

# Chapter 4

## Competence and Professional Expertise

Arnoud T. Evers and Beatrice I.J.M. van der Heijden

### 4.1 Introduction

The performance of our society as a whole is largely the result of the existence of multiple coherent working systems in which competent employees display their knowledge and skills in different kinds of jobs and in different working settings and are able to compete with important counterparts. Each professional person, as such, must possess a certain degree of expertise in his or her specific job domain. Confidence in professional people – teachers, secretaries, librarians, surgeons, psychiatrists, pharmacists and lawyers, for instance – is based to a great extent on the assumption that these people know what is best in terms of their own profession and that it is in outsiders' best interests to accept their opinion.

Where it is impossible for a person to function competently, for example, owing to a deficient physical or mental condition or a situation of diminished responsibility, there is an even greater need to rely on specialist third parties. Take, for example, the patient's dependency on medical specialists in the case of life-threatening injuries. Moreover, the pace of everyday life forces us to make so many choices and decisions that we have no alternative but to defer to experts, relying on their

---

A.T. Evers (✉)

Welten Institute, Research Centre for Learning, Teaching and Technology,  
Open University of the Netherlands, Heerlen, The Netherlands  
e-mail: [arnoud.evers@ou.nl](mailto:arnoud.evers@ou.nl)

B.I.J.M. van der Heijden

Radboud University, Institute for Management Research, Nijmegen, The Netherlands

Open University of the Netherlands, Heerlen, The Netherlands

Kingston University, London, United Kingdom

knowledge and experience to compensate for our own limited time and range of capabilities.

In business and in the service sector, expertise is assumed to be the norm and at the same time taken for granted, in blissful ignorance of the obstacles that have to be overcome to attain the level desired. The road one has to take to get there is frequently full of impediments. Of course, individuals differ considerably, and it is not necessary for every single person to be in the group of top performers in his or her specialist domain. Furthermore, there are great differences in the complexity of each domain of expertise.

In some domains this complexity can be partly compensated for by devices such as statistics and other tools, including computer programmes, technological aids, computerised memory systems, simulation techniques, etcetera. But still the fact remains that the possibilities these aids provide are restricted and one is always confronted with situations in which one is dependent on the 'human expert', that is to say, the person with the know-how to overcome the constraints and negative aspects that are inherent in the aids used and who is able to draw on the necessary skills and make a personal creative contribution in order to solve the problem in question. Nowadays, one of the most important problems in the domain of personnel management is to find out whether influential factors can be detected that stimulate or hinder the development of individual employees throughout their career. Throughout the last three decades, career researchers have focused on the idea of development throughout one's career, taking into account age-related problems (see Van der Heijden 1998 for a review on this topic). This attention shows the growing concern about the development of professional expertise throughout the working life. Literature also reveals that learning of professionals in practice is getting more important (Cheetham and Chivers 2001).

In this chapter, both 'competence' and 'professional expertise' are dealt with and used interchangeably, referring to the personal qualities and capabilities that are needed in the present-day workforce (Van der Heijden 1998). Competence involves not only ability but also the allocation and acceptance of responsibility in one's job. This responsibility is not logically inherent to one's expertise, but it is probably an indispensable condition for learning or gaining expertise. Therefore, it is essential for an organisation to have at its disposal people who are able to bear responsibility and whose interaction supplies the organisation with the expertise needed. Moreover, an increased expertise development is only possible in case management regards investments in a certain employee as profitable.

Furthermore, professional expertise can only achieve its potential in a situation where an employee is able to exploit or sell the knowledge and skills with which he or she is equipped and where the degree of intensity, amount of time available, degree of difficulty of the task and the amount of personal responsibility are sufficiently challenging. For example, gifted people not given the opportunity to employ their faculties tend not to be regarded as experts. This is why professional competence and professional expertise are interpreted as having the same meaning, namely, expertise at work. The next section will go into profound concept analyses regarding the terms competence and professional expertise.

## 4.2 Defining the Concept of Competence and Professional Expertise: Towards a Conceptualisation

Theoretical and empirical controversy abounds with regard to the understanding and potentials of the concept of expertise. The problem of definition is further complicated by the different qualifications in use for somebody who can exhibit expert behaviour. Some examples are a person of genius, or one who is talented, gifted, competent, prodigious, capable, excellent and proficient, to mention only a few. The divergent meanings attached to the concept of expertise create great confusion, mainly owing to the domain-specific character of expert behaviour (cf. Curtis 1986; Logan 1985; McLagan 1997).

Moreover, even within one specific domain, different definitions were sometimes used, depending on the prevalence of research approaches. As a generally accepted operationalisation of the concept was missing, Van der Heijden (1998) started her scholarly research with working at an operationalisation of the person-related concepts of 'competence', 'expertise' and 'being an expert'. Both what a person *knows* and what a person actually *does*, revealed by his or her overt behaviour, were taken to be the key issues in studying professional expertise. Following the line of thought that has been explained previously, competence and expertise are generally used interchangeably for the same (psychological) attribute. For the meaning of competence, please see the first chapter of this volume, in which its conceptualisation is thoroughly addressed. The meaning that is given to *expertise* (Sinclair 1992, p. 495) is 'special skill or knowledge that is acquired by training, study, or practice: a formal word. For example ... his professional expertise ... the technical expertise of the two Spanish firms'. Similarly, an *expert* is specified as 'a person who is very skilled at doing something. For example, what an expert can do in minutes takes you hours ... experts in various skills ... Experts were called in to dismantle the bomb'. And as 'a person who has studied a particular subject and knows a lot about it. For example, ... an expert on Eastern philosophy ... the financial expert who writes in The Times ... experts in obscure subjects ... Experts say the company will fail'. 'Someone who is *expert* at doing something is very skilled at it. For example, only expert acrobats can master these activities ... They have to be expert at dealing with any problems that arise'. 'If you say that someone has *expert* hands or an *expert* eye, you mean that they are very skilful or experienced in using their hands or eyes for a particular purpose. For example, he rubbed his expert hands over the wound ..., ... not noticeably except to the expert eye ... He ran an expert eye over the photographs'. '*Expert* advice, opinion, or help is advice, opinion, or help that is given by someone who has studied a subject thoroughly or is very skilled at a particular job. For example, we would like an expert opinion ... Get expert treatment from a specialist ... The appliance needs expert attention'.

