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Job entry and on-the-job skills acquisition in the construction sector

Catherine DELGOULET

EA 4070 “Ergonomie, Comportement et Interactions”, Paris Descartes University (France)

catherine.delgoulet@parisdescartes.fr

Corinne GAUDART

LISE / CEE (France)

corinne.gaudart@cnam.fr

Karine CHASSAING

Ergonomics Department, IdC – University of Bordeaux 2 (France)

karine.chassaing@ergi.u-bordeaux2.fr

This paper presents a research project focused on induction in the construction sector in France, in which employers report difficulty in retaining newly hired employees. The objective was to identify the various types of job status of these new workers and to understand what happens after they are hired, with a particular focus on the ways in which skills are acquired and transmitted by the various protagonists. To explore these issues, 26 interviews were conducted with employees of a large construction company. An analysis of the responses showed that despite the variation in the job status of these new employees, the way in which they learn the job is relatively uniform and rudimentary. Skills are acquired opportunistically, often at the initiative of the newly hired employee, with older employees lacking the resources and the time to pass on their know-how. These findings raise issues relating to workplace safety and organization – a dual focus of the debate about conditions conducive to skills transmission.

INTRODUCTION

Entry into the workforce is a major milestone in a person’s life. Many issues must be confronted by the individual taking a first job and also by the company hiring him or her (Kergoat, 2006 ; Cohen-Scali, 2008 ; Merlino et al., 2003). Companies carry out training to address such issues as over-exposure of young and inexperienced workers to occupational accidents, retention of this group of workers and transmission of knowledge and know-how between new and experienced workers.

Against that backdrop, a study was carried out in a building and civil engineering company that complained of difficulty in retaining new workers despite a pro-active recruitment and training program. Following work on a possible ergonomic approach to worker retention issues (Gaudart, Delgoulet and Chassaing, 2008), we illustrate the various aspects of the first work experience and the diversity of ways in which people take on and learn a first job in the construction sector.

METHODOLOGY

Approach

To examine this issue, we took an exploratory approach. We had an opportunity, during in-house vocational training, to meet with employees from the various divisions of this large French company. To gain greater familiarity with the industry, we also carried out three worksite visits during which we observed and met with workers.

26 interviews were conducted, each lasting between half an hour and one hour. The goal was to define: the varying status of new workers, what happens during the initial period spent in the company and, especially, the way in which knowledge is acquired and transmitted and the prerequisites for learning. Thematic analysis of these interviews (Braun & Clarke, 2006) enabled us to identify the salient points and also to take on board the diversity of the situations encountered. Excerpts of verbatim statements are presented. However, to ensure the anonymity of the participants, their names have been changed. For each excerpt, we specify first name, age and current employment status.

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Population

The workers interviewed ranged in age from 22 to 49, had between 2 and 33 years experience in the sector and were all employed, in a variety of worksite jobs, under unlimited-term contracts.

RESULTS

Entry into the sector

Some of the employees interviewed began working the sector following initial training (stonecutter CAP vocational diploma, building and civil engineering technician BEP diploma, Civil Engineering vocational high school diploma, Construction BTS diploma, etc.): “I entered the sector in September, working directly for X [the company in which he was still working at the time of the interview], because they came to my school and hired me.” [Antoine, 24, crew leader]. Others entered the sector after training or working in a different sector for a more or less protracted period of time, with previous experience varying quite widely (salesperson, accountant, hairdresser, baker). This means that although most of the newcomers are fairly young, it is not unusual to encounter newly hired employees who are 35 or 40 years old. “*Before I started here, I was a shopkeeper for ten years and before that I was an accountant for 11 years. When I closed my shop, I wanted to go back to accounting. But after a decade of self-employment, it is very difficult to go back [to being an employee]. I arrived in this sector by chance and over the years I have worked my way up.*” [Bernard, 47, foreman]. Moreover, in many cases those entering the sector had prior familiarity with it, taking a job in construction after hearing or learning about it from family members. “*I was fortunate because my grandparents worked in construction. I got started that way, with a CAP vocational diploma. I did my apprenticeship with my grandfather and then one thing led to another and I went to work with my uncle in a company.*” [Daniel, 49, foreman].

Job status at entry into the sector

In terms of the job status of new employees, we found

four different types (see Fig 1).

