, but they are important in the construction and industrial sectors. Almost all apprentices in both programmes are male (95–99%).

Automation technology apprentices learn how to manufacture, maintain and repair different machines, apparatuses and automated systems. They also learn how to plan, document, program and bring machines and systems into service. Apprentices can enrol in either a full-time school-only programme or a dual-VET programme that involves theoretical education in a VET school two days a week and learning and working at their company three days a week. In the dual system, apprentices also complete 40 to 64 hours of practical-training workshops. One of the cantons involved in the study has an exchange system that allows dual apprentices to spend several months in practical workshops at the VET school and their colleagues from the full-time school programme to gain experience with a company. The apprenticeship lasts four years and requires high intellectual aptitudes and high grades in compulsory school.

The bricklaying apprenticeship programme teaches a broad range of construction skills with different types of stone, prefabricated elements and concrete, as well as how to build concrete forms and drainage systems, plan work, read plans and take measurements at the building site. Apprentices attend the VET school for theoretical instruction one day per week and learn and work at their company four days per week. Apprentices spend a total of 65 to 75 hours in practical-training workshops, where they prepare for their practical final exams. This programme lasts three years and requires average intellectual skills and grades in compulsory school.

In Fuller and Unwin's terms, Switzerland's VET system is structured to provide expansive rather than restrictive training. The automation technology programme is more expansive than the bricklaying programme, as it lasts longer, requires more school training and offers broader learning opportunities on multiple sites. In terms of participation in company activities and in a community of practice, however, our analysis does not reveal significant differences between the two trades.

Methods

This analysis is founded on a qualitative study of the development of occupational identity among bricklaying and automation technology apprentices. We collected data in four Swiss VET schools between 2018 and 2020. The apprentices were at least at the end of their first year, as a result of which they had already acquired significant experience of their apprenticeship. We conducted 35 interviews with 30 bricklaying apprentices (some were interviewed twice, once at the beginning and once at the end of their training) and 31 interviews with 31 automation technology apprentices about their subjective perspectives on their vocational training. Interviews began with biographical questions about the apprentices' transition from compulsory school to VET, followed by more structured questions addressing their learning and working experiences. Questions concerned issues such as work tasks and activities, conditions, relationships within the team, support and guidance, learning progress and career perspectives. The apprentices were chosen to ensure a wide range of regional origins and types and sizes of employers. We also led three to four focus groups per occupation with the apprentices on topics similar to those of the interviews and conducted classroom observations at each school for eight to ten days, and for shorter periods of time in some practical workshops. This time spent together allowed us to establish trust with the apprentices. As a result, the research is close to their individual concerns and experiences. We transcribed and analysed the empirical material using grounded theory methodology (Charmaz 2014): we employed open coding closely related to the data and then developed more abstract categories and the links between them. Subjective experiences and meaning making about workplace activities were among the core categories that emerged from this process.

We found that participation in company activities does not differ systematically between the two trades or company size. Expansive or restrictive learning is possible in all contexts, which is why our analysis does not involve a comparison between trades or company size. However, we observed strong differences in individual apprentices' experiences, and these differences were intimately related to the learning context in different companies. We thus opted for a case analysis (Kelle and Kluge 2010), from which eight different cases emerged. Four cases represent different forms of expansive participation in workplace activities, and the other four represent different types of restrictive participation. The eight apprentices chosen for the presentation of the results are representative of the diversity of all the apprentices we interviewed and illustrate the different learning contexts particularly well. They were all in their third year of their apprenticeship at the time of the interviews, because the more experienced apprentices were able to provide a broader description of their training situation at their company.

Participation in the company's activities and integration into the community of practice

How do bricklaying and automation technology apprentices participate in their company's activities and community of practice? What opportunities do they have to perform a large number of tasks, and thus to engage in expansive rather than restrictive participation? And how does the nature of their participation impact their ability to take initiative and develop their self-confidence and occupational identity? These questions guided our analysis of the different cases and led to the emergence of eight distinct learning contexts.