*Expertise* (Merriam-Webster 1975, p. 403) is also described as 'expert opinion or commentary' or 'skill in a particular field', for example, technical know-how. Correspondingly, *expert* is the indication of someone who is 'experienced' and 'having, involving, or displaying special skill or knowledge derived from training or

experience'. A second specification is summarised as 'one who has acquired special skill in or knowledge of a particular subject (authority)'. Finally, the word is used in sentences such as '... to serve as an expert for ...' and 'to serve as an expert'.

In the next paragraphs, there is a discussion of the definitions and comments from the relevant literature on these matters. Both information on competence on the one hand and on expertise and experts on the other have been included (see Appendix 1 in Van der Heijden 1998 for a full overview of definitions and descriptions of characteristics grouped, firstly, according to three definition levels, and, secondly, five sets of views or notions concerning professional competence or expertise).

In her aim to come up with a measurement instrument for professional expertise, Van der Heijden (1998) focused on individual competence or attributes of individuals, consisting of professional knowledge and skills. During the analysis, a possible subdivision of individual competence definitions and descriptions into five sets of views or notions emerged.

According to the first view, professional expertise is seen as an attribute of individuals who possess a vast amount of relevant knowledge. The second view is founded on the idea that professional experts are aware of their own performance and are able to rationalise it. They have, so to speak, metacognitive knowledge. The notion of a high amount of skills comprises the third view. Professional experts possess capacities, apparent from their overt behaviour, to perform qualitatively well in their domain of expertise. They sometimes even surpass the norms set by their superior. According to the fourth view, the expectations and recognition of a professional are central, signifying the credit that is attached to his or her achievements. A fifth view of the concept focuses on the difference between domain specificity and capabilities that exceed specific fields of expertise. In other words, it relates to the aspects of growth and flexibility. Following this perspective, the changeability of one's expertise is emphasised, negating a static view of expertise.

Five dimensions of individual expertise can be distinguished on the basis of the five views or notions that have been explained above: (1) knowledge, (2) metacognitive knowledge, (3) skills, (4) social recognition and (5) growth and flexibility.

In the light of Van der Heijden's (1998) aspiration to isolate the ingredients for the operationalisation in terms of measurement scales in the instrument, categorising the different definitions and descriptions on the individual level has proven to be extremely useful. Before her endeavour, only speculative remarks regarding the possibility of finding common ingredients of expertise have been made (Spencer and Spencer 1993) (see Van der Heijden 1998 Appendix 2 'Different views on expertise and experts' and Appendix 3 'Generalizations regarding the phenomenon of expertise' for more elaborate literature overviews).

The fifth dimension on the changeability of professional expertise instigated our work on the *development* of professional expertise and professional development, as will be discussed in the next section.

As such, from reviewing relevant literature, it was concluded that expertise is a multidimensional concept. It follows that a multidimensional operationalisation of professional expertise must comprise the different types of knowledge inherent in a

certain professional field. These different types of knowledge are *declarative* knowledge ('knowing that'), *procedural* knowledge ('knowing how') and *conditional* knowledge ('knowing when and where or under what conditions') (Alexander et al. 1991).

This first dimension by which professional expertise was operationalised was therefore termed the *knowledge dimension*, which is closely related to the second dimension called the *metacognitive knowledge dimension* (i.e. knowing about knowing or knowing that one knows). This dimension, which has to do with self-insight or self-consciousness, is known in the literature by a number of different labels: metacognitive knowledge, meta-knowledge, executive control knowledge, self-knowledge, regulative knowledge and metacognitive strategic knowledge, to mention but a few.

The third dimension referred to the particular skills an employee needs to perform requirements for professional tasks. Once the activities and responsibilities have been defined, it became clear which skills were necessary to perform a given job. A person can only be referred to as an expert if his or her overt behaviour demonstrates the capacity to perform qualitatively well in a particular domain. This third component of professional expertise was termed a *dimension of skill requirement*.

The three dimensions outlined so far are fairly commonplace to earlier conceptualisations of the construct of expertise (e.g. Bereiter and Scardamalia 1993; Chi et al. 1988; Ericsson 1996; Ericsson and Smith 1991). However, the opinion that expertise is fully explained by these three dimensions is not shared by all researchers (Boerlijst et al. 1996). Measurement of cognitive abilities and skills is not enough to fully cover the construct of professional expertise (Ericsson and Lehman 1996; Trost 1993). Motivational aspects and self-insight, as well as social skills, social recognition and growth capacities are important variables that interact and moderate. That is to say, there is a compelling reason for proposing a broader type of measurement in which cognitive abilities and overt skills play an explicit, but partial role (Van der Heijden 1997). Thus, there is a need for alternative perspectives in order to measure expertise effectively.

Expertise can only exist by virtue of being respected by knowledgeable people in the organisation. There are a number of individuals who have a vast amount of knowledge and/or skills. However, not all of them can be considered as highly skilled or as experts, owing to a lack of social intelligence, communicative skills and so on. This fourth important aspect of professional expertise can be labelled the *dimension of acquiring social recognition*. For the development of professional expertise, it is essential to be recognised as a promising employee. From an earlier study, it was concluded that the possibility to experience further development correlates closely with the reputation a person has within the organisation (Boerlijst et al. 1993).

A fifth dimension that was added to the conceptual framework was the *dimension of growth and flexibility*. Individuals who are capable of acquiring more than one area of expertise within adjacent or radically different fields or who are capable of acquiring a strategy to master a new area of expertise or expert performance in another territory can appropriately be termed 'flexperts' (Van der Heijden 1996).

These are people who are both flexible and in the possession of expertise at the same time. However, without a certain amount of perseverance, there is no continuity in the classification of an employee as expert. Achievement orientation is ‘a concern for working well or for competing against a standard of excellence’ (Spencer and Spencer 1993, p. 25).

Therefore, each of the five measurement scales that are aimed to cover the five distinguished dimensions of professional expertise, with the exception of the social recognition scale, contains one to three items concerning the dynamic component of *achievement orientation* as possessed by the employee. In the dimension of knowledge, one item refers to achievement orientation. The metacognitive knowledge dimension contains two items, and the skill dimension and the dimension of growth and flexibility contain three items regarding ‘the level of perseverance’ (Van der Heijden 2000, p. 11–12).

