

## THEORIES OF UNCONSCIOUS LEARNING CONFRONTED

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### Introduction

More and more, it has become clear of late (again) that there are many implicit ways of learning and many implicit outcomes of learning (Bolhuis & Simons, 1999; Doornbos & Krak, 2001; Eraut, 2000). Here, we call these also unconscious learning and unconscious learning outcomes. Both the processes and the outcomes of learning can be implicit or explicit to the learner, determining four possibilities of awareness of processes and outcomes. Levy, Collins and Nail (1999) distinguish between “conscious” and “non-conscious” psychological processing. Non-conscious processing refers to an automatic process characterized by four features which was said to be unintentional (the individual does not start the process by an act of will), to occur outside awareness, to be uncontrollable (the individual cannot stop it once it has started) and to be efficient or consume minimal attentional resources. Are these all necessary at the same time or can processes be unconscious on less than the four dimensions?

Table 1 presents the four possible combinations of conscious and unconscious processes and outcomes of learning and examples of all four. When learning processes are unconscious, people do not realise that activities they are undertaking or processes they are involved in, can or will lead to changes in knowledge, skills, attitudes and / or learning ability.

Awareness of learning processes can arise before, during or after the activities and processes. Oftentimes this awareness does not arise at all. When learning outcomes are unconscious, people do not realise what they (have) learn(ed) during activities such as working, playing or problem solving.

*Table 1: Examples of conscious and unconscious learning processes and outcomes*

Outcomes	unconscious	conscious
Processes		
unconscious	without knowing how a person learned to recognise visual expressions and (s)he is not aware that (s)he can do it	a person knows that (s)he is able to recognise emotions in a face but does not know how (s)he has learned this
conscious	A person tries to learn to ride a bicycle but does not know that (s)he is already able to do it	A person intentionally learns to drive a car and knows that (s)he can do it.

Because there are four possible stages where learning processes and or learning outcomes can become conscious, there are 16 possible combinations (see Table 2).

*Table 2: stages of awareness of learning processes and learning outcomes*

Awareness of learning outcomes	Never	Before learning	During learning	After learning
Awareness of learning processes				
Never				
Before learning				
During learning				
After learning				

To complicate affairs even more, we should realise that learning processes as well as outcomes can be unconscious for the learner but conscious for other persons such as teachers, counsellors, observers, colleagues, etc, who either plan the learning processes and outcomes explicitly or observe that learning is going on or has been accomplished.

This paper explores several issues related to unconscious learning processes and outcomes: a) gradually making learning outcomes unconscious; b) making unconscious learning outcomes conscious; c) making unconscious learning processes conscious; e) making conscious learning processes unconscious. Moreover, some theories of collective unconscious learning are discussed briefly. This leaves at the end several questions and issues where we lack knowledge and concepts and challenges psychodynamic theories to fill in the gaps.

### **Making unconscious learning outcomes conscious**

Research shows (see for example Eraut (1998), Doornbos & Krak (2001)) that many work related learning processes as well as learning outcomes remain unconscious. This becomes clear when people try to talk about their job-related learning. When Doornbos and Krak (o.c.) interviewed police officers about their work-related learning, they reported hardly any learning outcomes or learning processes. They discovered, however, that just asking them about learning was not the right approach. The word 'learning' puts people into the wrong mode: they start looking for courses they attended, books they read, coaching they received and so on. Only when the word 'learning' was not used and instead they were asked about changes in competences (see next paragraph), people started to realise that they had learned a lot in and from their work. By focussing on concrete changes in work processes or outcomes, they could become aware of their learning processes. When they realised what they had learned they started to talk about how they had learned.

We have found three issues:

1. It is important to realise that it is neither possible nor desirable to make all implicit learning outcomes and processes explicit. Sometimes it is better not to make implicit learning explicit. As Nonaka and his colleagues (Von Krogh, Ichijo, & Nonaka, 2000) made clear, there can be an implicit kind of exchange. And it is within informal activities and settings, and without

explicitness, that people develop a feeling of shared competences (Nonaka, Reinmoeller, & Senoo, 1998).