During the analysis, it became important to distinguish between three categories of tasks that the apprentices execute. So-called *secondary tasks* are often considered 'dirty work' (Hughes 1958) that is not directly related to the trade. These tasks include tidying,

cleaning and moving materials. *Production tasks* are directly related to the company's productive work. In bricklaying, these tasks typically consist of any construction activity, including preparing the construction site, earthwork, building and removing forms, tying rebar, measuring and pouring concrete. For automation technicians, these tasks include cabling, producing mechanical parts for machines and developing expertise in electrical and electronic operations. Work teams value some production tasks more than others. The less valued tasks include preparation and support tasks such as preparing mortar. More complex tasks, such as building a brick wall, or tasks involving the handling of machines are valued more highly. *Learning tasks* often overlap with production tasks. Apprentices see these activities as central to learning the trade and successfully completing their apprenticeship. The more experienced the apprentices become, the more complex production tasks have to become if they are to contribute to their on-going learning.

Expansive participation: Variety of tasks and integration into the community of practice

Kadem: Guidance and complex production processes

Kadem is an automation technology apprentice working at a small company with eight employees that produces pneumatic systems. He describes how his boss reassured him to make more decisions on his own. 'It was pretty hard for me to make decisions at first because I was afraid of making mistakes. Then, little by little, my boss put me at ease. He said: "Don't worry, you might order a false part once, but it'll get used for another customer who'll need it"'.

At the time of the interview – and hence at an advanced stage of his training – Kadem's boss was asking him to carry out entire projects for the company, from beginning to end, including planning the projects, ordering the parts and assembling and installing the

compressors. Typically, he has to set up electronic boxes for compressors adapted to the customer's requirements:

I'm really the one who has to make decisions. It's as if I'm my own boss for the length of the project. He [trainer] is still the boss, but in a sense I'm the one who has to make the decisions, and it's actually up to me to vary each element according to price, utility and all that.

We can see in Kadem's example reassuring guidance adapted to his skill level and experience, thus contributing to his increasing autonomy. Access to different tasks increases to full participation over time (Fuller and Unwin 2003). Full responsibility for his final project as an apprentice gives him the opportunity to acquire a deeper understanding of the production process and his role in the work team. In Fuller and Unwin's terms, Kadem experiences an expansive participation process that allows him to become a well-rounded expert.

In this context of guided work and recognition within the community of practice, Kadem evolves by being increasingly able to discuss new and more complex tasks with his boss, who often questions him about his decisions, thus requiring him to make his reasoning explicit. This process contributes to reification (Wenger 1998), which is important in the process of developing an activity and the meaning associated with it.

Kadem feels comfortable with his professional choice. He sees himself as an important member of the team whose participation contributes to the successful completion of projects: 'When I'm on building sites with employees, I help quite a lot, and that helps speed up the work rhythm. So several times we were quite proud because we finished ahead of time. It's things like that that satisfy us'. We note the 'we' in this sentence, reflecting his identification with the community of practice.

Kadem reveals his agency through his willingness to make decisions about work processes and work independently, but also by seeking information and support from his

boss and team. He strongly identifies with his trade and is self-confident as an emerging professional:

I already consider this my trade because it's what I really want to do, actually. I don't consider myself an automation technologist, because I haven't graduated yet, but I'm sure I'm going to continue doing this, I'm sure I'm going to finish this, so I'm 100 per cent sure that I'll receive my certificate as an automation technologist at the end of my four years.

Antoine: Responsibilities and the search for more learning opportunities

Antoine, a bricklaying apprentice at a medium-sized construction company, emphasises his successful integration into the work team, and especially the high degree of responsibility he is given by his boss:

Well, I do more and more tracings, calculations, organisation tasks. One day I was on a building site and the boss was there to train me, and he gave me the organisation of the building site to do. He gave me two buildings, two small buildings, not huge, not enormous, but still two good buildings, and he said: 'This one you manage on your own. You do the tracing, you take two masons, two or three, with you and you manage'.

In their study on the experience of apprentices in Finland, (Rintala and Nokelainen 2019,

4) demonstrate that giving apprentices responsibility increases their self-confidence.