Thorough psychometric validation studies indicated that the domain-independent multi-trait (employee version and supervisor version) measurement instrument for professional expertise is valid and reliable (Van der Heijden 2000). The instrument has proven to be useful as a means of identifying professional expertise and expert performance and finding individuals who need support to improve and excel further. The scales have also been used as a research instrument in studies of professional development (Evers et al. 2011a, b; Heerkens et al. 2011; Njoku et al. 2010).

### 4.3 Stages of Competence or Professional Expertise

In addition to literature that focuses on *defining* competence or professional expertise, as discussed until now, an important stream of research focuses on different stages or levels of expertise (e.g. Boydell 1990; Cornford and Athanasou 1995; Dreyfus and Dreyfus 1986; Kose and Lim 2011). Dreyfus and Dreyfus (1986) discerned five stages of becoming an expert (see also in Cheetham and Chivers 2001 and Eraut 1994):

1. Novice. In this stage there is a rigid adherence to taught rules or plans and there is little situational perception and no discretionary judgement.
2. Advanced beginner. Guidelines for action are based on attributes or aspects; situational perception is limited; all attributes and aspects are treated unconnected and given identical importance.
3. Competent. The person can cope with overcrowding, can see actions at least partly as longer-term goals, is able to plan consciously and deliberately and can apply standardised and routinised procedures.
4. Proficient. The person sees situations holistically and not in terms of aspects, sees what is most essential in a situation, sees deviations from the normal pattern, makes decisions with less labour and uses maxims for direction whose connotations differ according to the situation.
5. Expert. The person no longer depends on rules, guidelines or maxims; has an intuitive grip of situations established on deep, tacit understanding; has analytical methods used only in new situations; and has a vision of what is possible.

Dreyfus and Dreyfus (1986) see learning from experience as the main ingredient of transition through the various stages. Correspondingly, Kose and Lim (2011) used a similar although simpler model to measure teachers' self-reported expertise: they distinguished between the following four categories: novice, intermediate, advanced and expert.

The Dreyfus and Dreyfus (1986) model has been criticised for being too stratified and hierarchical (Cheetham and Chivers 2001). After all, an individual may display certain characteristics from several stages or levels at the same time. It is also possible that different individuals have a usual inclination towards either intuitive or analytical styles of problem-solving and decision-making. Apart from this criticism, which in our view applies to most models, the stages show that it takes a considerable amount of time to become an expert in the field. Cornford and Athanassou (1995, p. 12) stated: 'The attainment of a level of expertise in highly skilled professions will generally not be attained before a minimum of 5 years in that speciality and there is ample evidence that 10 years may be typically the norm'. Although Cheetham and Chivers (2001) mentioned that the authors do not elaborate upon what they exactly mean by 'ample evidence', other authors also mention this ten-year rule: at least 10 years of study and practice in a field are required to achieve expertise (Ericsson et al. 1993; Simon and Chase 1973). However, it is not only the invested time in practice that matters in reaching an expert level of performance. Ericsson et al. (2007) concluded that research shows that the making of an expert is the product of years of *deliberate practice and coaching*, not of any innate talent or skill. Deliberate practice is a particular kind of practice to develop expertise. It is not about focusing on the things people already know how to do. Instead, it is about considerable, specific and sustained efforts to do something you *can't* do well yet – or even at all. Deliberate practice is defined as 'expanding intentional efforts to achieve further improvement through focused, concentrated, well-structured, programmatic, and goal-oriented practice' (Chi 2011, p. 28; Ericsson and Lehmann 1996). Research across domains indicates that only by working at what you can't do well yet will turn you in the expert you want to become (Ericsson et al. 2007). In addition to deliberate practice, the type and quality of the development activities engaged in matter as well in case one aims to reach an expert level of performance (Van de Wiel and Van den Bossche 2013). These aspects of development activities will be dealt with after the next section about the necessity for expertise development. As professional expertise and competence are interpreted to have the same meaning, only reference to professional expertise is made in the remainder of this chapter.

#### 4.4 The Need for Professional Expertise Development

Being an expert and maintaining one's expertise are by no means an easy task. However, the potential of a given organisation to perform optimally in global markets depends on the capability to develop, cultivate and maintain fundamental



qualifications. Added to this is the fact that these qualifications are continuously changing at an ever-increasing rate. There are three fundamental tendencies underlying these changes.

Firstly, there is the emergence of the information society which in fact entails ongoing industrial revolution producing substantial changes in job content. This means that the speed of thinking that is required from an individual employee is constantly increasing. The second change is the internationalisation of the economy which means an ever-growing acceleration of knowledge exchange on a global scale. Thirdly, scientific and technological progress implies a continuous need to update one's expertise. Consider, for example, the large-scale influx of computers, the information explosion and the exponential increase in technical knowledge. A characteristic of the above-mentioned changes is that not only do they produce new expertise needs but, at the same time, they create new opportunities for learning. The qualifications that are required for a job are becoming increasingly complex, but, simultaneously, the 'half-life' of these qualifications is becoming increasingly shorter. Job requirements need constant replacement and adjustment because of the danger of becoming outdated.

