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RESEARCH REPORT 9956
ESTABLISHING A RELATIONAL FIELD THAT FOSTERS
LEARNING PROCESSES: SOME TENTATIVE
PROPOSITIONS DERIVED FROM TRAINEE EXPERIENCES

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D/1999/2376/56

**Establishing a relational field that fosters learning processes:
some tentative propositions derived from trainee experiences**

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Abstract

In this article, we look at the recent introduction of more relational oriented learning principles and how they translate into practice by documenting the experiences of both trainees and instructors. It became clear that actors held different opinions and viewpoints on learning objectives and process ingredients for achieving these objectives. This divergence in opinions resulted in an 'impoverished' learning trajectory. We suggest that remedying this situation implies introducing reflexivity regarding learning processes or, stated otherwise, addressing 'meta-cognitions' participants inevitably bring to the process as they affect the way in which people engage in the relational field that encompasses the learning trajectory. Despite some recent arguments in favour of a distinction between cognitive and meta-cognitive mediation, we argue for a similar approach with respect to both types of mediation. We end this article by suggesting that designing learning trajectories with this dual concern in mind might open the road to 'learning to learn'.

Introduction

Learning processes have received considerable attention in recent years, and this attention is very unlikely to diminish. A tendency strongly related to the pace of societal and technological change. Recent insights found largely within the organisational and situated learning literature point more and more to the relevance of the relational field in which these learning processes are embedded. This field in itself affects, or contributes to the outcomes of the learning process.

The observation that the relational process in which work activities are embedded influences the actual learning taking place, can be traced back to the seminal work of Argyris and Schön (Argyris, 1992, Argyris & Schön, 1974). According to Argyris and Schön, differences exist in governing variables when people collaborate within organisations. These differences, described as model I and model II, influence actions of people working together and eventually affect the learning process within teams or organisations. When taking a closer look at these governing variables, they present themselves as being to a large extent relational, portraying the interaction patterns in which the organising process is embedded. Within the more recent emerging domain of knowledge management or knowledge creation, a similar emphasis is put on relational issues (see for instance Nonaka, 1990, Nonaka & Takeuchi, 1995). Knowledge is depicted here as a dynamic and social process, influenced by frames of references brought to bear by participants. 'Knowledge is context-specific and relational'. (Nonaka and Takeuchi, 1995, p. 58). Nonaka and Takeuchi argue that knowledge creation is derived from social interaction where interplay between oneself and the environment, between tacit and explicit knowledge takes place. 'Knowledge is created and expanded through social interaction between tacit and explicit knowledge. It should be noted that this conversion is a "social" process between individuals and not confined within an individual' (Id. p. 61). Based on these notions they develop a model of knowledge creation implying different modes in which social and experiential processes figure prominently.

Both elements are emphasised as well within the work of scholars working from a situated activity or community perspective (see for instance Engeström, 1987; Chaiklin and Lave, 1993; Lave and Wenger, 1991; Brown and Duguid, 1991). Here the situated nature of human activity is stressed, resulting in the observation that this activity always involves changes in action and knowledge. These changes in their turn are central to the notion of learning. Therefore these authors conclude that there is 'no such thing as "learning sui generis", but only changing participation in the culturally designed settings of everyday life. 'Participation in daily activities may be seen as 'a process of changing understanding in practice, that is as learning' (Lave, 1988, p. 6). As a consequence, when looking at learning processes, the 'unit of analysis' shifts from the individual and its cognition to a more encompassing entity.ⁱ

Several scholars make the relational side of learning concrete by advancing the notion of communities when conceptualising key features of work and learning processes (Lave & Wenger, Brown and Duguid (1991)). Brown and Duguid for instance - based amongst others on Orr's (1996) ethnographic work - derive three central features of work practice: narration, collaboration and social construction. Narration, or creating and exchanging stories, has two important aspects. First of all, stories help to diagnose the problem at hand. Second, the stories become a means to preserve knowledge; they figure as repositories of accumulated wisdom that circulate within a community of practitioners. Stories help to relate beliefs, routines and artefacts. A second main characteristic of work lies in the notion of collaboration; the narrative process described above is a collective, not an individual process. Faced with difficult problems, people work together and discuss problems in groups.ⁱⁱ This makes working an inherently social process that benefits from collaboration. Brown and Duguid here make an analogy with the concept of 'bricolage' - the ability to 'make do with whatever is to hand' - as developed by Lévi-Strauss: *'What one needs for bricolage are not the partial, rigid models of the sort directives or rigid documentation provides, but help to build, ad hoc and collaboratively, robust models that do justice to particular difficulties in which one finds oneself.'* Thus exchanging, developing and adapting stories plays a crucial role in the process of knowledge, expertise and skill development. This activity,

however, implies the free-floating of these stories, the willingness to share, to listen and to engage in a constructive dialogue. In short, this implies collaboration. Finally, telling stories contributes to the (social) construction and development of one's identity. This also means contributing reciprocally to the construction and evolution of the community that one is joining. Similar dynamics are at work within learning processes. However, these dynamics ideally show some specific characteristics as pointed out by Lave and Wenger (1991). They develop a more encompassing view of the learning process in which the notion of legitimate peripheral participation figures prominently. This notion denotes the particular mode of engagement of a learner who participates in the actual practice of an expert, but only to a limited degree and with limited responsibility for the outcomes. Learning is seen not as merely the reception of factual knowledge or information but as a process of participation in communities of practice; participation that is at first legitimately peripheral but increases gradually in engagement and complexity. Learning as legitimate peripheral participation involves becoming an insider; one becomes a member of a community - be it a community of physicists, classmates or scholars of philosophy or organisational behaviour. Community membership is not so much an issue of being as it is a process of becoming. Hence learning implies not only a relation to specific activities but also a relation to social communities; it implies becoming a full participant, a member, a specific kind of a person. (Lave and Wenger, 1991, pp. 50-56, see also Giddens, 1979 & 1984).