2. When one does want to make learning outcomes and processes explicit, one has to choose between reflection-in-action and reflection-on-action (Schön, 1987). “In action” our implicit competences are, although not conscious to our selves, of course visible to others. By observing people in action, a trained observer can infer these underlying competences. By using pre- and post-action interviews, for example, people can learn to reflect-in-action, and become aware of their implicit competences and reflect on their knowledge, skills and attitudes themselves. In our experience, reflective practicums as described by Schön (1987) can be a very powerful methodology. And Klarus (1998) devised and studied for this purpose an effective method consisting of a combination of pre- and post-action interviews with observations.
3. Reflection “on action” is probably less accurate, but nevertheless very informative. For this, you can either ask others to reflect on your learning in a more general sense (not during action but afterwards), or do it yourself. Clients or colleagues may often have very good ideas of the specific competences they encounter in interactions with the subject we want to help become aware of their implicit learning. One can just ask clients for feedback: “What, in your experience, is my specific way of working?” Besides this, three hundred and sixty degree feedback methods can be a powerful tool. Probably more feasible however, is it to use reflective methods (both individual and collective ones). Then we help people to reflect on the outcomes of their learning. We will talk about them, more in depth in the next paragraph.

There are several techniques that help people become aware of unconscious learning outcomes. The first technique for making learning outcomes explicit through individual reflection came from Eraut (1998) and his colleagues. Instead of asking for learning outcomes directly, they asked (semi-) professionals (in their study: policemen and nurses) what had changed in their work. “In what ways is your current work different from one, two or five years ago?” “What does this tell you about what you know now and are now able to do that you were not able to at that time?” Another technique used is asking people to describe an ideal professional or worker. For example: “How does an ideal train conductor or an ideal human resource manager do his work?” In our experience, people have quite concrete ideal models. The next question can be “In what respect are you yourself already an ideal worker / professional?” This leads, almost automatically, to explicating learning outcomes and differences between ideal and practice. And sometimes this leads to on the spot discoveries of disconnections between current ways of working and ideals, and thus to new learning opportunities. For example, we met a human resource manager describing the ideal HR-manager as someone who is constantly networking with all line managers in the organisation in an informal way. On the spot, he himself discovered that he was not practicing this at all. Thus, asking people to reflect on the difference between their picture of an ideal practitioner and their own explicit and implicit competences may help them become aware of learning outcomes reached so far and needs for more explicit learning afterwards. A third technique often used is the critical incidents method. People try to think of practical situations that were critical. From there they start to think of the underlying competences. This technique

resembles the 'Pretty good practices' approach described by Marsick (2001), in which people talk about examples of situations where they performed pretty well. Marsick notes that it is important not to ask for 'best practices' because then we put too much pressure on people to excel. In our experience, we found that it is even important to avoid talking about failures and focus in the first place on positive incidents. By positive critical incidents or pretty good practices, there is a greater willingness and there are less defence mechanisms to do some 'research' into details of the learning outcomes and processes. Related is also the 'Story telling'-technique, where people tell anecdotes and stories from their practices. The difference here is in the 'story telling mindset', which activates a certain amount of detail in describing circumstances and events from a certain distance (talking about yourself in the third person).

Again another technique, described by Marsick (2001) is 'Walking in the shoes of the client'. People are asked to take the perspective of one of their clients and look at their own competences through the eyes of the client. A final example of a technique method described by Marsick is the 'Multiple intelligences approach'. In this approach, people try to use pictures, drawings, metaphors, movements, etc. to make clear to themselves what they have learned implicitly.

Many other techniques could be thought of, to name a few more:

- Teaching others
- Looking into the future
- Working in heterogeneous groups
- Thinking of changes and improvements.

A common underlying general feature of all of these methods is that they start from concrete situations or experiences and go from there to learning out-comes and competences.

### **Gradually making learning outcomes unconscious**

In educational psychology one can also find theory about the other way around: how to make conscious learning outcomes unconscious. There has been a rich tradition in the former Soviet Union (Van Parreren en Carpay, 1980). It started with the theory of Vygotski in the beginning of this century. Vygotski's most famous principle refers to the *zone of proximal development*. One should not look at what a child is able to do on its own at a certain moment of time, but what it is able to do and learn with a little help from an expert. Education's main task is to help children develop their thinking by offering them optimal help in the zone of proximal development. Mental activities (thinking) develop through the *interiorisation* of material activities. Therefore, learning to think is always proceeding from the concrete material to the abstract, internal. Vygotskian psychology is also called socio-historical or socio-cultural theory. It assumes a *communicative origin* in the human, cultural world as it developed through history. Human beings are fundamentally *educable*. Adults may learn as well when challenged in a zone of proximal development. The *dialogue* with experts is of fundamental importance in this respect.