Individuals who are able to survive and satisfy the needs of the new organisation are the ones with not only the most up-to-date knowledge and skills but also the capability to continuously build up the new expertise requirements. Thus, achieving flexibility in functioning, or adaptive expertise, over and above so-called routine expertise (see Hatano and Inagaki 1986 for thorough conceptualisations of both concepts) seems to be the key criterion that enables an employee to stay in the race. Routine experts are 'able to complete school exercises quickly and accurately without understanding', whereas adaptive experts have 'the ability to apply meaningfully learned procedures flexibly and creatively' (Hatano 2003, p. xi). Bohle-Carbonell et al. (2014) call for more research into the differences between adaptive and routine expertise, its dimensionality and the development of adaptive expertise. That is to say, additional insights into how to design learning environments and tasks that support its further growth are needed. Adaptive expertise allows employees to perform at a high level in the face of changing job requirements and work methods, herewith differentiating it from routine expertise. Having an expert level of functioning entails using schemas, selective attention, chunking information, automaticity and more reliance on top-down information. These mechanisms allow experts to perform quickly and efficiently; however, at the same time, they restrict flexibility and control, which may cause the experts to miss and ignore important information and introduce tunnel vision and bias, to mention but a few effects that may degrade their performance (Dror 2011, p. 177). These effects can be noticed across a wide range of professional domains, herewith stressing the need for more insights into possible ways of continuously developing one's professional expertise across professional settings, in order to actively prevent leaning on routines only and to stimulate the growth of adaptive expertise. Given the above-mentioned increased need for flexibility in the workplace, adaptive expertise is more and more key in the light of one's future employability (Van der Heijde and Van der Heijden 2006). To summarise:



there is an ever-increasing need for expertise development. But how can expertise exactly be developed? What forms of learning can be discerned?

## 4.5 Professional Expertise Development

Professional expertise, as has been discussed in the previous section, can be seen as *what* is being learned. In this section an exploration will follow of *how* one learns and, more specifically, how one learns from different forms of learning: formal, non-formal and informal. Characteristics of these types of learning will be discussed, but the actual design principles will not be elaborated on (e.g. with regard to formal learning, the actual curriculum design). This is left to other authors in chapters in this volume to explore. Traditionally, interest (in practice as well as in research) has focused on formal (professional) learning or education, while interest in non-formal and informal (workplace) learning has only increased since the beginning of the 1990s (Tynjälä 2008). This latter increase can be partly explained by the rapid change in society and working life, the rapid development of information and communications technology and the increasing internationalisation and globalisation which have challenged educational institutions and work organisations to ensure that the workforce is able to meet these challenges (Tynjälä 2008). Another reason for an increase in this interest in non-formal and informal learning is related to the problems encountered in transferring what has been newly learned during formal learning activities to the workplace (Baldwin and Ford 1988).

Formal learning consists of participation in formal training and development programmes in educational institutions and in-service training programmes. In-service training can be seen as formal learning opportunities across the career cycle (Richter et al. 2011). But a rising trend can also be seen in following formal programmes in educational institutions (e.g. master programmes and other structured learning environments with a specified curriculum) as formal learning opportunities across the career. An often heard strength of formal education is that it is aimed to produce general skills that *may* be applied and transferred to a variety of situations (Tynjälä 2008). A problem however is *how* the newly learned could be transferred to the workplace.

Apart from formal learning, non-formal and informal learning can be distinguished. Non-formal learning refers to intentionally organised learning activities related to work, for example, mentoring (Tynjälä 2008) or intentional practicing of certain skills in learning projects (Poell 2006). With regard to mentoring, interaction between novices and experts is crucial for learning at work. In the process of mentoring, one can distinguish between direct or close guidance and indirect guidance (Billett 2004). This kind of guidance is relevant to obtain knowledge that would be hard to learn without the support or assistance of a more knowledgeable and experienced partner. Poell (2006) developed a model of learning projects that have the specific intention to learn and to improve work at the same time. In these projects employees learn something new by resolving work-related problems. Poell (2006)

has shown in his empirical studies that in these kinds of projects, participants are indeed able to develop their competencies and at the same time improve their work.

Informal (incidental) learning is not highly structured and often takes place as a side effect of work (Tynjälä 2008). This type of learning comprises implicit processes that lead to the acquisition of knowledge without any explicit awareness or conscious effort of what has been learned. These implicit processes result into the kind of tacit knowledge on which people, for example, make decisions apparently intuitively (Reber 1993). Informal learning suggests flexibility or freedom for learners, distinguishes the social significance of learning from other people and takes place in a much wider variety of settings than formal education or training (Eraut 2004). Investigating informal learning is not without problems, as informal learning is either taken for granted or not recognised as actual learning (Eraut 2004).

Although informal learning is difficult to investigate and the categorisation between non-formal and informal learning is not without problems, these types of learning are assumed to be highly important learning activities which can be complementary to formal learning and need to be acknowledged. Indeed, nowadays, there is more attention in organisations for learning that is embedded in work activities, and that is linked to innovation of products, services and work processes (Van der Klink 2011). However, a difficult question for organisations seems to be which organisational conditions are important for these non-formal and informal learning activities to have the desired effect, namely, an increase in professional expertise development. In the next section, this will come back.

Before going to the next section, about organisational conditions, now a concrete example of a professional field will follow, i.e. the teaching profession, which can serve as an illustrative profession, where professional expertise development is more important than ever. Nowadays, teachers, specifically those in primary and secondary schools, need to be prepared for changing demands stemming from expanding knowledge fields (e.g. ICT developments), more varied student and pupil populations, new responsibilities and higher social expectations of schools (OECD 2005). In order to be well prepared for these demands and challenges, teachers' expertise development is crucial and has become a vital concern for schools in many countries worldwide (Commissie Leraren 2007; National Staff Development Council 2009; OECD 2009). Teachers' expertise development is closely related to another concept which can be found in the literature: teacher professional development (TPD). One could say that TPD has a somewhat broader scope than teachers' expertise development, although the definition of TPD is very similar: 'The process by which teachers acquire the knowledge, skills and values which will improve the service they provide to clients' (Hoyle and John 1995, p. 17). This process comprises teachers' participation in the aforementioned formal, non-formal and informal professional learning activities.

Worldwide, many policy initiatives have been taken to stimulate TPD. For example, in the United States of America, many states have accepted standards to stress expectations that all teachers have to engage in effective professional development (Darling-Hammond et al. 2009). In a similar vein, across Europe, countries are seeking ways to offer opportunities and incentives for ongoing professional devel-

opment throughout the career (OECD 2005). There is even improvement in the supply and diversity of professional development including formal, non-formal and informal learning activities (Commission 2010). Especially for non-formal and informal learning activities, it is crucial to focus on beneficial organisational conditions.