These recent efforts to re-conceptualise learning processes have provided us with insights complementary to the ones generated within the more individual-oriented, traditional cognitive theory. The learning process is here no longer confined to an individual acquisition process. Instead, interaction and participation are stressed as crucial for arriving at the acquisition of new knowledge and skills,ⁱⁱⁱ thus a more encompassing view (see also Hosking, 1999) can emerge, acknowledging both reification and interaction (see Wenger, 1998).^{iv} The generative potential of these ideas and concepts will however also depend on how they translate into daily practice within different contexts and settings. More specifically one could pose the question what these insights imply for traditional training or learning situations. While the different scholars

discussed briefly above stress both experiential and social processes, the latter of these might pose specific challenges for more traditional learning settings. Here the main part of the relational field consists of colleague novices or trainees. As such the social context becomes quite different from the one depicted by Orr, who illuminates the dynamics among professionals in technical environments, or the setting described by Lave and Wenger in which dyadic relationships between expert and apprentice figure dominantly. In situations with several trainees new possibilities for learning might occur while at the same time specific issues and problems might arise. As Lave (1993) points out, by adopting a perspective in which experiential and relational issues get more attention, heterogeneity is introduced into the process. 'The heterogeneous, multifocal character of situated activity implies that conflict is a ubiquitous aspect of human existence. This follows if we assume that people in the same situation, people who are helping to constitute a situation together know different things and speak with different interest and experience from different social locations' (Lave, op. cit. p. 15). So while traditional cognitive theory assumes universal processes of learning and the homogenous character of knowledge and learners (Lave, 1993), the conceptualisation adopted here expects quite the opposite. And this immediately raises issues of how to deal with this heterogeneity within training situations as well as how to realise a positive impact on the learning process and its outcomes. Within this contribution, then, we mean to shed more light on the crucial ingredients of learning trajectories when adopting a more relational perspective: what is important when acknowledging that multiple perspectives will be implied and how should one proceed in order to reap the potential benefits of this heterogeneity?

Approach and research setting

We address this question by examining the experiences of several training groups participating in learning trajectories in order to become skilled practitioners (painters, plasterers, gardening, forestry maintenance). Both the total learning trajectory as it is conceptualised by the education institute as well as the concrete experiences of trainers and trainees were documented. Data were gathered by means of observation and

extensive interviews and document analysis with respect to creating an insight in the overall learning trajectory. We adopted this more case-oriented research approach as it seemed best suited to answering the types of questions raised here (Yin, 1984, Eisenhardt, 1989).^v

Noteworthy is that the institute^{vi} that organises the learning trajectories has been involved in developing a specific approach towards so-called ‘difficult’ groups in the labour market. During the first years of training and job placement activities, the awareness grew that ‘traditional’ approaches are rather insufficient for helping certain groups of unemployed people. Whereas this traditional approach reflects a rather cognitive/technical orientation^{vii}, the organisation started to develop more encompassing trajectories whereby work-related attitudes and the broader personal and/or familial situation is addressed as well. This results in longer ‘process trajectories’ of which training forms only a part. Reflecting this stance, the training programs themselves contain, besides technical training, sport activities, language training and initiatives that address work attitude. The notion of diversity is explicitly taken into account when forming training groups^{viii}, making this case particularly interesting from the perspective of our research question. The training process itself has a duration of six to nine months; besides ‘in house’ training sessions, several field experiences (ranging from three to six weeks) form an inherent part of the trajectory. Trainees are assessed regularly and are provided with feedback during the whole process.

Organising the learning trajectory

The learning process can be depicted as consisting of five phases. During the first training period, trainees acquire basic skills and competencies related to the profession at hand. During this period the emphasis is on expert teaching and practising. Activities take place within the training centre, which has facilities to engage in practical exercises. The second stage starts after a period of eight to twelve weeks^{ix} and implies an apprenticeship within a company. This first period of ‘real life’ practising takes two weeks. Equipped with this experience, trainees engage in a second period of

eight to twelve weeks at the training centre; besides acquiring more sophisticated skills, issues that surfaced during the preceding two-week period are addressed, resulting in more individual trajectories. Trainees then start working within a company for a one month period; this 'final' apprenticeship often takes place within companies that are seriously considering engaging the people involved. The fifth and final stage can be seen as 'aftercare' in which employer, employee and the educational centre engage in feedback sessions and discuss eventual additional interventions both on the level of the individual employee and his/her competencies and the work setting. It is noteworthy that the process described here should be seen as an underlying format. Depending on the specific training or the (learning) characteristics of the trainees, this format can be modified. Slow learners, for instance, might be involved in two - intermediate - apprenticeship periods, while some trainees might start working right after the first two weeks of practice (stage 2). The learning process is supported by three roles; the technical instructor is responsible for guiding the trainees in acquiring the relevant technical skills and competencies while group facilitators take care of issues related to job attitude. Finally, work facilitators are responsible for the relationships with the companies involved; besides making arrangements regarding apprenticeships, they are also responsible for 'after care' activities. It goes without saying that these three different functions engage in extensive co-ordination and integrative activities.^x

Data collection and analysis

After examining the training process (by means of an event and document analysis), experiences of both trainees and trainers were documented mainly by interviews^{xi}. In total about 20 people were involved in this research effort (4 trainers/process consultants, 15 trainees).