Antoine describes important learning opportunities and the feeling of being considered a colleague in regard to one of the foremen in particular:

I learned a lot because he was good, and he taught me all the best techniques to go faster and so on. And the good thing was that we got to collaborate a bit. He has a lot of stuff to keep in mind, and maybe I have less things to keep in mind, so I can think more about the details. And I could tell him and he wasn't someone who's fixed on his own ideas, and he liked to have new ideas....

Antoine benefited from this guidance, which allowed him to participate in thinking about how to carry out work tasks, but he also experienced some less supportive periods: he regularly changed teams in a rotation system, some of his foremen were less attentive and welcoming. Nonetheless, Antoine emphasises his agentic action in making progress. That

he is able carry out production activities useful to his apprenticeship is due to his own interest in the trade: ‘I think I’ve put a lot of myself and a lot of personal effort into it. [...] So things went really well on the building sites. I was really interested in the work. So I had the opportunity to learn and it was good’.

His involvement in the training and interest in the trade are agentic actions that have clearly opened up broader learning opportunities. Like Kadem, Antoine, now completing his apprenticeship, feels ready to work as a professional and has a high degree of self-confidence, and he wants to train as a foreman soon after obtaining his certificate. Antoine’s case is an example of ‘becoming’ and ‘being’ in the development of occupational identity (Chan 2004): Antoine has become a professional bricklayer and feels that he belongs to this trade.

Gabriel: Work routines and integration into the community of practice

Gabriel, a bricklaying apprentice at a medium-sized company, also feels integrated into his company’s activities. He performs a wide variety of tasks, although not yet some important ones, such as vibrating concrete, which he describes as a sensitive task, or finishing load-bearing walls, which also requires special attention and care. He thinks his position within the team has evolved naturally from ‘labourer’ to advanced apprentice:

Yeah, of course there are still some tasks that everyone has to get on with, right? So, for example, tying rebar or whatever. You’ve got to get on with it, that’s how it is. But you’re not just a beginner anymore [laughs]. But that’s just the normal process you go through, and it’s probably the same in every trade, I think.

This example demonstrates the evolution from peripheral participation to full participation within the community of practice (Wenger 1998). Gabriel emphasises above all the routine work processes that he has assimilated on the job site over time:

Yeah, I think it's just logical, you know more than in the first year of your apprenticeship, because at some point you get into the rhythm, at some point it's just always the same. Formwork, then rebar, read the rebar plan, pour concrete. Then comes the ceiling: you have to peel out the ceiling, remove the supports, lay the beams, nail the switches, and then comes the formwork, and then rebar again, then pour the ceiling again.

He also finds himself working more independently than earlier in his apprenticeship: he needs fewer explanations or orders. He refers to two foremen who, through adapted guidance, especially helped him learn the trade. The first stayed at his side and asked him to perform learning tasks while evaluating them directly. The second instead relied on Gabriel's ability to organise himself and perform the tasks autonomously.

The combination of these two foremen's approaches allowed Gabriel to learn expansively, in that he participated in a wide range of activities while learning and integrating important aspects of the trade. Although we find less evidence here of a global understanding of the trade than in Kadem's case, Gabriel participates fully in the collective work, establishes routines and is integrated into production activities. Nonetheless, Gabriel reveals less agentic action. He emphasises the importance of adapting to work routines, receiving guidance and experiencing good teamwork. Although he is self-confident, he does not identify much with the trade and already knows that he wants to pursue higher education at the end of his apprenticeship and change professions. He already had this professional ambition before he started his apprenticeship, which explains his limited identification with the trade.

Mario: Consideration of requests for expansive participation

Mario, a bricklaying apprentice at a large company, begins the interview by saying that he is very happy with the way he has been received by his team. He gets along well with the other employees, who explain tasks and integrate him into the work. He has had the

opportunity to perform all the different tasks involved in bricklaying. But he also went through a phase earlier on that was less conducive to learning:

The first year, at the very beginning of the apprenticeship, you could see that the foreman was motivated [to help me learn]. Well, he taught me everything I needed to know, and he answered all my questions. But as time went by, I felt that he let go. At the end of my first year, it was more like sweeping, sweeping, cleaning. Then, at the beginning of the second year, we changed building sites and it wasn't bad, because I helped a foreman lay out the entire building site....