## 4.6 Organisational Conditions for Professional (Expertise) Development

Besides organisational conditions, there are other types of conditions, which are relevant for professional (expertise) development, for example, at the macro level (the *likelihood of losing one's job, support from outside the workplace*), characteristics of the *learning activity* itself and socio-demographic characteristics (like *initial level of education*) (Kyndt and Baert 2013). Personal characteristics are also essential in this regard (Billett 2004; Kyndt and Baert 2013; Tynjälä 2008). While organisational conditions set the context and conditions for learning, it is a reciprocal interaction between the individual and the workplace or organisation that determines learning (Billett 2004; Tynjälä 2008). For example, a positive *attitude* towards learning and *self-efficacy* (Kyndt and Baert 2013), the latter defined as the confidence in one's capability to activate resources to meet situational demands (Bandura 1977), are crucial determinants for professional development to take place. That being said, it seems that particularly organisational conditions can be influenced by, for example, HRD professionals and directors, and therefore it is interesting to elaborate on particularly these conditions.

Previous work investigated organisational conditions for *professional development* (Eraut 2004; Evers et al. 2011a; Kwakman 2003; Kyndt and Baert 2013; Opfer and Pedder 2011; Sambrook 2005), although some studies also focused on the predictive validity of organisational conditions for *professional expertise development* (Van der Heijden 2001; Van der Heijden 2002; Van der Heijden 2003; Van der Heijden 2006). In both cases these studies focus on the conditions for development or learning.

Kyndt and Baert (2013) performed a systematic review study on the antecedents of employees' involvement in formal and informal learning activities, both on and off the job, whereby employees and groups of employees acquire and/or improve competencies (integrated knowledge, skills and attitudes) that may change their present and future professional achievement and organisational performance. At the organisational level, they distinguished two categories. The first category of antecedents that was dealt within their analyses refers to the characteristics of the organisation. The *firm size*, for example, appeared to be positively related to participation in especially formal learning activities, but also to informal learning activities. Several empirical approaches that were included in their review examined differences between organisations in different *sectors, industries* and *departments*.

Although some studies did not find differences between sectors, others did find that employees in the public and non-profit sector participated more in formal learning activities in comparison to those in the private and profit sector.

The second category of antecedents dealt with organisational variables or factors (Kyndt and Baert 2013). The first factor, which has been investigated by a lot of researchers, is (organisational) *support*. A majority of studies as discussed in Kyndt and Baert (2013) found organisational support to be positively related to participation in development activities. The *learning climate or culture* was also found to relate positively to participation in learning activities. A positive learning climate or culture is defined as an organisational climate that values, supports and appreciates work-related learning. Moreover, within informal learning, a culture of feedback plays an important role. A *company policy* that facilitates participation in learning and development activities and a *staffing strategy* that focuses on the internal (from within the organisation) development of expertise were also found to be positive predictors for development to take place. Another important organisational factor appeared to be the different *opportunities* for learning an organisation offers to their employees. For example, the availability of development resources [learning materials and time, see also Sambrook (2005)] related positively to on-the-job learning. Similarly, learning opportunities at work correlated positively with informal learning success. Another example of opportunities for learning are the possibilities for collegial feedback, which was an important variable for participation in various kinds of informal learning activities. Similarly, Fuller and Unwin (2003) addressed the significance of an appropriate context to maximise learning opportunities, which they call expansive learning environments (opposed to restrictive environments). In such an environment, employees are enabled to participate in communities of practice, have opportunities for personal development and are offered enough institutional arrangements.

Apart from opportunities for learning, Eraut (2004) found *expectations of performance and progress* to be an important condition for informal learning in the workplace. He stated that the informal role of managers is probably more important in this context than their formal role. Finally, Kyndt and Baert (2013) presented the influence of *organisational change*, although no clear conclusion could be drawn about whether organisational change as such influences the participation in development activities.

A very specific organisational factor, which can also be perceived as a separate category (Evers et al. 2011a; Kwakman 2003; Kyndt and Baert 2013), refers to task or job characteristics. For example, *participation in decision-making* was related to participation in learning activities (Kwakman 2003; Kyndt and Baert 2013). Another example is the role of *job demands* and *job control* in participation in development activities. Some studies that were taken up in the review work by Kyndt and Baert (2013) showed that job demands are positively related to work-related development. One study showed that job control was moderately positively related to work-related learning. The results of another study showed that most learning occurs when both job demands and job control are high. Finally, the so-called learning value of the function (the latter defined as ‘the value which the function has as a

nutrient for the employee's further professional development') (Boerlijst et al. 1993, p. 57) is another important example of a task or job characteristic that has proven to have predictive value in the light of one's further development (Van der Heijden and Bakker 2011). As an illustration, now the chapter will go back to a specific example of a professional field, the teaching profession.

In addition to the above-mentioned factors, Evers et al. (2011a) discussed two factors based on their literature study which were explicitly important in the teaching profession. First of all, the extent of *trust* in a school was considered to be relevant. Trust was described as one party's willingness to be vulnerable in the relationship with another party (colleagues, the school head and parents), based on the assurance that the latter party is benevolent, reliable, competent, honest and open (see also Tschannen-Moran 2001).

The second factor they added and which receives more and more attention nowadays as being a crucial factor for enhancing professional (expertise) development in school environments is *transformational leadership*. In the last two decades, a shift has taken place from 'transactional' leadership, wherein the exchange relationship between leaders and teachers is important (effort and productivity in exchange for rewards), to 'transformational leadership', which is characterised by leaders having the ability to give a clear vision for the future, to inspire employees, to stimulate employees to develop their talents in the best possible way and to give their work a deeper meaning (De Hoogh et al. 2004). Also from empirical work, transformational leadership appeared to be an important predictor for professional development of teachers (Geijsel et al. 2009; Runhaar, 2008).

## 4.7 Conclusions

The pace of everyday life forces people to make choices and decisions where there is no alternative but to defer to experts, relying on their expertise to compensate for our limited time and range of capabilities. Each professional person must possess a certain degree of expertise in his or her specific job domain. This is necessary to enable their own further career growth, but also to stimulate outsiders of their own profession, so-called laypersons, to accept their opinion and to have faith in their professional approach.