The protocols relating to both observations and interviews were analysed extensively by three researchers^{xii} using content analysis. Within this article we want to highlight the different learning objectives as well as the role colleague trainees play within the learning process^{xiii}.

Viewpoints held with respect to learning objectives

As became clear, the learning trajectory attempts to include different objectives: besides technical skills and expertise, job attitude and social and personal issues are addressed. In order to achieve these multiple learning objectives, different activities were organised during the course, reflecting a mixture of the different objectives. Still, one could state that some activities reflected one objective more than others; where the technical training sessions could be seen as primarily focusing on skills and knowledge, the job attitude sessions addressed work attitude and values. Sport activities were organised as a means to improve both personal and interpersonal skills and insights. Table 1 contains an overview of the relevance of these different activities for the different actors involved. These data relate to one specific training program (painting)^{xiv}. An 'X' in the table indicates the relevance of these activities for attaining the learning objectives; an 'O' indicates the opposite, namely that this activity is seen as not relevant at all. Finally, blank cells indicate that no explicit stance is taken in this respect.

Insert Table 1

In this table the unanimity regarding the relevance of the technical training sessions becomes immediately clear. Equally striking is the lack of unanimity with respect to the job attitude sessions and sport activities. The following examples of interview fragments illustrate the different views held.

'Technique, that's what this is all about. Well, in fact everything, but technique is undoubtedly the most important.' (Sevket, trainee)

'What I want to teach these people is the practice of painting and the required more theoretical background. And of course, a little bit of job attitude is involved as well.'
(Pierre, technical instructor)

The unanimity regarding the acquisition of technical skills, stood in sharp contrast with the views held on the other activities, and hence the objectives of the program. While Arnout was convinced that job attitude was a key issue within the process, several trainees seriously doubted the relevance of these sessions for becoming a professional painter.

'Job attitude, that's what this is all about. If they have the right attitude, they don't need to learn much and they can start working really fast. (Professional) painting requires a lot of skills, but none of them are really that complex, once you have acquired the right (job) attitude.' (Arnout, group facilitator).

'I don't think these sessions are necessary. A lot of this stuff, I've heard before and then you have to listen again to all this. For me these sessions can be skipped.' (Kevin, trainee).

'No, I don't feel that I learn a lot during these sessions. I don't think this is needed, maybe one hour or so, but that will do.' (Sevket, trainee, on the job attitude sessions)

'I don't learn anything during these sessions.' (Rebecca, Trainee)

These discrepancies become even more striking when it came to the sport activities. First of all, several people doubted the relevance of the objectives aimed at, namely improving physical and (inter)personal skills. Secondly, sport activities as a means to an end was questioned. Finally the relationship with 'becoming a professional painter' was perceived as non-existent.

'Sport is important, both for the physical condition and for learning how to work together as a team. That is a very important aspect. During these activities, you also find opportunities to get to know people in a different way which creates possibilities to intervene in a manner which is not possible without them.' (Arnout, group facilitator).

'I don't think you need these sport activities. When people work hard enough during the other activities, sport becomes a leisure activity.' (Pierre, technical instructor)

'Sport is just sport. What kind of learning could be involved here?' (Sevket, trainee)

'Sport is fine for me, but I don't think we are learning anything. For me it's just entertainment. And besides, two hours a week will not have such an impact on our physical condition anyway.' (Kevin, trainee).

'For me sports is like a 'folie'. I don't think it bears any relation with the training. As a painter, you just don't need this.' (Eddy, trainee)

Moreover, these opinions translate into behaviour as well. The following fragment clearly illustrates how the viewpoints held by the actors result in forms of (dis-) engagement.

'Tuesday morning, sport activities are organised. One of the trainees mentions that he cannot participate because his shoes are worn out. On the bus, another trainee indicates that he will not be participating either, for medical reasons. When asked by the group facilitator whether he can show some documents provided by a physician, the answer is negative. The group facilitator hence concludes that he will be able to join the others. Upon arrival however, it appears that no sportswear has been brought along by this trainee' (observation report, 15.10).

Opinions held with respect to the learning process: the role of colleague-trainees

A similar type of analysis has been conducted with respect to the learning process as experienced by the different parties involved in the learning trajectory. Given the considerations sketched in the introduction, we focus on the perceptions and attributions made with respect to the role of colleagues within the learning process^{xv}.

After a first analysis the variety of opinions were grouped into three categories. Social learning contains those opinions that bear relation to whether or not interviewees saw interaction and collaboration with colleague-trainees as a (possible) relevant learning source. It soon became clear that several people saw advantages in collaborating with other trainees only when they were perceived as being more experienced in one or several domains. As such this type of perception was labelled 'Social learning, if expert attribution can be made'. Finally, we explored explicitly whether the presence of cultural diversity – advocated by the training institute – was perceived as relevant for learning.