According to Mario, his foreman's lack of investment at certain times is due to the economic pressure to get jobs done quickly. The more pressure foremen feel, the less time they dedicate to apprentices and the more they make them do simple jobs that require little supervision. Mario had to take the lead in re-establishing good learning conditions after being assigned to sweeping and tidying, secondary tasks that lasted for months.

According to Goller and Billett (2014), agentic action can sometimes involve refusing to submit to orders that make no sense. Mario demonstrated agentic action of this sort:

Oh yeah, I spoke really frankly, yeah, I said, 'Look, either you send me to another site with a boss who trusts me, or you trust me and let me do my job. You let me do it, and you let me struggle for a while'. For example, if I don't know how to do something I think about it for five minutes, but at least after five minutes I figure it out by myself.

Agency here is demonstrated in the willingness to perform complex tasks and use them as learning opportunities in order to acquire autonomy and responsibility. Despite his struggles, Mario's case reflects expansive participation because he finally has the opportunity to perform a wide range of tasks. Important in his case is that his company adapted to his demand for greater participation.

This adaptation to apprentices' need for guidance also allows us to broaden Fuller and Unwin's (2003) understanding of expansive participation. According to Fuller and Unwin, expansive learning situations are characterised by increasing participation in the company's production processes and integration into the community of practice, which

enable the apprentice to become independent and manage increasingly complex tasks. Mario's case demonstrates that learning situations can also be expansive when apprentices are able to influence their situation and turn weak learning opportunities into strong ones. Although the reification is less strong in such cases, there is a regular exchange – and thus relatedness – between the apprentice and the team and foreman, which increases apprentices' learning opportunities and self-confidence.

Limited participation and lack of integration in the community of practice

Nils: A lack of complex production tasks in the company, training at vocational school

Nils is an automation technology apprentice at a large company that manufactures and maintains electrical transformers. His apprenticeship is structured such that he is rotated to a different department every three months, returning to an earlier department after he has completed the full rotation. Experiencing the trade from different perspectives is one characteristic of an expansive apprenticeship, but Nils finds little direct connection between the work he performs and the trade he is learning. Indeed, his work consists of rather simple things like making minor electrical repairs and checking and maintaining production machinery. In addition, during the three months he periodically spends with one of the trainers, he spends his time maintaining the storage area and moving equipment and office furniture, all of which are secondary tasks:

I thought the apprenticeship, the company would pay a little more attention to the apprentices, and that we would do things a little more related to our apprenticeship. But now, let's say that we're just working for the company, we're not working for our apprenticeship.

Nils understands that his company, torn between meeting its production goals and training apprentices, favours the former, and this situation does not allow him to take initiative to enhance his learning. Moreover, the general atmosphere is deleterious because the

company was taken over by a competitor and employees fear that it will be relocated. As a result, Nils finds the theoretical courses and especially the practical workshops provided by the vocational school especially important, and he takes satisfaction in preparing for his final exams. It is in these courses that Nils develops agency by putting a great deal of effort into them: ‘Here [at the vocational school], we’re in workshops, so we have everything at our disposal. Let’s say, in quotation marks, it’s easy to do our job. But at a company like this, it’s not. [...] The company’s name is not “automation technologist”’. At the same time, the workshops helps him take pleasure in his job. Nils’s agency is visible in his will and ability to find ways to progress in learning his trade outside the company. In addition, this effort allows him to project himself into the future as an automation specialist. Nils thus remains engaged in a process of building a professional identity, in the ‘becoming’ and ‘being’ described Chan (2013).

Laurent: Lack of learning opportunities, lack of self-confidence

Laurent, a bricklaying apprentice at a large construction company, has been fully involved in production activities since the beginning of his training, although he has not been able to carry out important tasks such as slab or brick-wall construction: ‘Well, there was a lot of just normal work, but not necessarily work that I could link to my apprenticeship. So I just learned to work like normal, and not really things I would have needed for my training’.