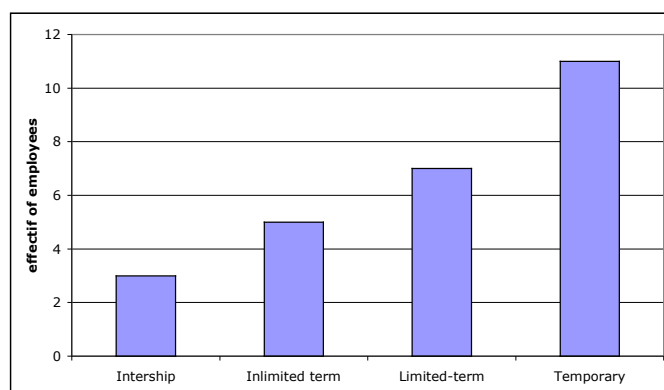


Figure 1 : Initial job status distribution of the 26 employees interviewed

The types of job status and their training implications are described below, together with their frequency within the population studied.

1. *Internship as part of educational curriculum.* We met very few people in this category (3/26). They were performing their internship as part of a vocational curriculum: stonecutter CAP, Construction BEP and worksite management BTS; they were hired after completing their training (whether or not they earned their diploma). Simon (24, crew leader) was supervised by both an administrative mentor and a worksite mentor - the crew leader in the latter case. In contrast to the other situations we encountered, he was a supernumerary in most of the teams he worked with, i.e. he was not counted in the production ratios, his official job being to receive training. An induction program was provided and he changed teams a number of times in order to gain an overview of the way a worksite operates. He emphasises that being a supernumerary during the learning phase makes a major difference: “*On the concrete worksite, I went to see the foreman, he showed me the drawings and I walked around to see what people were doing. On the drainage worksites, I spent the day doing backfill. When you are working to be productive, you can't afford to leave your workplace to go and ask a question.*”

2. *Unlimited-term contract.* Five people (of the 26) were hired under unlimited-term contracts: three, who had substantial seniority within the company, entered the sector because of family members (father, brother and brother-in-law) and two, who were younger, were recruited after graduating from a highly-regarded

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specialized building and civil engineering school and were offered supervision by a mentor during the first year to round out their training. However, this offer did not materialise and initial training was virtually non-existent. Benjamin (24, foreman) says, *“I signed a contract that included a mentor for the first year. But after I started, I was never provided with one.”* In Antoine’s case, the site manager was officially appointed his mentor, but he never saw him. They both began as jacks-of-all-trades: *“It is up to us to become members of the team and prove ourselves. We have a diploma, so we have to prove ourselves.”* [Antoine]. It is clear that the diploma would be a handicap of sorts if the new employee were to flaunt it.

3. *Site contract for the duration of the project.* Given the itinerant nature of some projects, especially in civil engineering, the company recruits workers (7/26) in regions where the worksites are located for the duration of the project (between 1 and 3 years, approximately). Here, too, job status makes no difference in the way in which new employees are inducted; practice ranges from formal induction to virtually no induction at all.

4. *Temporary contract.* Temporary job status does not entail training as such since temporary employment companies are assumed to provide workers having the required skills. Yet this was the initial job status of the majority (11/26) of the people interviewed. They started as temporary workers, learned on the job and asked to be hired under unlimited-term contracts. *“I am 31 and I have been working in construction for about seven years. I was hired two years ago and prior to that I was a temporary worker.”* [Mathieu, 31, skilled worker]. These interviewees were former temporary workers who had “succeeded” in being hired after a more or less lengthy period (ranging between several months and sometimes or 6 years) of temporary status. Training was not official and induction, when it existed, was sketchy. A crew leader will ask for a temporary worker because an extra hand is required to take part in production. Therefore temporary workers are assigned to tasks that apparently require no training - “wielding a shovel” - and this can last for a considerable period of time. We did, however, encounter two situations in which the temporary workers were explicitly inducted and trained by a member of the team: in one case, a person on the verge of retirement trained the temporary worker to replace him; in the other case a crew

leader, working alone, recruited a first person and trained him as part of the tandem. These cases show that the training objective is clearly stated when there is an immediate need to hire a team member for the long term.