Insert Table 2: Opinions held with respect to the learning process – The role of colleague-trainees

Social Learning

As table 2 indicates, opinions varied widely. First of all, not all participants shared the opinion that people can learn from each other:

'Everybody is here to learn; everybody gets the same program. So I don't see how I can learn from someone sitting beside me.' (Kevin, trainee)

'I don't learn anything from the others. I learn when I can work with Pierre (Instructor)' (Rebecca, trainee).

'I don't believe I can learn anything from the others; after all, they are just trainees, aren't they.' (Sevket, trainee).

These views stand in sharp contrast with the beliefs facilitators hold with respect to the role colleagues can play within the learning process.

'I do think a lot of advantages are out there. And not only on the level of attitude, but technical as well. Someone who has the ability to work very precisely can have a positive influence on his colleagues. When working together with someone who is more 'clumsy', the latter will experience the relevance of precision and pick up some ideas and skills on how to be more precise.... I do believe trainees learn a lot from each other. This could still improve, but there is certainly a positive effect.' (Arnout, group facilitator)

'I do hope that trainees learn from each other. That's what I would expect anyway.' (Sabine, work facilitator)

It goes without saying that the opinions held in this matter are also reflected in concrete behaviour:

'I don't give any feedback towards the others. I think everybody has to solve his own problems. I don't think it is my job to comment on or check whether someone else is doing something good or wrong. That's the instructor's job.' (Erik, trainee)

'Actually, I don't say anything to the others, and vice-versa. That's not my job. And also, what can I say? What can they tell me?' (Vera, trainee)

Expert attribution

While this picture at first sight suggests that for some people learning from colleague trainees is non-relevant and hence non-existent, nuances should be made. Several people did point out the potential relevance of colleagues, given that they possess higher levels of expertise. In and of itself this point might come as no surprise;

in fact the same applies for the role of the instructor, which in some ways is an institutionalised version of this opinion. But it does make clear that suggestions made in other fields - namely that everyone is in some way an expert in something and hence everybody can learn from others - require some effort to be realised. The mindset people bring with them does not necessarily reflect this assumption. Making people aware of the potential role of the other participants will thus require intervention and explication in some form, a point we shall develop in the discussion. Let us, however, first look in detail at some (example) opinions put forth by the people interviewed. Note that the training institute explicitly tried to assemble groups reflecting varying levels of expertise; the fact that different groups, i.e. groups that started the course at different moments, work within the same surroundings also created possibilities for exchange between people with different skill levels.

'I do check in with people who have been around for awhile and started the training before me. I do pick up things from them.' (Davy, trainee)

'When you start the course, you do learn from people who have been in the course for some months. At that point in time, you don't know anything, and then it really helps when they give you a hand. But after a while this effect diminishes.' (Rebecca, trainee)

'We try to have groups that reflect some heterogeneity in expertise. Without that, you risk creating a bad attitude towards the role others can play. If you have a group where nobody has worked before, you risk ending with bad learning attitudes. People start saying that other people are more an obstacle than an aid. And in fact, if they have no experience at all, they can't learn from each other. On the other hand, if you do have these differences, people start picking up things from each other. Like when we discuss the apprenticeship reports when people come back, here you see that people who just started learn a lot from the guys who have been around for six months.' (Arnout, group facilitator)

'This variety of groups in terms of expertise really works; someone who is less competent finds help with the more experienced guys. Most often, this really works.'
(Pierre, technical instructor)

'Francois (trainee) was really a great help when we learned how to construct pathways. He has been doing this type of thing before and while we were busy practising, I learned a lot from him' (Vera, trainee).

'Like Dirk, he has been working in the domain of gardening before. And he really gives you good insights and makes valuable suggestions. And then you try it and it works: that's learning. That's why we are here I think.' (Erik, trainee)

As mentioned, the training institute also applied this heterogeneity principle to cultural differences. In concrete terms, this meant that groups were comprised of people with different cultural backgrounds^{xvi}. The assumption here is, again, that this heterogeneity will be beneficial for the learning process. But although this could be seen as a form of policy, not all instructors and facilitators agreed on this issue. As for the trainees, relevance was perceived in connection with language issues; when it came down to technical skills however, benefits were seldom seen. It is clear also that cultural differences posed specific issues, as additional barriers for achieving collaborative relationships were perceived.