We see here the typical ‘fast transition to full participation’ (Fuller and Unwin 2003, 411) characteristic of restrictive learning. Laurent has often been involved in renovation work, which has offered him some degree of task diversity. However, his case shows that if an apprentice’s learning needs are not sufficiently taken into account, participation in a company’s activities can be expansive (in that it involves performing multiple tasks) without necessarily leading to a sufficient acquisition of skills. Laurent asked several

times for opportunities to build brick walls, an important skill for the practical final exam, but his boss only finally allowed him to participate in the construction of a brick wall after his parents intervened.

Like Nils's company, Laurent's employs a rotation system for apprentices. Laurent changes teams every two or three months and regrets being unable to establish a relationship with team members and become part of the community of practice. Importantly, the company has more than 6,000 employees in Switzerland. In the past, he worked with a foreman who engaged with him seriously and observed his work closely. He is currently working more independently, but he is uncomfortable doing so: he believes he has not learned the job well enough to work independently. Here again, the rotation system seems to undermine the apprentice's need for guidance:

Well, and then at some point they just said, 'Well, you have to be able to do this or that'. And I just said I've never done that before. Then they kind of said, 'Well, you're in your third year of your apprenticeship, you have to be able to do it, we can't explain it now'. And I was there and I thought, well, I can try something, but I'm not going to tell you that it'll work because I don't know exactly how it works.

Like Nils, Laurent emphasises that he does not have enough learning tasks to prepare properly for the practical final exam. In his view, apprentices' learning needs are not important to his company. An apprentice has to quickly become effective and participate in simple production tasks. Learning the trade happens 'on the job'. Unaccompanied learning periods and a lack of guidance make the apprentice feel that he is not up to the task, not a professional. This lack of self-confidence limits his ability to develop an occupational identity as a bricklayer. He takes agentic action by trying to improve his learning conditions, i.e. by asking for a variety of tasks, but his workplace ignores his needs and hinders his initiatives.

Celien: A lack of guidance and adapting tasks to interests

Celien is an apprentice at a small electronics and home-automation company. Like other apprentices who experience restricted participation, he lacks guidance and the opportunity to perform a variety of tasks: ‘I found myself in this small company that doesn’t really care about me.... I wanted to be an automation technician, but they mainly make electrical panels, I rather become an automation fitter, and there’s not really a lot of thinking required for this kind of work’.

He learns the basics of his trade ‘on the job’, but he does not have a contact person with whom to discuss his work, and this lack of guidance is a major loss for him:

One day my trainer was fired and I was alone. After that I had colleagues I worked with on a few jobs, and sometimes there were some projects I did myself. So you learn with them anyway, that’s how it generally works, but I didn’t really have someone I could discuss what I did, what I learned, with.

Celien repeatedly mentioned that he does not have an interlocutor. He also misses receiving feedback and recognition. He lacks relatedness, which Ryan (1991) identifies as a basic psychological need. He complains about having to perform repetitive and simple production tasks, such as wiring, when he feels capable of doing more complex jobs. He finds himself in a restricted learning situation with few learning tasks and a lack of reification: ‘I’m a fast learner, so it bothers me to learn something and do it over and over again when I already know how to do it and I could be learning more interesting things that the company also does’.

Celien is curious and expresses a desire to learn his trade in depth. He has spoken with his boss and asked to participate in different departments in his company, but his boss is reluctant to let him work in these departments because, he claims, their work is beyond the gamut of automation technicians. Only the intervention of an apprenticeship commissioner helped Celien obtain more diverse, complex and learning tasks for a while:

That's when I said to myself, 'I feel like I'm finally learning a little'. I'm not just putting wires in terminals, which I've learned to do, which I know how to do and which we do all the time. [...] It's not the first time I've helped out a little here and there, but I didn't work on a project from beginning to almost the end until I came here [to the vocational school].