Uniform induction, a severe test

The interviews show uniform induction patterned on the induction of the temporary worker, even when a mentor is provided. This kind of orientation for newly hired employees harks back to the experience described by more experienced workers (even younger ones), for whom the idea is to prove oneself. *“At the start, since you don’t know anything, the foreman yells at you right away. And afterwards, you learn as you go ... now I am the one who yells, to get the work done.”* [Loïc, 22, skilled worker]. Today’s experienced foremen started out as “gofers” or labourers, no matter what their initial job status – temporary contract, site contract or internship. *“I came in as a temporary worker. That must have lasted something like six months.”* [Mikaël, 33, crew leader]. *“We are sort of like “gofers” on the worksite. We are formwork helpers, bricklayer helpers and labourers. We go everywhere, we clean up the worksite, we hose down the shuttering – which is being done less and less now... It was a transition, it took 6 months to a year.”* [Franck, 36, foreman].

The job of labourer has never been easy to take and all the interviewees considered that this first worksite experience is physically and emotionally trying. *“I really had a hard time on my first worksite. I was so disgusted that I nearly quit. [...] After a number of arguments with the old hands, I told myself, “I can’t go on like this.” [...] At the beginning I was taking physical risks because I had been in an army commando unit, but physically it is very tiring. And my morale was low because to me it was demeaning. When you spend a day shovelling sand into a container, you go home in the evening and you are physically tired because shovelling is hard, and you are even more tired in your head. I’m not an engineer but I couldn’t see myself spending my life shovelling sand. It’s degrading. And psychologically it got to me. I felt like I was losing ground in my life.”* (Mikaël). Despite early familiarity with the job, as in the case of Franck who said he *“always know about the job. My father always talked about it with passion, he loved his job,”* the beginning can

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be painful. *“I was scared, it was a big world - major projects one after the other. It was a metal inferno. It was in the middle of winter, it was cold. I had a fur-lined jacket and I didn’t move. I was standing there like a stake. And I asked myself, “What am I doing here?” The first foreman I met said to me, “I didn’t go to school, but I am not an idiot”; so that day I understood that I was not going to be in charge. [...] At the beginning, it looked like a rough world and when you get there and you are weak - 18 years old and with no experience - it gets to you psychologically.”* These excerpts from interviews show real suffering at work, and remind us that although these people “held out” despite the experience they describe, others did not hold out and gave up.

In attempting to understand what enabled the people interviewed to persevere despite the experience they described, we identified four factors:

- the prospect of being financially independent without necessarily completing their studies or earning a diploma;
- the prospect of being promoted, perceived as a positive return on day-to-day work: *“At the end of the project, I succeeded in obtaining an internship as a crew leader; so I said to myself, if the company is offering me an internship, then I have a chance of moving up - because at the start you don’t know where you stand, you don’t know whether you have done a great job or not.”* (Mikaël);
- the team spirit that exists among skilled workers in certain teams, which prevents people from leaving, because that would be seen as letting down their co-workers. *“There’s a team spirit that forms, I think. There is a kind of solidarity. I may not personally feel like working today, but I am not going to let my friends down. And that effect, alternating between people, makes it work. At some point in a team, somebody is going to flag, and the group gives him a boost again.”* (Franck).
- the ability to learn on one’s own as a labourer (an issue we will discuss in more depth under the following chapter).

Independent of job status: “opportunistic” learning

In the case of all the workers interviewed, learning can be called “opportunistic” in the sense that the new employees make the best of the circumstances. Newly hired workers are responsible for their own training and for working their way up. They all started out as labourers and had to prove themselves, with little if any notion of what sort of career possibilities were open to them. They therefore had to start out as labourers and figure out for themselves the link between what their peers and supervisors expected of them (i.e. courage, determination, interest, etc.) and the content of the work. They had to make a mark for themselves by proving that they were able to do the work that others were doing:

- by arriving earlier to get the job done,
- by taking advantage of their breaks and the absences of co-workers: *“The draughtsman broke his hand and I took over. [...] I finished the job and that is why I stayed in the company [Jean, 31, skilled worker]*
- by taking the tools from the old hands. *“By asking questions and taking the tools from the old hands. You have to take the tools from them because if you don’t insist, they won’t lend them to you. [...] You have to nag them to let you try, otherwise you spend the whole day just watching.”* [Nicolas, 34, crew leader]
- by disregarding decisions taken by supervisors: *“Every time I saw a machine, I climbed right on it. Sometimes I got yelled at - the foreman would come and shout ‘Get down from there! You have no business being up there!’ The next day I would get back on it and the guy would yell at me again. And then there were days when the machinery operator wasn’t there. And the foreman would say, ‘O.k., Mikaël, you like those machines, you get up there,’ and after a year had gone by I was operating a planing machine. Apart from the crew leader, that was the most important job.”* (Mikaël).