'Collaboration between people with different cultural backgrounds can – in principle – be beneficial, both in terms of technical competencies, language and even interpersonal communication. But in practice it is often difficult to organise it in a proper way. And it also might bring frictions within the course. And in order not to have situations that might escalate, I often prefer groups that are more homogeneous.' (Pierre, technical instructor)

'Although it might require some additional efforts, they are worth it. By avoiding tensions or even conflicts, you just eliminate learning opportunities. If you work on the

relationships within the group and they become good, then you see them all sitting together: men and women, Turkish people and Maroccans.^{xvii} Then they all speak Dutch and you see how they improve each other. That's what we need to achieve, this positive learning atmosphere.' (Arnout, facilitator)

'I think it is good that we have Belgian, Italian and Turkish people together. Then you learn a lot in terms of the language.' (Sevket, Trainee)

'What can I learn from these Turkish guys? They don't even think it's appropriate I am following this course.' (Rebbeca, Trainee)

Thus one of the conclusions that emerges from the analysis of these data^{xviii} relates to the importance of addressing the heterogeneity of opinions held by the different parties engaged in the learning trajectories. These opinions relate both to the objectives and the process by which these objectives are achieved. Far too often we noticed a relationship between unaddressed differences of opinion and frictional situations that led to a reduced level of engagement and hence the perception of certain situations as 'non-learning' events. This observation does not imply that one should start designing learning situations by incorporating 'pleasant' experiences that accord with the opinions held by trainees on what constitutes relevant practice. Instead, bringing in 'expert principles'^{xix} - as happens already within the training institute today - should continue to be advocated, but accompanied by an acknowledgement of differences that might arise regarding the opinions held in this respect by participants even if it implies confrontational moments or conflict. The continuous shifting and dynamic nature of these opinions - that change as learning experiences are built up - adds to the complexity of addressing them during learning trajectories. On the other hand, incorporating these issues might relate to the notion of 'learning to learn' and hence lead to greater levels of self-reliance and employability later on. In the next section, we elaborate on these ideas. We shall argue as well that recent - and less recent - insights and concepts developed and proposed within the field of educational psychology might be highly relevant in this respect. This will lead to some tentative propositions on how to design learning

trajectories by incorporating reflexivity in this respect. Central in this endeavour is the suggestion that reflexivity (Schön, 1983), or what is labelled as addressing ‘meta-cognitions’ within other domains, should be taken seriously within work-related educational processes. To clarify the role these notions play we turn to insights put forward in the domain of educational psychology^{xx}. Equipped with this background, we suggest that dealing with this concern will imply at least some form of explication. Our findings suggest that learning always implies ‘learning to learn’; leaving this latter notion implicit might hamper the effectiveness of training programs. And this brings us to the second point we want to develop, namely how to design the training processes more effectively given the role the opinions of participants with respect to learning can and do play.

Learning to learn: acknowledging the importance of opinions held regarding learning processes as affecting the type of – relational - encounters one engages in.

Meta-cognitive mediation refers to the acquisition of semiotic tools of self-regulation: self-planning, self-monitoring, self-checking and self-evaluating. As such, this type of mediation facilitates the development of processes that are designated in contemporary psychological literature as ‘meta-cognitive processes’ (Karpov & Haywood, 1998). Meta-cognition is the ‘ability to think about thinking, to be consciously aware of oneself as a thinker, and to monitor and control one’s mental processing’ (Bruer, 1994). This notion clearly relates to the idea of ‘learning to learn’, put forward on many occasions but seldom made concrete. Learning to learn hence means learning to self-regulate the learning process, which can be further specified as learning to become reflective about what constitutes relevant learning processes, including the part played by participation and interaction. Whereas the notion of meta-cognition was initially advanced in the field of developmental psychology, the relevance for occupational settings has been stressed recently. Simons (1991), for instance, points to the fact that meta-cognitions do influence the strategies and tactics deployed by learners; an observation completely in line with the old adage of Thomas and Thomas (1928): ‘If men define situations as real, they are real in their consequences’. Within his

research Simons also found that one of the major inhibitors of learning processes in fact relates to the learning concepts held by the different actors involved in training situations. More specifically, differences of opinion regarding the roles of trainer and trainees seriously hamper the effectiveness of specific training programs (Simons, 1991). Within the case described above, similar observations can be made: what trainees considered as relevant learning approaches, did relate to their behaviour and commitment. When one is convinced that becoming an expert completely depends on the (interaction with an) expert teacher, colleague trainees are merely seen as a 'contextual element'. One does not consider colleague-trainees as playing a role in acquiring relevant skills and knowledge and hence mutual engagement does not take place. The relevancy of these observations does not limit itself to the learning process; the same observations can be made with respect to the content of the curriculum as put forward by the educational centre. When trainees consider team activities like sport or sessions that address work attitudes as irrelevant for becoming a practitioner, their attitude and behaviour will tend towards non-involvement and hence result in sub-optimal learning.

The most striking example of this type of dynamic can be found in social learning. Several trainees explicitly doubted the relevance of colleagues as sources of learning, since they were perceived as lacking competencies. As well, the 'instrumental' nature of interaction during the acquisition process of new skills and knowledge was often not recognised. As a result, laymen - in this case the majority of the participants in the training program - often did not share what Vygotsky calls 'underlying processes that lead to new concepts'.

According to Vygotsky, meta-cognitive mediation of children's psychological processes has its roots in interpersonal communication. As Karpov and Haywood summarise: 'a) someone regulates the child's behaviour by the use of external speech, b) the child regulates someone's behaviour by the use of external speech and regulates his or her own behaviour by using egocentric speech, and c) the child regulates his or her own behaviour by using inner speech' (Karpov & Haywood, op. cit., p. 28)^{xxi}. In fact,

one could state that Vygotsky sees the relevancy of interpersonal communication as broader than just applying to the acquisition of meta-cognitions^{xxii}.

