Abstract

For nurses, awareness of their on-the-job learning style is important to improve their on-the-job learning. Mental aspects of these on-the-job learning styles hardly receive any attention in literature on on-the-job learning. Studies in educational psychology do focus on mental aspects of learning styles but mostly in educational settings. The aim of this study is to identify mental aspects of on-the-job learning style dimensions that can create a reasonable awareness among nurses, offering opportunities for the improvement of their on-the-job learning. We interviewed eight educators and seventeen supervisors in seven hospitals in the Netherlands and investigated the importance and face validity of four mental learning style dimensions for the profession of nurses. The results show that the most significant dimension in nurses’ on-the-job learning was the awareness with which they engaged in reflection.

Introduction

Nurses need to learn continuously and on-the-job learning is significant if this is to be achieved. The main reason why nurses need to learn continuously is that the context of health care is constantly changing, for instance, the extensive developments of new technologies in nursing equipment, changing disease patterns, the from task-centred nursing to patient-centred nursing, and the changing boundaries between the work carried out by nurses and other caretakers. Nurses need to adapt to new working situations. There is a growth in the complexity of the knowledge and skills required; they need to be decisive and to work as competent and autonomous caretakers and as members of multi-disciplined and multi-professional teams (Clark, 2001). Another reason for the need for continuous learning by nurses is that the nursing profession will remain more attractive to nurses if they are given greater learning opportunities (Berings, Gelissen, & Poell, in press). In addition to formal training and education, the most significant sources of learning are the challenges of work itself and interactions with other people in the workplace (e.g., Eraut, Alderton, Cole, & Senker, 1998; Mumford, 1995). Little is known about methods that can be used to improve on-the-job learning. A useful way to improve employees’ on-the-job learning could be making them aware of their on-the-job learning styles. As Figure 1 shows, on-the-job learning styles can be regarded as the tendency to use a particular combination of implicit and explicit learning activities that a person can and likes to perform on the job. The person adapts the combination of learning activities to each situation differently. This particular combination is called the actualised learning strategy. Knowledge about their own and other possible on-the-job learning styles can make people aware of their choices in learning behaviour and therefore offer opportunities for adaptations (Berings, Poell, & Simons, in press). However, in literature, there is a lack of knowledge on on-the-job learning styles.
Literature in the field of on-the-job learning (e.g., Eraut et al., 1998; Gerber, 1998) mostly focuses on overt aspects of on-the-job learning styles, such as having social interaction or searching for information, and hardly addresses mental aspects. In contrast, literature on learning in educational settings predominantly focuses on the mental processes behind the overt learning activities, such as holistic or analytic thinking. (e.g., Allinson & Hayes, 1996; Riding & Cheema, 1991; Sternberg, 1997). When identifying employees’ on-the-job learning styles, attention is needed to both overt and mental aspects (Berings, Poell et al., in press). Therefore, in this study we focus on mental aspects that provide a valuable complement to the overt aspects that are found in studies on on-the-job learning.

The aim of this study is to identify mental aspects of on-the-job learning style dimensions that can create a reasonable awareness among nurses, offering opportunities for the improvement of their on-the-job learning. Therefore, we investigate the significance of mental learning style dimensions in the nursing profession. First, we distinguish four core dimensions from literature on educational psychology that could be translated to on-the-job learning situations. Second, we actually translate these dimensions, using literature on on-the-job learning, and third, describe the interview study we conducted about the importance and face validity of these dimensions in the nursing profession. Finally, we will discuss the insights derived from this study in the perspective of future research and practice.

Dimensions from literature on educational psychology

Berings, Poell, & Simons (in preparation) distinguished several mental dimensions of on-the-job learning styles that can create a reasonable awareness among employees, offering opportunities for the improvement of their on-the-job learning. The dimensions they distinguished concern learning activities, are applicable to the workplace context, and can actively be directed by learners themselves. They studied the learning style dimensions mentioned in the literature review from Coffield, Mosely, Hall, and Ecclestone (2004) on learning styles in post-16 learning: Entwistle’s deep and surface learning approaches (1981, 1988), Vermunt’s learning styles (1992), Kolb’s learning styles (1984), Honey and
Mumford’s learning cycle (1986), Jackson’s learning styles (2002), Allinson and Hayes’ intuition and analysis (1996), Dunn, Dunn, and Price’s model of learning preferences (1989), Gregorc’s mind styles model (1982), Riding and Cheema’s cognitive styles (1991), Hermann’s brain dominance (1989), and Sternberg’s thinking styles (1997). Then, Berings et al. (in preparation) explicated on conceptual similarities with other learning style dimensions in literature on educational psychology and concluded on their relevance for the purpose of creating awareness of these learning style dimensions among employees. They distinguished the following relevant dimensions:

1. **sequential and random ordering**, derived from Gregorc’s mind styles model (1982);
2. **learning alone or with others**, derived from Dunn, Dunn, and Price’s model of learning preferences (Dunn et al., 1989);
3. **intuitive and analytic learning**, derived from Allinson and Hayes (1996); and

**A translation to on-the-job learning**

In literature on on-the-job learning, attention has been paid to theories that have great similarities with the selected learning style dimensions, but often different terminology is used. To connect these two areas of research, in this section, we will elaborate the learning style dimensions we selected from the field of educational psychology, adding terminology and theories from the field of on-the-job learning.

The first learning style dimension distinguished, derived from sequential and random ordering (Gregorc, 1982) and similar dimensions, establishes great similarities with the distinction between reproductive and developmental learning described by Ellström (2005). Reproductive learning is learning with a focus on a subject’s adjustment to and mastery of certain given tasks or situations. Argyris and Schön (1978) refer to this type of learning as single loop learning. This learning strategy can be very effective in the execution of work, with a focus on performance and security. However, employees are currently usually also asked to contribute to the innovation of work (Nieuwenhuis & van Woerkom, 2003, August). In this form of learning, there is a need to explore, question, reframe and transform a situation, rather than simply adapt to a predefined reality. Developmental learning is learning while transforming rather than reproducing a prevailing situation, developing new solutions (Ellström, 2005). Argyris and Schön (1978) refer to this type of learning as double loop learning. Ellström emphasises that reproductive and developmental learning are complementary, but that one way of learning can be dominant. Further, also “middle forms” of learning can be possible, such as productive learning, as described by Engeström (1987), in which the given outcome is reached by experimentation. To describe this learning style dimension, we will adopt the terminology that is used by Ellström: **reproductive and developmental learning**.

The second dimension distinguished is the **social learning style dimension**, that is the tendency to work and learn alone or with others (Dunn, 2003; Dunn et al., 1989). The aspect learning alone can be elaborated as explained in the other dimensions. The aspect learning with others can be elaborated more extensively. In almost all learning activities other people are directly or indirectly involved. These can be interaction partners from
within the working group, such as collaboration partners, mentors and coaches, and interaction partners from outside the working group, such as clients or suppliers, people elsewhere in the own or other organizations (Eraut et al., 1998). Several authors describe social dimensions of learning, but usually not entirely in terms of learning activities (e.g. Dunn, 2003; Dunn et al., 1989; Eraut et al., 1998; Riechmann & Grasha, 1974; Salomon & Perkins, 1998). Doornbos, Eekelen and Koopmans (in press) describe five different forms of activities interaction partners perform: responding to the employees’ work, being a role model, supporting learning, for instance by giving a lecture or course, providing information or reactions to the employee (in a one-way direction), and exchanging information (in a two-way direction). In the first four forms the interaction partner supports the employee’s learning and in the fifth form participatory knowledge is constructed (Salomon & Perkins, 1998). To elaborate social forms of learning in the context of on-the-job learning styles, we need to find a classification that clearly indicates the activities of the learners themselves. The insights above lead to five different social learning activities of the learners themselves:

- processing feedback;
- observing others;
- asking for information (in a one-way direction);
- exchanging information (in a two-way direction); and
- visiting information meetings.

Also the use of these social learning strategies are complementary; is some situations it is better to ask for feedback for peers, in other situations it is better to visit information meetings, etc.

The third learning style dimension distinguished, intuitive and analytic learning, derived from Allinson and Hayes (1996), does, in contrast to the other dimensions, originate from and is implemented in research on samples with employees and managers (cf. Allinson & Hayes, 1996; Sadler-Smith, 1998; Sadler-Smith, Allinson, & Hayes, 2000). We choose to describe this dimension by the difference between holistic and analytic learning, because we think that this description covers the meaning best. Analysts are individuals that prefer to pay attention to detail. They approach new information and experiences with a systematic method of investigation. Holists, on the other hand, are less concerned with detail. They have adopted a global perspective on new information and experience. They tend to integrate many inputs simultaneously. Despite its origination in research on samples with employees and managers, the holistic-analytic style dimension has received much more attention in studies on workplace learning. This might be due to its cognitive basis, which is more common in that range of literature, and to the complexity of on-the-job learning situations, which makes it harder and perhaps less desirable to describe the learning process in such an outlined way. However, some parallels can be drawn with the Dreyfus-model in literature on expertise development (e.g. Benner, 1982; Dreyfus, Dreyfus, & Athanasiou, 1986). In this model, people who encounter situations from a context-free analytic perspective are regarded as novices, and people who encounter situations from a holistic perspective are regarded as experts on the job. Although suggested by the relation with novices and experts, we believe that one cannot indisputably conclude that holistic learners are better learners than analytic learners. Or that, as Dreyfus et al. (1986) put forward, novices always learn
best using analytic strategies and experts always learn best using holistic strategies. We believe that for an individual, in some learning situations it is better to use holistic strategies and for the same individual, in other situations, it is better to use analytic strategies (cf. Benner, 1982; Sadler-Smith, 1998).