More and more, vocational preparation can only partly provide one with the necessary knowledge and skills' bases, and life-long learning is necessary to 'stay in the race'. Indeed, professionals' learning is getting more important. However, nowadays, one of the most significant difficulties in the domain of personnel management is to find influential factors that stimulate or hinder the development of employees throughout their career. First, periodic monitoring of one's competence base is the only way to survive and meet current labour market requirements and to provide the necessary input to fine-tune learning activities. In order to do so, organisations should make use of performance appraisals, such as the one that has been advocated in this study, that have proven psychometric qualities (i.e. reliability and

validity). After a careful registration of the amount of competence or professional expertise, management needs to invest in the maintenance and further development of employees. At the same time, organisations need employees who bear responsibility and whose interaction supplies the organisation with the expertise needed.

In this chapter, the text started with conceptualising competence and professional expertise and advocated these concepts to have the same meaning, namely, expertise at work. In conceptualising competence and professional expertise, the focus was on individual-level definitions, that is, on individual competence or attributes of individuals. Following this approach, a possible subdivision into five sets of views or notions emerged. First of all, professional expertise is seen as a characteristic of individuals who possess a large amount of relevant knowledge. Second, metacognitive knowledge is important. This is based on the idea that professional experts need to be aware of their own performance and need to be able to rationalise it. The idea of a high amount of skills comprises the third view. Fourth, recognition of a professional is crucial, signifying the recognition for his or her achievements. Fifth, it is not only important to be an expert in one's own domain but also to exceed specific fields of expertise. This relates to the aspects of growth and flexibility. On the bases of these five notions, five dimensions of individual expertise can be distinguished: (1) knowledge, (2) metacognitive knowledge, (3) skill requirement, (4) social recognition and (5) growth and flexibility (Van der Heijden 2000). The last notion instigated our work on the *development* of professional expertise. Thorough psychometric validation studies proved that the domain-independent multi-trait (employee version and supervisor version) measurement instrument for professional expertise had good psychometric qualities and provides a promising tool for further empirical work (Van der Heijden 2000). In addition to defining competence and professional expertise, also the stages of competence or professional expertise were discussed in this chapter, before elaborating on the need for *development* of professional expertise.

Currently, there is an urgent need for continuous development as qualifications and professional expertise requirements are continuously changing at an ever-increasing rate. There are three fundamental tendencies which cause these changes: (1) the rise of the information society, (2) the internalisation of the economy (globalisation) and (3) scientific and technological progress. Individuals who can survive and satisfy the needs of the new organisation are the ones with the most up-to-date knowledge and skills, but who also have the capability to continuously build up new expertise requirements. This means keeping abreast of new developments, continually fine-tuning one's expertise and fighting against rapid obsolescence. Employees can do this by working on their professional expertise development.

In this chapter, *development* was categorised into three forms or ways of learning: formal, non-formal, and informal professional learning. Subsequently, characteristics of these types of learning have been discussed, but not the actual design principles (e.g. curriculum design), which will be left for other authors in chapters in this volume to explore. Non-formal and informal learning activities may be complementary to formal learning and need to be recognised. Indeed, Evers (2012) recently found indications that these kinds of activities for teachers potentially even



reinforce each other. A difficult question for organisations remains: which organisational conditions are important for non-formal and informal learning activities to take place?

Following the outline of the different types of learning, the focus was upon a specific professional field, i.e. the teaching profession, where continuous professional development is more important than ever, as teachers need to be prepared for changing demands stemming from expanding knowledge fields, more varied student and pupil populations, new responsibilities and higher social expectations of schools. It was argued that *professional* development has a somewhat broader scope than *professional expertise* development, although the concepts are very similar, also in their definitions. Unfortunately, a lot of teachers are dissatisfied with the quality and outcomes of professional development and critically reflect on possibilities for improvement (Czerniawski 2013). Concrete experiences teachers most value are with, and from, their peers in informal groups, and not school-based training activities, which they often found 'pointless', 'wasteful' and 'forgettable'.

The final part of this chapter focused on organisational conditions for professional (expertise) development. Although other conditions, for example, at the macro level, learning activity level and personal characteristic level are also deemed to be important, the focus was on organisational conditions as these can be most easily influenced and changed by, for example, directors, HRD professionals and other stakeholders. First, at the organisational level, two categories were distinguished: characteristics of the organisation and organisational variables or factors. Important characteristics of the organisation were *firm size* (which is positively related to professional development) and differences between *sectors*. With regard to organisational factors, the following appeared to be important: (organisational) *support, learning climate or culture, company policy* that facilitates learning and development, *opportunities* for learning an organisation offers to their employees and *expectations of performance and progress*. Finally, task or job characteristics are relevant for professional development, like *participation in decision-making, job demands, job control* and *learning value of the function*. In addition to the mentioned organisational factors, two factors seemed especially important for the teaching profession: *trust* in school and *transformational leadership*.

In the context of discovering lacks in one's professional abilities, the distinction in five dimensions of professional expertise has proven to be fruitful. Once employees and management have more insight into the employees' scores for the five dimensions, it is known to guide the individual career development, where necessary, in order to improve the capabilities of the employee in question and to fill up consisting expertise gaps.

To conclude, although factors that are generalisable across a wide range of working contexts were looked into, their relative significance and how these factors interact will vary from one context to another and are sometimes counterbalanced by an opposing one. For example, control (or autonomy) and administrative direction, shared assumptions and diversity of opinion are all necessary (Opfer and Pedder 2011). Therefore users and researchers should collect evidence and information from their own context, before drawing any firm conclusions about which factors



are important and how these interact in their context. This kind of evidence can exist out of quantitative (e.g. surveys) or qualitative (e.g. interviews) data and other relevant documents via desk research. Moreover, the more diverse working population; the increasing importance of other areas in life, such as ‘quality time’ with family and friends, leisure, difference in coping style and personality; and the increasing individualisation, to mention but a few, urge management to prevent thinking in categories regarding, for instance, retirement age, professional development peaks, career success and learning needs. Employees have totally different ideas on and answers to professional development-related questions and need to be supported in fulfilling their individual aspirations, further developing their capabilities and meeting their expectations with regard to work and personal development.

