Vocations and Learning
https://doi.org/10.1007/s12186-018-9199-x

ORIGINAL PAPER

On the Relation Between Teachers' (In)formal Learning and Innovative Working Behavior: the Mediating Role of Employability

Antoine Lecat[1] · **Simon Beausaert**[2] · **Isabel Raemdonck**[3]

Received: 10 April 2017 / Accepted: 30 January 2018

Abstract Teachers' innovative work behavior and professional development is receiving more attention lately. More precisely, it is argued that teachers' formal and informal learning is crucial to anticipate and deal with continuous changes and innovations in technology and didactics, for example. Therefore, this study researches the teachers' innovative work behavior by studying relations between (in)formal learning activities, employability (i.e. five competences: occupational expertise, anticipation and optimization, personal flexibility, corporate sense and balance) and innovative working behavior (IWB, i.e. ideas generation, promotion and realization). Furthermore, the mediating role of employability between learning and innovative working behavior is studied, too. Based on path analysis conducted on questionnaire data from 301 primary and secondary school teachers from the French-speaking community of Belgium, findings conclude that employability competences are related to both formal and informal learning, but the relationship between informal learning and employability is stronger. Next, making a distinction between the frequency and use of social informal learning is relevant given the differentiated role the different components play. Feedback use in particular seems to play an important role in teachers' employability and IWB. Finally, it can be concluded that employability partially mediates the relation

This author is supported by an FSR grant from the Université catholique de Louvain

✉ Antoine Lecat
antoine.lecat@uclouvain.be

[1] Psychological Sciences Research Institute (IPSY), Place Cardinal Mercier 10 box L3.05.01, 1348 Louvain-la-Neuve, Belgium

[2] Department Educational Research and Development School of Business and Economics, Maastricht University, Maastricht, The Netherlands

[3] Institute for the Analysis of Change in Contemporary and Historical Societies (IACCHOS), Université catholique de Louvain, Louvain-la-Neuve, Belgium

Published online: 21 February 2018

between the undertaking of (in)formal learning activities and dimensions of innovative working behavior. Results imply that schools should pay more attention to supporting teachers' informal learning since it's crucial for improving their ability to innovate and to be able to deal with changes in the dynamic world of education.

Keywords Teachers · Formal and informal learning · Employability · Innovative work behavior

Introduction

Innovation in technologies and in didactics are common in the world of education today. However, do our teachers have the required abilities to keep up with those changes within their field (e.g. flipped classroom, mobile and online learning, adaptative learning technologies, differentiation in the classroom)? To this question, the answer from Dirk van Damme (2014) and Sonia Guerriero (2017) of the Centre for Educational Research and Innovation (CERI) of the OECD is clear: European teachers lack the expertise and flexibility needed to tackle innovation challenges. In other words, they are not sufficiently employable, and don't score high enough on innovative work behavior (IWB). Employability refers to: "*the continuously fulfilling, acquiring or creating work through the optimal use of competences*" (Van der Heijde and Van der Heijden 2006, p. 453). Schools are dynamic by nature, so therefore it is of utmost importance to invest in their human capital. Keeping this in mind, we need to strategically support teachers' continuous professional development.

Teachers develop skills by undertaking both formal and informal learning. Formal learning takes place in a more structured, classroom-like, educational setting, while informal learning does not require a specific place or even a teacher or a trainer. Informal learning is not planned and can occur in the workplace while working (Marsick and Watkins 2001). In line with previous studies, we make a distinction between two different forms of informal learning: social and individual (Clough et al. 2008; Froehlich et al. 2015; Noe et al. 2013). Moreover, Noe et al. (2013) distinguished learning activities using the following classifications: learning from oneself, learning from others and learning from non-interpersonal sources (such as books or internet). Learning from oneself is learning by experimenting, by trial-and-error or by reflecting on how to improve one's performance. Learning from non-interpersonal sources is learning by seeking information and resources on the internet or in literature. Learning from others refers to learning during collaboration, from colleagues.

In this study, we focus on teachers' innovation working behaviors and main determinants that explain its variance, namely employability competences, formal learning activities and social informal learning. This is in line with previous research in the field of Human Resource Development where it was shown that employees develop employability competences through social informal learning (e.g. Froehlich et al. 2014) and employability competences can improve innovative working behaviors. Froehlich et al. (2014) studied the relation between social informal learning and employability. It was found that learning from others allows employees to learn about a job-related subject (occupational expertise), trends in the job-related field (anticipation/optimization) and how to react to it (flexibility) or even about organization

processes (corporate sense). Also, according to Froehlich et al. (2015) social informal learning in organizations, called, is more strongly related to employability than formal learning. Next, Grant and Ashford (2008) reported that an employee who improves his/her flexibility becomes more autonomous and can more easily bring innovations at work. However, to our knowledge, research on the relation between teachers' informal learning, employability and IWB has been scarce so far, especially studies on the relationship between employability competences and IWB are lacking. Additionally, the majority of previous studies were performed in higher education (e.g. Van der Heijden et al. 2009; van der Rijt et al. 2012). This study aims at filling this gap by examining the relation between teachers' formal and informal learning and employability and IWB, in primary and secondary education. Both the relation between (in)formal learning and IWB is studied, as well as the mediating role of employability, in the relation between (in)formal learning and IWB.