A successor of Vygotsky's in the fifties and sixties was Gal'perin (Galperin) (Van Parreren en Carpay, 1980), who developed and tested the theory of stepwise interiorisation. The teaching procedure consisted of five steps. First, students are required to orientate themselves. They should form or get/obtain a complete picture of/they should visualize the activity in its final form: its objectives, the sub-steps involved, the transitions and transition-conditions, etc. One important assertion of

Gal'perin's was that the orientation should always occur beforehand, that it should be complete, and that it is best to build an orientation base in a discovery-learning setting. The second step is that students should learn the material/physical, concrete forms of the activity (the 'material' level). Thirdly, they should learn to verbalize what they are doing when executing the material activity. Gradually, the material activity is abandoned; the verbalizing is gradually diminished/reduced into a sub-vocal whispering. Finally, the mental level is reached when the whispering stage is abandoned.

Gal'perin postulated four independent parameters of mental activities: a) the level (concrete/material, verbal, mental); b) the extent / degree of shortening / abbreviation (from very extensive to very shortened); c) the degree of automaticity (from unsmooth / faltering / hesitating to fluent and automatic), and d) the generality (from specific to general). This means that one can practice at each of the three levels (concrete, verbal and mental) independently, the shortening, the automaticity, and the generality. All four of these parameters refer to the degree of consciousness of the learning outcomes.

### **Making unconscious learning processes conscious**

Many learning processes in work situations occur unconsciously for the learner and often also for other people involved or present. In educational situations, learning processes remain hidden for the learner too, because they are organised and planned by the teacher. There are, however, many reasons why it would be good to become more aware of one's ways of learning. One is that this is probably needed in order to improve learning and to reach more or better learning outcomes. We believe that only people who have self-knowledge about their way of learning can improve their learning processes (and outcomes). Development of learning abilities will depend partly on self-knowledge about it. Another reason is that one needs this self-knowledge when in order to find partners for learning, be it people with a similar learning style or people with different complementing styles.

How can we become aware of one's unconscious learning processes? At least partly, this can be done through reflection. In our experience, people can best reflect on their way of learning when they connect this to concrete situations or concrete learning outcomes (Doornbos, in preparation; Eraut, 1998). When aware of certain learning outcomes, it is easier to become aware of the way one reached these outcomes. Our research shows, that most people in work situations learn by doing and in collaboration with or depending on other people.

Another popular way to become aware of one's learning processes is through inventories and tests, such as Kolbs' learning style inventory (1984) and Vermunts' Inventory of learning styles (1992). In our view, however, these inventories make only parts of learning visible. The Kolb instrument focuses only on individual and implicit learning. The Vermunt inventory focuses on learning in educational settings only. In another session at the EARLI conference, we present a new instrument that gives insights into both implicit and explicit learning, both individual learning and learning with and from others and learning outside of educational contexts.

From the previous discussions one might have gained the impression that we want professionals to learn in more explicit ways. We call this educationalising. This is, however, contrary to our intention. Educationalising, meaning replacing unconscious learning processes with conscious learning, is often a mistake. It is trying to preplan

and preorganise learning where it had better occur spontaneously in the context of work. This can, in our view, be a mistake for several reasons:

- a large part of the existing work related learning is (as we mentioned before) implicit;
- often people enjoy finding new solutions and like to start new actions (and so learning implicitly) in their work, but resent learning in more explicit ways.
- educationalising may focus people's attention too much on learning instead of on working.

Moreover, the possibility of ruining people's motivation is quite real. So, before educationalising, we propose to pose the following three questions:

- What are the consequences of educationalising specific working situations?
- What is gained by replacing implicit learning with more explicit learning?
- Can we reorganise working environments to increase the chances of implicit learning?

In many instances, we think it better to find ways to help people and their managers to reorganise work in such a way that the chances of implicit learning grow and increase. Simons and Ruijters (2001) describe possible ways to do this.

### **Making conscious learning processes unconscious**

In the more popular literature, there is interesting material about the other ways around: to make learning processes less conscious. Originally, this was described in the popular book by Gallwey entitled *The Inner Game of Tennis*. Recently, he added an interesting book on the *Inner Game of Work* (Gallwey, 2002). In his work, Gallwey claims that people are learning ineffectively when they are too conscious of their learning. When focusing, for instance, on the movement of their arms in learning to play tennis, when thinking too much about the way one is learning and when listening too much to one's self-talk, learning is impeded. Alternatively, people should, in his view, free their minds of thoughts about the processes going on and focus on the outside world (the flow of the ball or the position of the competitor). Seeing work as playing or gaming, refraining from self-reflection, can facilitate learning. A similar idea can be found in the theory of Julius Kuhl (Kuhl and Kraska, 1989). His theory claims that learning is impaired when people focus too much on the end state to be reached, prior successes or failures or planning of processes.