Along with remaining on the lookout for opportunities to prove their skills, these workers took a proactive approach to acquiring new knowledge by following a combination of strategies:

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- watching experienced employees up close: being assigned as a pipelayer helper provides an opportunity to closely observe the pipelayer at work – *“The goal of a good labourer is to make sure the pipelayer has to do as few things as possible apart from pipelaying; it means you prepare a lot of equipment.”* [Benjamin].
- watching people working from a distance: being assigned to doing backfill or to operating the shovel gives a good overview of the worksite.
- looking at the construction drawing: this is a sign of trust on the part of the crew leader; it provides an opportunity to understand the entire project and to anticipate the work to be accomplished in the coming day.
- asking questions: *“The people who taught me the job were welders and pipelayers, because I was interested. I asked questions, I went to see how they were working. Whenever I had five minutes to spare, I went to see the pipelayer and talked with him.”* [Nicolas]; *“They explain when we ask them about it.”* [Simon]; *“I learned by watching. You could get people to explain things to you if you got along well with them.”* [Christophe, 38, skilled worker].
- picking and choosing, i.e. adapting what others have demonstrated to one’s own work – which involves putting one’s own practice into perspective, and thinking about the way one does things. *“Afterwards, everyone has to pick and choose which method he wants to use. It’s part of learning the ropes.”* [Franck].

A look back over the careers of these workers shows relative uniformity in the orientation and training they received, across all types of initial job status. The status of the newly hired worker makes very little difference in the way he starts out on the job. A person who has no experience or diploma begins as a labourer, since he cannot perform a task requiring specific technical knowledge, and a person who does have a diploma must not be given preferential treatment and must “prove himself” like everyone else. On the other hand, the jack-of-all-trades status may last less long than it does in the case of temporary workers, and a new employee with experience or a diploma is able to move on to other tasks

fairly quickly. 6 to 12 months later, they now had the job status of assistant pipelayers and worked de facto as pipelayers supporting the crew leader. Their start in the business is similar to that of the temporary workers, but the opportunity to move up occurs earlier.

Orientation and transmission of knowledge and know-how

While new employees focus on learning the technical ins and outs of the job and on understanding the way the worksite is organised, the more experienced workers first ask them demonstrate their backbone, grit, respect and interest in the life of the worksite. Several statements made during the interviews show the importance of these qualities: *“Some temporary workers have backbone and willingness to follow orders, and others don’t. We try to tell which temporary workers are able to get things done. After four, five or six months, we are able to identify them and recognize the ones who have grit.”* [Gérard, 44, foreman]; *“You have to get off to a good start. I started out in earthworks, doing test boring. I wanted to do that, I did my job, I did it well and I liked it. They can tell right away when a young person wants to do a good job. They are there to explain things and show you how to do it. Afterwards, when they turn their backs, the young people keep going, and really get into it. And after awhile, they leave.”* (Nicolas). The first tasks entrusted to new workers are tasks that don’t require any particular skill. It is not necessary to learn how to hold a shovel.

The demands of the “old hands” can be ambivalent for new workers who are asked to make a commitment to the job and to show interest (for example by asking questions) while at the same time unquestioningly following orders. Moreover, the personal qualities called for – backbone, grit, respect – are qualities that are not specific to the job. The “old hands” act as if showing backbone were a natural, innate quality that is independent of the job and the conditions in which it is performed. Tenacity is also called for because the trial period can last for several months or even years, during which time the new employee has little information about what is in store for him and at the same time realizes that he must take charge of his own future career path.

Meanwhile the statements made by the “old hands”

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suggest that their attitude has been shaped by the failures they have encountered, particularly the temporary workers for whom they made an effort and who did not stick with the job. When they talk about their own start on the job 15 or 20 years ago, they note that the older workers at the time took a pro-active approach. *“The skilled workers told us how to do the job and why it had to be done that way. They had to explain it several times. [...] We watched them do it and then tried it ourselves while they watched us to make sure we didn’t make mistakes.”* (Gérard). They also mention team stability and deadlines as important factors in forming a working team and transmitting skills properly: *“Explaining things to new people? It depends on whether you are running late or not. And you don’t know in advance how long the temporary workers are going to stay.”* (Jean).