## References

- Alexander, P. A., Schallert, D. L., & Hare, V. C. (1991). Coming to terms: How researchers in learning and literacy talk about knowledge. *Review of Educational Research*, 61(3), 315–344.
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, 41(1), 63–105. doi:10.1111/j.1744-6570.1988.tb00632.x.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
- Bereiter, C., & Scardamalia, M. (1993). *Surpassing ourselves. An inquiry into the nature and implications of expertise*. Chicago: Open Court.
- Billett, S. (2004). Learning through work: Workplace participatory practices. In H. Rainbird, A. Fuller, & A. Munro (Eds.), *Workplace learning in context* (pp. 109–125). London: Routledge.
- Boerlijst, J. G., Van der Heijden, B. I. J. M., & Van Assen, A. (1993). *Veertig-plussers in de onderneming* [Over-forties in the organisation]. Assen: Van Gorcum/Stichting Management Studies.
- Boerlijst, J. G., Van der Heijden, B. I. J. M., & Verhelst, N. D. (1996, August 4–8). *The measurement of expertise*. Paper presented at the Fourth Asia Pacific Conference on Giftedness, Jakarta. Optimizing Excellence and Human Resource Development, Theme. Organised by the University of Indonesia, Faculty of Psychology and the Indonesian Foundation on Education and Development of Gifted Children.
- Bohle-Carbonell, K., Stalmeijer, R. E., Könings, K. D., Segers, M., & van Merriënboer, J. J. (2014). How experts deal with novel situations: A review of adaptive expertise. *Educational Research Review*, 12, 14–29.
- Boydell, T. (1990). *Modes of being and learning: Working paper no. 8*. Sheffield: Transform.
- Cheetham, G., & Chivers, G. (2001). How professionals learn in practice: An investigation of informal learning amongst people working in professions. *Journal of European Industrial Training*, 25(5), 247–292.
- Chi, M. T. (2011). Theoretical perspectives, methodological approaches, and trends in the study of expertise. In Y. Li & G. Kaiser (Eds.), *Expertise in mathematics instruction* (pp. 17–39). New York: Springer.
- Chi, M. T. H., Glaser, R., & Farr, M. J. (Eds.). (1988). *The nature of expertise*. Hillsdale: Lawrence Erlbaum Associates.
- Commissie Leraren. (2007). *Leerkracht!* [Teacher!]. Den Haag: DeltaHage.
- Cornford, I., & Athanasou, J. (1995). Developing expertise through training. *Industrial and Commercial Training*, 27(2), 10–18.
- Curtis, B. (1986). By the way, did anyone study any real programmers? In E. Soloway & S. Iyengar (Eds.), *Empirical studies of programmers*. Norwood: Ablex.

- Czerniawski, G. (2013). Professional development for professional learners: Teachers' experiences in Norway, Germany and England. *Journal of Education for Teaching*, 39(4), 383–399. doi:10.1080/02607476.2013.769339.
- Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Standord: NSDC & School Redesign Network.
- De Hoogh, A. H. B., Den Hartog, D. N., & Koopman, P. L. (2004). De ontwikkeling van de CLIO: een vragenlijst voor charismatisch leiderschap in organisaties [The development of the CLIO: A questionnaire for charismatic leadership in organizations]. *Gedrag & Organisatie*, 17, 354–382.
- Dreyfus, H. L., & Dreyfus, S. E. (1986). *Mind over machine: The power of human intuition expertise in the era of the computer*. Oxford: Basil Blackwell.
- Dror, I. E. (2011). The paradox of human expertise: why experts get it wrong. In N. Kapur (Ed.), *The paradoxical brain* (pp. 177–188). Cambridge: Cambridge University Press.
- Eraut, M. (1994). *Developing professional knowledge and competence*. London: The Falmer Press.
- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, 26(2), 247–273. doi:10.1080/158037042000225245.
- Ericsson, K. A. (1996). *The road to excellence. The acquisition of expert performance in the arts and sciences, sports, and games*. Mahway: Lawrence Erlbaum Associates, Publishers.
- Ericsson, K. A., & Lehmann, A. C. (1996). Expert and exceptional performance: Evidence on maximal adaptations on task constraints. *Annual Review of Psychology*, 47, 273–305.
- Ericsson, K. A., & Smith, J. (1991). *Toward a general theory of expertise. Prospects and limits*. Cambridge: Cambridge University Press.
- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363–406.
- Ericsson, K. A., Prietula, M. J., & Cokely, E. T. (2007, July–August). The making of an expert. *Harvard Business Review*, 114–121.
- European Commission. (2010). *Improving teacher quality: The EU agenda*. Lifelong Learning: Policies and Programme, Brussels.
- Evers, A. T. (2012). *Teachers' professional development at work and occupational outcomes: An organisational and task perspective*. Doctoral dissertation, Open University of the Netherlands.
- Evers, A. T., Kreijns, K., Van der Heijden, B. I. J. M., & Gerrichhauzen, J. T. G. (2011a). An organizational and task perspective model aimed at enhancing teachers' professional development and occupational expertise. *Human Resource Development Review*, 35(1), 24–44. doi:10.1177/1534484310397852.
- Evers, A. T., Van der Heijden, B. I. J. M., Kreijns, K., & Gerrichhauzen, J. T. G. (2011b). Organisational factors and teachers' professional development in Dutch secondary schools. *Journal of European Industrial Training*, 35(1), 24–44.
- Fuller, A., & Unwin, L. (2003). Learning as apprentices in the contemporary UK workplace: Creating and managing expansive and restrictive participation. *Journal of Education and Work*, 16(4), 407–426.
- Geijsel, F. P., Slegers, P. J. C., Stoel, R. D., & Krüger, M. L. (2009). The effect of teacher psychological and school organizational and leadership factors on teachers' professional learning in Dutch schools. *The Elementary School Journal*, 109(4), 406–427.
- Hatano, G. (2003). Foreword. In A. J. Baroody & A. Dowker (Eds.), *The development of arithmetic concepts and skills: Constructive adaptive expertise* (pp. xi–xiii). Mahwah: Lawrence Erlbaum Associates.
- Hatano, G., & Inagaki, K. (1986). Two courses of expertise. In H. Stevenson, H. Azuma, & K. Hakuta (Eds.), *Child development and education in Japan* (pp. 262–272). San Francisco: Freeman.