To recapitulate the arguments so far: interpersonal dynamics are at stake during the acquisition processes of new knowledge and skills in professional settings, as the work of several scholars has made clear over the last decade (see for instance the work of Brown and Duguid, Orr, Lave and Wenger, touched upon in the introduction). Thus, while on the one hand interaction with peers will be beneficial in terms of acquiring skills and knowledge, on the other, taking into account this 'expert knowledge' purely in the interests of pedagogical approaches in itself seems not to be sufficient when designing training situations. Only when trainees perceive and experience such approaches as relevant^{xxiii}, will they engage in the activities that will eventually result in acquiring a higher level of expertise, competence and problem-solving. Accordingly, one could state that in order to harvest the benefits from interaction with peers, one should explicitly address the meta-cognitions trainees bring^{xxiv}. How to translate this into the concrete design of training courses then becomes the next issue. Here the insights put forward by Vygotsky can guide the way.

Implications for designing learning trajectories

Although both meta-cognitive and cognitive mediation imply an interactive acquisition process, then, participants in training settings tend to overlook these dynamics. How can this myopia be corrected? As mentioned, explication is a first answer. However this notion in itself remains fairly vague. To make things more concrete, we again turn to the field of educational psychology, and more specifically to the concepts put forward by Brown and colleagues (see for instance Brown & Campione, 1991). Looking back at the research she and her colleagues have conducted over many years, she depicts a shift towards constructive learning whereby domain-specific trajectories imply a learner's comprehension and control.^{xxv} These ideas have been translated into an educational approach, labelled 'guided discovery within a community of learners'. Besides the active strategic nature of learning and the role of

meta-cognition, central notions put forward include multiple zones of proximal development, dialogic base, legitimisation of differences, the role communities of practice play and finally the acknowledgement of the contextualised and situated nature of knowledge and hence knowledge acquisition (Brown & Campione, 1994, p. 266).

Stated differently, the notion of 'guided discovery within a community of learners' builds on the idea that 'everyone is an expert in something'. Given the heterogeneity of participants present within training courses, the 'guided discovery' approach aims to build on this variety and to create a field of interaction in which learning can take place most effectively. Looking back at the case findings, it is clear however that this 'expert attribution' is not something that can be taken for granted; it implies an active stance towards the differences present in terms of meta-cognitions. As such, we would like to suggest some modifications that can be seen as complementary to the ingredients of learning trajectories put forward by Brown et al.

Given that learning always implies 'cognitive' and 'meta-cognitive' mediation, the 'guided discovery' approach might become extended to this meta-level as well. As the case made clear, designing a learning trajectory which to a large extent reflects the principles derived from recent insights regarding the learning process, reflecting the role practice and interaction fulfil within it, might not per se result in optimal learning situations. In other words, if you want people to learn, learning to learn cannot be passed over lightly. And given the similarities one can draw between the acquisition process of both cognitive and meta-cognitive mediation, similar principles might apply to address this latter issue. To put it more concretely, we would like to recall the role of heterogeneity - on the level of skills - plays in the case study. Here heterogeneity is seen as instrumental in the process of acquiring new skills (see also the expert attribution in conjunction with the role colleague trainees play). One could start thinking in similar ways about heterogeneity, undoubtedly present, in terms of meta-cognitions. These also provide ample opportunities to learn more about one's own learning. Yet, too often they remain implicit, or one perceives these differences as too difficult to touch upon. In leaving them implicit, however, one runs the risk of ending up with a 'reduced' learning

environment. Rather, we would like to suggest that 'directing' or 'guiding' the learning process should be approached as a layered endeavour: meta-cognitions are more than an ingredient of a learning trajectory; in fact they can be seen as continuously present in the acquisition of 'cognitive' skills and competencies. There is, however, a scarcity of training courses in which this dual nature of learning trajectories is acknowledged and where principles of guiding and discovering^{xxvi} - so well accepted when it comes to acquiring cognition, i.e. new skills or competencies on the 'content' level - are seen as an inherent ingredient. One fruitful approach to setting up design trajectories that reflect this, might be the application of the principles for acquiring domain-specific knowledge as advanced by Brown et al.(1994). Relevant ingredients for starting such an endeavour would seem to include establishing a field of interaction that allows for in-depth exploration of these differences and working with multiple zones of proximal development whereby one draws on the heterogeneity of experiences present within a group. Realising that this once again adds to the load 'placed on the guide, the official teacher' (Brown & Campione, p. 262), we are as well convinced that conceiving the learning process in this way might set people on the 'learning to learn' road, a reward worth some effort.

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Table 1: Opinions held with respect to the learning objectives – Painting

Learning objectives	Pierre (Techn. Instructor)	Sabine (Work facilitator)	Arnout (Group facilitator)	Rebecca (Trainee)	Kevin (Trainee)	Sevket (Trainee)	Eddy (Trainee)
Technical training sessions	X	X	X	X	X	X	X
Job attitude sessions	X	X	X	O	O	O	X
Sport activities	(O)		X		O	O	O

Table 2: Opinions held with respect to the learning process – The role of colleague-trainees.

	Pierre Techn. Instructor	Sabine Work facilitator	Arnout Group facilitator	Rebecca trainee	Kevin trainee	Sevket trainee	Eddy trainee	B&A trainee	Davy trainee	M trainee	Frans trainee	Vera trainee	Erik trainee
Social learning	O	X	X	O	O	-	-	X	X	X	O	O	O
Social Learning, if expert attribution	X	X	X	X	X	-	O	X	X	X	X	X	X
Diversity in culture	X	X	X	O	O	X	X	-	X	-	-	-	-

ⁱ See for instance the work of Engeström on the notion of ‘activity system’ which integrates subject, object and instruments into a unified whole (Engeström 1987).