Celien wants to do more complex work, complete an entire project, in order to expand his knowledge. Like other apprentices, he thinks his company is prioritising its needs over his, and he is frustrated about this. He is seriously considering leaving his company and completing his apprenticeship at a full-time vocational school, where he can satisfy his desire to learn his trade properly.

Celien demonstrates agentic action in his repeated attempts to influence the organisation of his apprenticeship by asking to set up procedures and a training plan. Asking an apprenticeship commissioner to intervene and planning to leave the company and complete his training at a full-time vocational school are also attempts to improve his vocational training and ensure that he can pass his exams.

Despite this unfavourable learning context, Celien is attached to his trade: 'I'm made for this job'. Unlike Laurent, his self-confidence has not suffered, and he struggles to broaden his participation and learning. Like Nils, he also benefits most from the practical workshops at the VET school.

Liam: Lack of integration in the community of practice and limited to secondary tasks

Liam is a bricklaying apprentice at a small construction company. He describes his serious difficulties in integrating into the team at the construction site, because his co-workers mostly speak Portuguese, which he does not understand. He is unable to take part in conversations or deepen his understanding of the trade. He also mentions that his boss openly reprimanded him in front of his co-workers. Liam experiences a lack of

relatedness and a lack of participation in the community of practice. Even worse, some foremen report that he is unmotivated and uncommitted:

Some workers on the site tell the boss I'm unmotivated, but that's also normal! I'm not motivated to work because I'm not a bricklayer per se. I sweep, I clean, I carry things, I do the mortar, but I don't do the bricklaying work. And that's why there are days when I'm not motivated to work. I explained that to my boss. I am motivated to work, but I have to work as a bricklayer.

Here we can see how participating in productive tasks helps foster a feeling of belonging to a community of practice: 'working as a bricklayer' is synonymous with recognition of his belonging. Instead, Liam mainly carries out simple secondary tasks. During the three years of his apprenticeship, he has rarely participated in constructing a brick wall. He does not understand why he prepares mortar while his foreman lays bricks. The foreman already knows how to lay bricks perfectly, while the apprentice is expected to learn how to do so.

Liam waited until almost the end of his apprenticeship before speaking up about his mistreatment. Until then, he had felt shy and wanted to respect the boss's orders:

I was on a construction site cleaning formwork panels recently. I was told I was too slow, they were just taunting me like that. They told me I was slow, I wasn't working fast enough, I wasn't efficient enough, and I lost my temper and got really pissed at the foreman and left the site.

Here, losing one's temper is an agentic action because it indicates a refusal to accept the situation any longer. After this event, Liam talked to his boss about his willingness to work as a professional bricklayer and his fear of not passing the final exam because he will not have learned the necessary skills. Liam's experiences of a restrictive apprenticeship, lack of exchange and practice and mistreatment have left him deeply frustrated. He does not feel ready to work independently, does not identify with the trade and has lost interest and pleasure in it. He wants to finish his apprenticeship and then change to another job.

As we see from our case studies, restricted participation is primarily characterised by a highly limited variety of tasks. Nils, Laurent, Liam and Celien believe they do only unskilled work, helping the company with simple production tasks without benefiting from *legitimate peripheral participation* (Wenger 1998) or a gradual transition to full participation (Fuller and Unwin 2003). These apprentices are also lacking relatedness and integration into a community of practice. Their work teams are insufficiently supportive. As a result, some of these apprentices lack confidence in their professional skills and are afraid to fail their practical final exam.

Conclusion

This paper has identified the conditions necessary for apprentices in dual-VET programmes to participate in workplace activities and become members of a community of practice. It has discussed the influence of learning conditions in companies on apprentices' development of a vocational identity and examined the role of apprentices' agentic action in promoting their professional self-confidence.

The results show that learning situations that promote expansive participation are characterised most importantly by participation in multiple tasks. Also important is that apprentices have significant responsibility and autonomy as they progress in their apprenticeship. However, this autonomy should not come at the expense of adapted guidance (Swager et al. 2015), which includes moral support, structured work interventions and (sometimes) didactic explanation. In expansive participation, apprentices feel valued by the confidence placed in them and supported in their learning.