There is a large amount of literature in the field of on-the-job learning and other fields of study that focuses on reflection, the fourth learning style dimension distinguished. Boyd and Fales (1983, p.100) offer a definition of reflection that is convenient for the context of on-the-job learning: "Reflective learning is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective". Mezirow (1990, p.1) describes its result: "Reflection enables us to correct distortions in our beliefs and errors in problem solving". Many different aspects of reflection can be distinguished:

- the amount of reflection (Kagan, 1965; Petzold, 1985);
- the content of reflection, such as task or social reflection (Swift & West, 1998), reflection on single or multiple contents (Alvesson & Sköldberg, 2000), and reflection on events or problems, or reflection on the self of the learner (self-reflection or reflexivity, Mezirow, 1990);
- the depth of reflection, such as shallow, moderate, or deep reflection (Swift & West, 1998), reflection or critical reflection (Mezirow, 1985; van Woerkom, 2003), and single and double loop learning (Argyris & Schön, 1978);
- the timing of reflection, such as reflection-in-action or reflection-on-action (Schön, 1987) and inductive or deductive learning (Felder & Silverman, 1988); and
- the social dimension of reflection, such as reflecting alone or in social interaction (Swift & West, 1998; van Woerkom, 2003).

In work activities people use personal heuristics and shortcuts for information-processing and decision-making. Many of their actions have become routines, which saves energy. This could be called habitual action (Kember & Leung, 2000), active processing (De Chiantis & Kirton, 1996; Felder & Silverman, 1988), or knowing-in-action (Schön, 1987). However, sometimes these routines do not function (van Woerkom, 2003) and lead to biases in decision-making (Kahneman & Tversky, 1996). Then, reflection is needed, to change the conceptual perspective. Thus, in some situations it is good to reflect and in other situations it is better to rely on routines, since too much reflection can lead to indecisiveness and inertia (Schippers, 2003).

Since on-the-job learning is a comprehensive activity that entails many different processes, such as working, thinking, making decisions and innovating (Berings, Poell et al., in press), it is not surprising that the dimensions we distinguish do contain some overlap. For example, the difference between single loop and double loop learning (Argyris & Schön, 1978) is indisputably related both to the distinction between reproductive and developmental learning and to reflection. Single loop learning is detecting and correcting error in relation to a given set of operating norms, double loop learning is questioning the accepted norms in a learning situation. Riding and Cheema (1991) and Sadler-Smith (1998) found many similarities between the style dimensions we refer to as developmental and reproductive learning and as holistic and analytic learning.
The relation between reflection and the social learning style dimension is clear, since reflection can occur alone or in social interaction. Nevertheless, the distinctions between the learning style dimensions we distinguish are substantial. In literature, they are described separately for a reason. For the goal of this paper, to identify mental aspects of on-the-job learning style dimensions that can create a reasonable awareness among employees, offering opportunities for the improvement of their on-the-job learning, their distinction is sensible as well.

All four core dimensions described above have a complementary basis: in different learning situations, for different individuals, different learning strategies will fit best. Being aware of their learning styles, employees can adapt their use of learning strategies to fit specific learning situations. This is called adaptive flexibility (Berings, Poell et al., in press).

In different professions, the awareness of different learning style dimensions will have different significance. In this paper, we are interested in the usefulness of the learning style dimensions distinguished for the nursing profession.

**Research Method**

We interviewed seventeen supervisors and eight educators in seven peripheral, top-clinical, and academic hospitals in the Netherlands using semi-structured interviews. These people were considered experts on nurses’ on-the-job learning. The sample included fourteen men and eleven women. Their average experience in health care was 27.8 years (SD=6.6). Firstly, we asked the interviewees whether they considered it useful for nurses to gain insight in mental aspects of their individual learning styles. Then we questioned them about three different learning style dimensions in particular: holistic and analytic learning, reproductive and developmental learning, and reflection (i.e. the timing of reflection, the level of reflection, and the social dimension of reflection). Note that the social learning style dimension is integrated in the reflection dimension, because one of the aspects of reflection is whether it occurs in social interaction. We asked the interviewees whether they recognised the theoretically distinguished learning style dimensions in nursing practice and whether they were able to observe differences on these dimensions between the various nurses. They were also asked to illustrate their notions with examples. We summarized the interviews and coded and analysed the summaries using Atlas-ti.