ⁱⁱ See also Weick’s view on the relation between equivocality and interaction (Weick, 1979)

ⁱⁱⁱ Note the similarities with Piaget’s constructivist viewpoints on the one hand (whereby thought precedes language), and Vygotsky’s emphasis on language and interaction in acquiring concepts and thoughts on the other; we will return to the insights proposed by these scholars later on.

^{iv} Besides the work of Wenger – where he clarifies the complementarity between the notions of interaction and reification – the work found in Classroom Lessons: integrating cognitive theory and classroom practice (McGilly, ed.) is another case in point. Starting from ‘traditional’ cognitive information processing (McGilly, chapter 1), one evolves towards the notion of ‘Guided discovery within a community of learners’ (Brown and Campione, chapter 8). The notion of elaboration can be seen as playing the role of bridging concept

^v A case study is an empirical inquiry that: (1) investigates a contemporary phenomenon within its real-life context; (2) when the boundaries between phenomenon and context are not clearly evident; (3) and in which multiple sources of evidence are used.’ (Yin, op. cit. p. 23)

^{vi} Route VZW, an organisation which originated out of the work of BLM (Begeleidingsdienst Limburgs Mijngedied). This organisation was founded some ten years ago when mining activities stopped in the region of Limburg with the specific mission to work on the reintegration of actual and future miners into the labour market. Note that this problem relates not only to unskilled labour but also affects a considerable amount of - often non-European - immigrants; this introduces an additional ‘language’ problem

^{vii} Whereby unemployed people are mainly addressed as needing ‘just’ technical training

^{viii} With respect to experience, language, and professional background.

^{ix} Depending on the level of expertise shown by the trainees, something which is assessed regularly.

^x Here a formalised process has been installed, which implied meetings between all actors involved at certain points within the process (e.g. before starting the training process, before and after finalising the first apprenticeship period). For an extensive description of the approach followed, see also Van den Berg H., Denolf, L., van der Veer K. and Vanschoren J. (1996) *Integrale Trajectbemiddeling: Een methodiekbeschrijving* (Designing integrated learning trajectories: description of a method). J. Mets Publishers, Amsterdam.

^{xi} Several researchers also participated in the training activities in order to get acquainted with the process and with the trainees. As a result, several observation reports have been used in the analysis as well.

^{xii} Using Nud-Ist as a supporting software tool.

^{xiii} Questions focussed mainly on learning experiences and the difference between certain situations and/or interactions with respect to learning.

^{xiv} Similar tables related to other courses are available as well; due to space constraints they are not reported here. They do imply comparable observations.

^{xv} A similar type of analysis is available with respect to the role of experts and practice; however due to space constraints, we shall not discuss these here. These findings are available from the authors on request.

^{xvi} Implying different national backgrounds: Italian, Polish, Turkish, Moroccan.

^{xvii} While it might come as a surprise for some readers, one of the problems faced during the course development related to the 'sticking together' behaviour that sometimes developed. When Turkish, Moroccan or Belgian people started to have breaks and meals separately, different languages were used. And although the official policy was to speak only Dutch during courses, it was sometimes difficult to implement this rule. Moreover, religious considerations led some men to perceive it as inappropriate to share meals with women, let alone to accept remarks or 'critiques' of their performance from them.

^{xviii} As well as during consecutive discussions concerning these findings with the actors involved

^{xix} Remember the training institute already incorporates several insights that are in line with the recent insights advanced from a more relational perspective, like considering the person as totally involved (cfr. the notion of identity) or acknowledging the role of diversity (and hence the other) with respect to learning

^{xx} A source of inspiration often neglected by scholars in the field of organisational behaviour and organisational learning, even though highly relevant insights and principles for organisational and work settings have been put forward within this field. As Elkind (1967) stated in his introduction to *Six Psychological Studies* by J. Piaget (Random House, New York): 'He (Piaget) is not fundamentally a child psychologist concerned with practical issues of child growth and development. He is rather, first and foremost, a genetic epistemologist concerned with the nature of knowledge and with the structures and processes by which it is acquired.' (op. cit. p. xvii)

^{xxi} Vygotsky's original text reads as follows: 'The specifically human capacity for language enables children to provide for auxiliary tools in the solution of difficult tasks, to overcome impulsive action, to plan a solution to a problem prior to its execution, and to master their own behaviour. Signs and words serve children first and foremost as a means of social contact with other people. The cognitive and communicative functions of language then become the basis of a new and superior form of activity in children, distinguishing them from animals.' (Vygotsky, *Mind in Society*, p. 28).