In such a context, they adopt agentic actions to increase the variety and complexity of their tasks, their autonomy and responsibility and their participation in the company's joint activities while reserving time for their professional learning.

Restrictive participation is characterised by a highly limited variety of tasks, simple production tasks and a rapid onset of full participation (Fuller and Unwin 2003), which reduce the development of expertise. Above all, apprentices in such a context quickly have to become effective for the company. They are often poorly integrated into the community of practice and feel devalued as aspiring professionals. These conditions do not promote the processes of belonging and becoming described by Chan (2013) or the construction of a vocational identity. To the extent that these apprentices develop agentic action, they focus their efforts on improving their participation in the company's activities and their apprenticeship. Unlike apprentices in the expansive case, they are unable to improve their skills or become more independent in complex tasks.

These learning contexts have a strong impact on apprentices' ability to develop a vocational identity. The case studies show that restrictive learning contexts limit apprentices' ability to become professionals, while expansive learning contexts foster their professional self-confidence and vocational identity. As we have also shown, however, the learning context also affects apprentices' agency in improving their learning conditions and their companies' willingness and capacity to respond to their needs. As such, our analysis moves beyond Fuller and Unwin's expansive and restrictive model of learning opportunities by showing that these contexts also foster or constrain apprentices' agency in taking advantage of their learning environment, and this agency can therefore be described as fully bounded in context (Evans 2007).

This analysis also helps broaden Fuller and Unwin's (2003) understanding of restrictive and expansive participation. We have observed that participation in multiple tasks is not sufficient to foster apprentices' sense of progress and confidence in their skills. Reflection with others about the work is also an important precondition for learning and identity development, as is the ability of trainers to adapt to the apprentices' needs in terms of

guidance and promoting their independence (Swager et al. 2015). We have also seen that the rotation system implemented by several companies, one aspect of an expansive apprenticeship, is beneficial only if it is organised according to apprentices' needs and allows them to take full advantage of the learning opportunities in each department and gradually experience full participation.

Our results demonstrate another important area for research on workplace learning. The learning context that apprentices encounter, which means the opportunity for participation in various activities and adapted guidance provided by trainers or team members, is also strongly dependent on what Negrini et al. (2015, 96) refer to as the 'learning culture'. The learning culture is characterised by the importance that is given to workplace learning in the company as a whole and the recognition of the status of both the learner and the trainer (Fuller and Unwin 2003). Our analysis shows that the organisation of workplace learning depends more on this learning culture than on the size or specialisation of the company in question: even if expansive learning is assured at a given point in time, a simple management change or a change of trainer can alter the apprentice's learning situation significantly. In this case, responsibility for workplace learning in the company is not a common goal, but instead merely sustained by individual workplace trainers or team members. Accordingly, even in a rather expansive learning environment the team might consider apprentices more of a burden if their own contribution to apprentices' learning process is insufficiently recognised within the company. To conclude, our analysis provides some indication of the interplay of the different factors that contribute to an expansive or restrictive environment at the company level. This complex interplay has not yet been fully studied or understood.

Finally, our results provide opportunities for further research and have practical implications for these two VET programmes.

Despite the organisational differences between large and small companies observed in other studies (Baumeler and Lamamra 2019, Bishop 2012), this analysis has not revealed any striking differences in terms of participation in workplace activity between large and small companies. Restrictive and expansive participation situations were found in large and small companies alike, suggesting that both can create favourable conditions for expansive participation. As we have seen, the Swiss VET system provides expansive training by structuring training to include multiple learning sites. However, in order to avoid the negative effects of restrictive participation on apprentices' learning in companies, vocational trainers' qualifications and their trainer status in companies should be strengthened. As Lamamra and Besozzi (2019) demonstrate, vocational trainers' work conditions play a determining role in trainers' ability to provide high-quality training for apprentices. Employers and professional organisations could promote companies' awareness and recognition of the benefits of an improved learning culture and the presence of apprentices for the entire company.

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