Risk management and prevention are officially the responsibility of foremen when they are responsible for supervising interns and temporary workers. The three foremen interviewed considered that they had nothing to teach temporary workers, including newcomers to the construction sector, with the exception of safety instructions and the pitfalls of the worksite. When supervising interns in training, they send the trainees to perform a variety of tasks so as to identify those who are versatile. They also make a point of teaching trainees to be disciplined in their work – arriving on time and taking breaks on schedule. The transmission of knowledge and know-how is only rarely mentioned. Foremen delegate this responsibility to skilled workers.

This system result in poor communication and even mistrust between new and experienced workers. We met new workers who were disappointed because they had expected to be supervised as part of a formal learning process and who were thrown off balance by tensions in relations between workers; and the older workers tended to lack confidence in them and devote little time to them, because they had been disappointed when new workers (mainly temporary workers) repeatedly left.

DISCUSSION

Our analysis of these interviews does not claim to be comprehensive. Our objective is therefore not to draw general conclusions but rather to identify trends we encountered in the company. We would highlight several points:

- The job status of the new employee appears to have little impact on the worker’s career or the content of his training. New workers are asked to perform general tasks or tasks not directly related to the worksite, in other words tasks that are unskilled but productive. For those who have previous experience with providing new workers - some in their thirties – with orientation, the focus was not on transmitting knowledge and skills but on testing the new employees to see how they manage and how committed they are (just as they were tested themselves when they started out).
- The introduction of a system to support and train new workers was mentioned on a number of occasions. But it was often an expedient used to meet a short-term need (when an operator had to be trained fast) or an individual initiative taken by an older worker to induct a new worker. Even when supervision was included in the employment contract, it was not always effectively provided;
- Since the older workers and the supervisory staff were either not transmitting work-related knowledge and know-how at all, or at best were doing so only sporadically, new workers were often obliged to take charge of their own training by asking questions, thus demonstrating their interest in learning the job. This type of learning can be physically and psychologically demanding, especially when the prospect of a job and the duration of the trial phase remain vague.
- The role of the team as a resource appears crucial. Working in a team enables the new worker to cope with an environment perceived as hostile (the newer one is to the job, the more hostile the environment seems); and it makes it possible to work together to create opportunities for learning.

These first findings suggest several issues that should be further explored:

- The people interviewed invariably said that work situations are often dangerous and that the safety rules are strict. That being the case, to what extent should the new employee be allowed to

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learn by trial and error? Up to what point can learning be left up to the initiative of the learner, since by definition he is not familiar with the dangers and cannot identify the risks he is taking for himself and others?

- The time constraints inherent in the organization of worksites are strong determinants of how, what and sometimes whether knowledge is transmitted. How much time should be devoted to such transmission? How can production and training, which are in principle at cross-purposes, be reconciled?
- Just-in-time management involving the recruitment of temporary workers makes knowledge transmission uncertain. What can be transmitted and how? What is “worth” transmitting when teams have variable geometry?

liées à la carrière chez les apprentis du bâtiment (On-the-job support and career plans among construction apprentices) *Pratiques Psychologiques*, 14, 147-160.

Gaudart, C., Delgoulet, C., & Chassaing, K. (2008). *La fidélisation de nouveaux dans une entreprise du BTP: Approche ergonomique des enjeux et des déterminants* (Retaining new workers in a construction and civil engineering company: an ergonomic approach to issues and determinants) *Activités*, 5(2) pp. 2-24, <http://www.activites.org/>

Kergoat, P. (2006). *De l'indocilité au travail d'une fraction des jeunesses populaires. Les apprentis et la culture ouvrière* (Disobedience on the job among working-class youth. Apprentices and the worker culture). *Sociologie du Travail*, 48, 545-560.

Merlino, L.A., Rosecrance, J.A., Anton, D., & Cook, T.M. (2003). Symptoms of Musculoskeletal Disorders among apprentice construction workers. *Applied Occupational and Environmental Hygiene*, 18(1), 57-64.

REFERENCES

Braun, V., Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.

Cohen-Scali, V. (2008). *Accompagnement en entreprise et intentions*