^{xxii} As such, the sharp distinction Karpov & Haywood draw between Vygotsky's notions of meta-cognitive mediation and cognitive mediation can be questioned. Karpov and Haywood contrast the acquisition process of meta-cognitions (in which interpersonal 'experimentation' is a necessary step to arrive at internalisation) with the process of cognitive mediation. Cognitive mediation refers to children's acquisition of cognitive tools that are necessary for solving subject-domain problems. In *Thought and Language*, Vygotsky advocates that 'the acquisition of scientific concepts should arise from their presentation to students in the form of precise verbal definitions'. This observation however does not exclude an accompanying interactive internalisation process. When looking at the definition of the zone of proximal development as well as the examples provided by Vygotsky to arrive at the definition of this notion, it becomes clear that he refers as well to cognitive mediation (see Vygotsky, op. cit. pp. 84–91). His definition of

the notion of 'zone of proximal development' makes this clear. 'We propose that an essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal developmental processes that are able to operate *only when the child is interacting with people in his environment and in co-operation with his peers*. Once these processes are internalized, they become part of the child's independent developmental achievement.' (Vygotsky, p. 90, italics added). Additional evidence for the stance that the same processes are involved both with respect to cognitive and meta-cognitive mediation, can be found in *Thought and Language* (Vygotsky, 1986) where Vygotsky extensively discusses the acquisition process of scientific concepts. The importance of co-operation and interaction is stressed here as well on several occasions (see for instance chapter 6, The development of scientific concepts in childhood, pp. 187–191). Finally, the observation that 'scientific concepts just start their development, rather than finish it, at a moment when the child learns the term or word-meaning denoting the new concept' (Vygotsky, 1986, p. 159), further reinforces this interpretation.

^{xxiii} That people seldom arrive at such insights rings true with the observations made by Piaget and Elkind regarding the 'constructive' nature of knowledge (Piaget, 1967, with an introduction by Elkind). 'Despite the fact that reality always involves a subjective element, in the sense that it is always, at least in part, a projection or externalisation of thought or action, a majority of people still tends to a view whereby knowledge is seen as given or external.' (ideas that can be traced back to Kant, and found as well in the trialectic notion of the sign, as developed by Pierce). Epistemological relativism permeates Piaget's thinking about the construction of reality. Even the simplest environmental influence or stimulation is never passively received and registered, but is always acted upon. 'To deny that there is a psychological reality without the intervention of the subject's activity is not to deny the separate existence of an external world. All that such a denial means is that all knowledge is mediate (or 'mediated' as we say today) rather than immediate (or copied directly). At this point a concrete example of the evidence for epistemological relativism might help to clarify this position.' Next Elkind gives an example whereby a child of five is asked to match six pennies spaced out in a row with a like number from a nearby pile. Once the two rows are in one-to-one correspondence the child says that both rows have the same number. However, if one then moves the pennies in one row farther apart than those in the other, the five-year-old says that one of the rows has more pennies than the other. When the latter problem is presented to a seven-year-old, the reaction is quite different. The child regards the question as rather stupid and replies that the two rows have the same number. Elkind then continues as follows: 'The point of this illustration is that the older child takes as self-evident, or a priori, what only a few short years before he did not know existed! *Once a concept is constructed, it is immediately externalized so that it appears to the subject as a perceptually given property of the object and independent of the subject's own mental activity.* The tendency of mental activities to become automatized and for their results to be perceived as external to the subject is what leads to the conviction that there is a reality independent of thought. It is not surprising under these circumstances that the copy theory, as Boring (1950) said, dies hard'. (D. Elkind, 1967, Editor's introduction to *Six Psychological Studies*, J. Piaget Random House, New York, p. xi). The same 'amnesia' seems to prevail when it comes to the social side of the

knowledge creation process.

^{xxiv} Brown, Collins and Duguid (1989) remark that one of the difficult challenges in this respect is 'determining what should be made explicit in teaching and what should be left implicit' (p. 40). And while we subscribe to their appeal to use more implicit approaches towards teaching, reflecting a more situated epistemology (in which activity and perception are importantly and epistemologically prior to conceptualisation), reflection upon - and hence some form of explication of - meta-cognitions seems advisable to overcome the actual constraints depicted here

^{xxv} 'The cognitive transformation of psychological learning theory led to renewed emphasis on several key ideas. First, although the concept of autodidactic learning has a long history, it was not until recently that learners have become widely viewed as active constructors of knowledge, rather than passive recipients of others' expertise. Second.... we now recognize that one of the most interesting things about human learning is that the learner has knowledge and feelings about it, sometimes even control of it - metacognition if you will. Third, we now recognise that humans although excellent all-purpose learning machines equipped to learn about anything by brute force like all biologically evolved creatures, come predisposed to learn certain things more readily than others. ... So one could speak of a concentration on active, strategic learning, implying at least some level of the learner's understanding and control, following domain-specific trajectories.' (Brown & Campione).

^{xxvi} While this might sound rather directive or manipulative, we subscribe to the view advanced by Watzlawick others : 'Sincerity has lately become a catchword, a hypocrisy in its own right, associated in a murky way with the idea that there is such a thing as a 'right' view of the world - usually one's own view. It also seems associated with the idea that 'manipulation' is not only bad, but can be avoided. Nobody, unfortunately, has ever explained how this can be done. It is difficult to imagine how any behaviour in the presence of another person can avoid being a communication of one's own view of the nature of one's relationship with that person and how it can, therefore, fail to influence that person.' (Watzlawick et al., 1974, p. XV). Sincerity in this respect, then, more becomes an issue of being explicit about one's actions, and respecting the - ever present - other by allowing for domain-specific learning trajectories in which a person's zones of proximal development start acting as 'ethical' limits.