### **Collective unconscious learning processes and outcomes**

Learning cannot be understood as a process that is solely in the mind of the learner. Knowledge is distributed over mind, body, and its surroundings and is constructed in settings of joint activity. Learning is a process of participating in cultural practices a process that structures and shapes cognitive activity (Lave & Wenger, 1991). A lot of the collective learning processes and or outcomes are unconscious for some or all of the people involved in the collectivity. We treat three perspectives on this collective learning.

In Engeströms' (1999) approach to collective learning, the concept of a working system is central. It consists of 6 components: the subject who is working within the system, the tools he is using to change (mental) objects, the changed object / outcomes (to be) reached, the (unwritten) rules and norms that prevail in the system, the community of practice (the culture of the working system), and the division of

tasks in the system. One of Engeströms' basic assumptions is that learning and working should not be considered at the individual level, but at the level of the working system. These working systems are to be studied from an historical perspective, questioning which of the six components changed, creating what kinds of tensions with other components. He claims there are always one or two basic tensions between components of a working system, because of historical changes. When a subject is asked to reach new outcomes, for instance more collaboration with co-workers, there will be a tension between these new outcomes and the current division of tasks. When new tools (computer programs, for instance) are introduced, there can be a tension between the subject (who cannot yet use them or is afraid of using them) and the tools. All connection lines between the six components can be in a state of tension. In studying a working system, one should study the dominant tensions, make people aware of them, and let them find solutions on their own.

Nonaka and Takeuchi (1987) similarly treat learning at the level of a group or organisation. In their model of knowledge creation there is implicit and explicit knowledge. There are four possible stages: exchange of implicit knowledge (from implicit to explicit), making implicit knowledge explicit, combining forms of explicit knowledge (from explicit to explicit) and making explicit knowledge implicit (from explicit to implicit). In the knowledge spiral these stages of exchange follow each other, creating new collective implicit knowledge.

Wenger (1998) focuses on communities of practice: these are groups of people informally bound by a shared practice related to a set of problems [...] they typically solve problems, discuss insights, share information, talk about their lives, and ambitions, mentor and coach on each other, make plans for community activities, and develop tools and frameworks that become part of the common knowledge of the community. Over time these mutual interactions and relationships build up a shared body of knowledge and a sense of identity. They constitute an informal, social structure initiated by members and reflecting on their collective learning (Wenger, 1999, p. 4).

A community of practice defines itself along three dimensions (Wenger, 1998; 1999):  
*What it is about* – A joint enterprise as understood and continually renegotiated by its members

*How it functions*- Mutual engagement that bind members together into a social entity

*What capability it has produced* - The shared repertoire of communal recourses (routines, sensibilities, artefacts, vocabulary, styles, etc) that members have developed over time.

### **Psychodynamics?**

How could psychodynamic approaches deepen or extend the insights discussed above?

1. In making unconscious learning outcomes conscious, the main problem seems to be in the kinds of outcomes that can be become conscious and the ones that are difficult to make explicit. It is difficult for people to become aware of learning outcomes. Thus, it seems reasonable to expect that there are many more outcomes that remain hidden. Can the psychodynamic theory and methodology help us to become aware of more deeply hidden learning outcomes? Are there reasons why people do not become aware of learning outcomes? Are there defense mechanisms that impede awareness of outcomes?

2. In making conscious learning outcomes unconscious, psychodynamic theories could help distinguish the levels of consciousness further. Are the 4 parameters of automaticity (level, shortening, automaticity and generality) indeed independent of each other? How do they relate to the parameters of Levy, Collins and Nail (1999) mentioned above: unintentionality, uncontrollability, efficiency and minimality of attentional resources needed.
3. In making unconscious learning processes conscious, psychodynamic theories could help in finding better ways to make unconscious learning processes visible and to unravel reasons for a lack of reflectivity.
4. In making conscious learning processes less conscious, psychodynamic theory could find ways to disguise consciousness for the learner.
5. Finally, could psychodynamic theory also help in better conceptualizing collective learning processes and outcomes?

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