- Heerkens, H., Norde, C., & Van der Heijden, B. I. J. M. (2011). Importance assessment of decision attributes: A qualitative study comparing experts and laypersons. *Management Decision*, *49*(5), 748–760.
- Hoyle, E., & John, P. (1995). *Professional knowledge and professional practice*. London: Cassell.
- Kose, B. W., & Lim, E. Y. (2011). Transformative professional learning within schools: Relationship to teachers' beliefs, expertise and teaching. *Urban Review*, *43*, 196–216.
- Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education*, *19*(2), 149–170. doi:10.1016/S0742-051X(02)00101-4.
- Kyndt, E., & Baert, H. (2013). Antecedents of employees' involvement in work-related learning: A systematic review. *Review of Educational Research*, *83*(2), 273–313. doi:10.3102/0034654313478021.
- Logan, G. D. (1985). Skill, and automaticity: Relations, implications and future directions. *Canadian Journal of Psychology*, *39*, 367–386.
- McLagan, P. A. (1997). Competencies: The next generation. *Training & Development*, *51*(5), 40–47.
- Merriam-Webster, A. (1975). *Webster's new collegiate dictionary*. Springfield: G. & C. Merriam Company.
- National Staff Development Council. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Stanford: NSDC & School Redesign Network.
- Njoku, J. C., Van der Heijden, B. I. J. M., & Inanga, E. L. (2010). Fusion of expertise among accounting faculty: Towards an expertise model for academia in accounting. *Critical Perspectives on Accounting*, *21*, 51–62.
- OECD. (2005). *Teachers matter: Attracting, developing and retaining effective teachers*. Paris: Department for International Research and Cooperation National Institute for Educational Research. doi:10.1787/9789264022157-ja.
- OECD. (2009). *Creating effective teaching and learning environments: First results from TALIS 2008*. Paris: OECD.
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, *81*(3), 376–407. doi:10.3102/0034654311413609.
- Poell, R. F. (2006). Organizing learning projects whilst improving work: Strategies of employees, managers, and hrd professionals. In J. N. Streumer (Ed.), *Work-related learning* (pp. 151–180). Dordrecht: Springer.
- Reber, A. S. (1993). *Implicit learning and tacit knowledge; an essay on the cognitive unconscious*. London: Oxford University Press.
- Richter, D., Kunter, M., Klusmann, U., Lüdtke, O., & Baumert, J. (2011). Professional development across the teaching career: Teachers' uptake of formal and informal learning opportunities. *Teaching and Teacher Education*, *27*(1), 116–126. doi:10.1016/j.tate.2010.07.008.
- Runhaar, P. (2008). *Promoting teachers' professional development*. Doctoral dissertation, University of Twente, the Netherlands.
- Sambrook, S. (2005). Factors influencing the context and process of work-related learning: Synthesizing findings from two research projects. *Human Resource Development International*, *8*(1), 101–119. doi:10.1080/1367886052000342591.
- Simon, H. A., & Chase, W. G. (1973). Skill in chess. *American Scientist*, *61*(4), 394–403.
- Sinclair, J. (Ed. in chief) (1992). *Collins Cobuild English Language Dictionary*. London: Collins.
- Spencer, L. M., & Spencer, S. M. (1993). *Competence at work: Models for superior performance*. New York: Wiley.
- Trost, G. (1993). Prediction of excellence in school, university and work. In K. Heller, F. J. Mönks, & A. H. Passow (Eds.), *International handbook of research and development of giftedness and talent* (pp. 325–336). Oxford: Pergamon Press.
- Tschannen-Moran, M. (2001). Collaboration and the need for trust. *Journal of Educational Administration*, *39*(4), 308–331.
- Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational Research Review*, *3*, 130–154. doi:10.1016/j.edurev.2007.12.001.

- Van de Wiel, M. W. J., & Van den Bossche, P. (2013). Deliberate practice in medicine: The motivation to engage in work-related learning and its contribution to expertise. *Vocations and Learning, 6*, 135–158.
- Van der Heijde, C. M., & Van der Heijden, B. I. J. M. (2006). A competence-based and multidimensional operationalization and measurement of employability. *Human Resource Management, 45*(3), 449–476.
- Van der Heijden, B. I. J. M. (1996, June 24–28). *Life-long expertise development: Goal of the nineties*. Book of proceedings of the fifth conference on International Human Resource Management. Hyatt Islandia San Diego, California, USA.
- Van der Heijden, B. I. J. M. (1997). Het meten van expertise; aanzet tot een loopbaaninstrument [Measuring expertise; towards a career instrument]. *Tijdschrift voor het Hoger Onderwijs, jaargang, 15*(3), 250–264.
- Van der Heijden, B. I. J. M. (1998). The measurement and development of occupational expertise throughout the career. A retrospective study among higher level Dutch professionals. Unpublished doctoral dissertation, University of Twente, Enschede, The Netherlands.
- Van der Heijden, B. I. J. M. (2000). The development and psychometric evaluation of a multidimensional measurement instrument of professional expertise. *High Ability Studies, 11*(1), 9–39.
- Van der Heijden, B. I. J. M. (2001). Organizational influences upon the development of professional expertise in SMES in the Netherlands. *Journal of Enterprising Culture, 9*(4), 367–406.
- Van der Heijden, B. I. J. M. (2002). Organisational influences upon the development of occupational expertise throughout the career. *Journal of Training and Development, 6*(2), 54–79.
- Van der Heijden, B. I. J. M. (2003). Organisational influences upon the development of occupational expertise throughout the career. *Journal of Training and Development, 7*(3), 142–165.
- Van der Heijden, B. I. J. M. (2006). Age differences in career activities among higher-level employees in the Netherlands: A comparison between profit sector and non-profit sector staff. *International Journal of Training and Development, 10*(2), 98–120. doi:10.1111/j.1468-2419.2006.00247.x.
- Van der Heijden, B. I. J. M., & Bakker, A. B. (2011). Toward a mediation model of employability enhancement: A study of employee-supervisor pairs in the building sector. *The Career Development Quarterly, 59*(3), 232–248.
- Van der Klink, M. (2011). Opleiden op de werkplek [Education in the workplace]. In J. Kessels & R. Poell (Eds.), *Handboek Human Resource Development. Organiseren van het leren*. (pp. 264–276). Houten: Bohn, Stafleu, Van Loghum.