**Findings**

All interviewees agreed on the usefulness of awareness of nurses’ on-the-job learning styles. They grounded this conviction with statements, such as that it enlarges self-knowledge and knowledge about differences with colleagues, that it empowers adaptation, and enlarges self-confidence.

The opinions about the dimension holistic and analytic learning, however, were differentiated. Three interviewees did not recognise this dimension in the context of the
nursing profession. The others did, but four of them only identify analytic learners, and five of them only identify holistic learners, which they attributed to the job-content. An example the interviewees mentioned and give this ambiguity more sense, is that in intensive care units it is usually better to work and learn analytically, since the vital functions of the patients need all the attention. All other issues are relatively unimportant there. In neurological departments it is usually very important to work and learn holistically, since here physical, psychological and social problems of the patient are all significant. Six interviewees do observe differences, but these differences are considered as situational and not personal dependent. Only seven respondents observe differences between nurses on this dimension that they relate to differences in learning styles. An example interviewees mentioned, illustrating the individual difference between holistic and analytic learning, is that in anamnesis questioning some nurses directly question further on every significant detail and other nurses first try to overview the whole situation and then question further on different domains.

The opinions about the dimension reproductive and developmental learning were less differentiated. All but one respondents recognised this dimension in the context of the nursing profession. They all thought of reproductive learning as the dominant style. Nine nurses thought that there would be few differences between the individual nurses, only. Six of them explicated that this is due to the protocols that are handled in the hospitals, which makes developmental learning implausible. Thirteen interviewees, however, did notice differences between nurses that they relate to individual differences in reproductive and developmental learning. Eight of them, however, regarded developmental learning as learning by following innovations, instead of learning by innovating themselves. A clear example that was mentioned by one of the interviewees was about dealing with the great amount of work in administering antibiotics intravenously, using the usual stopcock. Assimilators will learn to do this more quickly, by practising the same procedure repeatedly. Innovators will try to develop a new procedure that can be applied more quickly.

All interviewees recognised the three different aspects of reflection in the nursing profession and expected individual differences on all of them. In contrast to the discussion of the other dimensions, they provided many examples, mostly about reflecting to solve problems, alone or with others. However, they did not agree upon the expected dominant reflection styles in the nursing profession. Many different prospects were expounded. This observation strengthens the expectation that apparent individual differences between nurses on this learning style dimension exist.

**Conclusion and discussion**

In this study, we investigated mental aspects of on-the-job learning style dimensions that can create a reasonable awareness among nurses, offering opportunities for the improvement of their on-the-job learning. Regarding the importance and face validity of on-the-job learning style dimensions in the nursing profession we can conclude that most interviewees consider the reflection dimension as most useful for nurses to be aware of. Also the face validity of this dimension was the highest. Due to perceived job
characteristics, such as protocol use in hospitals, leading to low job-control, the interviewees felt that nurses do not always have possibilities to develop holistic, analytic, or developmental learning strategies (cf. Bandura, 1997). The interviewees’ thoughts and interpretations of these strategies are ambiguous. Therefore, the usefulness of awareness of these dimensions is still ambiguous. We can conclude that the face validity of these dimensions is low. But what implications may we derive from these findings? Do they mean that it is not useful to make nurses aware of these dimensions? Or do they mean that the awareness of these dimensions in the nursing profession is low, and that, based on theoretical grounds, it is useful to make nurses aware of precisely these dimensions? This is an interesting question that could be answered in future research.

In this study, we interviewed supervisors and educators, who are regarded as experts on nurses’ on-the-job learning, about nurses’ learning strategies. This approach provided many insights, but it would be good to verify the outcomes in future research by interviewing nurses themselves. Further, it would be interesting to conduct similar studies in other professions, in order to investigate whether the on-the-job learning styles we distinguished can be elaborated differently and have different significance in different professions and which common grounds can be derived. The results of this study provide many opportunities for researchers to develop instruments to identify nurses’ on-the-job learning styles. Supervisors, mentors, coaches, and other HRD-professionals can use such instruments to make nurses aware of their learning styles and improve their on-the-job learning.

References


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