In that sense, the present study is innovative in three ways. First, it applies the employability framework to teachers working in primary and secondary education. Employability competences are mostly examined in employees working in business and industry while the concept of employability is relevant in other sectors, such as the educational sector, as well. Second, the study takes into account all five employability competences that have been distinguished by Van der Heijde and Van der Heijden in 2006 (occupational expertise, personal flexibility, anticipation/optimization as well as balance and corporate sense). In previous studies the focus was often on occupational expertise, personal flexibility and anticipation/optimization only (Froehlich et al. 2014; Gerken 2016). This allows us to have an overall view of teachers' employability competences. Third, it is, to our knowledge one of the first studies that links employability competences to IWB.

Theoretical Framework

Innovative Work Behavior

Innovative work behavior (IWB) refers to the voluntary introduction of new and useful ways of doing things within a role, a group or an organization (West and Farr 1990). Employees' IWB is crucial for continuous improvement of work (Fuller et al. 2006). In the context of education, and especially in schools, innovations are processes that usefully encourage the outcome and the quality of learning (Messmann and Mulder 2011). Scott and Bruce (1994) and afterwards Janssen (2000, 2003) conceptualized IWB as a set of three idea-related behavioral tasks: idea generation, promotion and realization. Idea generation is the production of a new idea, useful for the organization (Amabile et al. 1996). It is also a new solution for a recent or recurrent problem (Scott and Bruce 1994). Idea promotion refers to the exchange of these ideas or solutions (Scott and Bruce 1994). Finally, idea realization is when these ideas are implemented in the organization. For Messmann and Mulder (2011), teachers' IWB are behaviors such as observing and listening to ideas, adapting them, developing a strategy, evaluating the strategy and finding support and adjusting evaluation.

Following this pattern, an idea is consecutively emitted, shared with potential helpers and put into practice, even though the different phases can coexist

simultaneously for different ideas. When confronted with change, IWB will help to efficiently cope with organizational demands and to feel in control of that change's implementation (West 1989; Bunce and West 1994). Therefore, engaging in IWB could help diminish potential harmful consequences of change and concerns about change (Janssen 2000). Overall, employees' IWB seems to be efficient to face job-related demands. Also, researchers have found evidence for a relationship between the learning process of individuals and innovation processes at the organizational level (Engeström 1999; Fenwick 2003; Hoeve and Nieuwenhuis 2006; Molleman and Timmerman 2003; Van de Ven and Polley 1992). To summarize, innovative behavior on the workplace is an intentional self-initiated behavior with three stages: idea generation, idea promotion and idea realization (Janssen 2000, 2003; Scott and Bruce 1994).

Teachers' innovative working behavior takes place in a rapidly changing field. Like other professions, teachers' role is dynamic and constantly evolving (Révai and Guerriero 2017). New demands and requirements from policymakers (or sometimes from students) may necessitate teachers to innovate and set up new ideas and practices. Some authors argue that the teaching profession has not kept up with the pace of the changing environment, including new pedagogical and learning research (e.g. Dumont et al. 2010).

Employability

Employability is defined as: "*the continuously fulfilling, acquiring or creating work through the optimal use of competences*" (Van der Heijde and Van der Heijden 2006, p. 453). Moreover, Van Der Heijde and Van der Heijden introduce a competence-based conceptualization of employability. The importance of broader competence package has been clearly demonstrated by strategic Human Resource Management (Cappelli and Crocker-Hefter 1996; Miles and Snow 1996; Wright and Snell 1998). Specifically, evidence shows increasement of the importance of adaptative and social competences alongside domain-related knowledge and skills in jobs (Rodriguez et al. 2002). More specifically, it concerns a combination of domain-specific occupational expertise, completed by four more competences: anticipation/optimization, personal flexibility, corporate sense, and balance (Van der Heijde and Van der Heijden 2006).

Occupational expertise constitutes a substantial element of employability (Boudreau et al. 2001). It is both a prerequisite for positive workers' career outcomes and a significant human capital factor for the vitality of organizations. Furthermore, many authors have shown that, due to fast-evolving knowledge, its importance is increasing (Schein 1996; Van der Heijde and Van der Heijden 2006). Continuously developing your occupational expertise might be pivotal for mobilizing innovative practices (Carmeli et al. 2006).

People who work for a longer period in their current job are more likely to develop skills that are relevant and specific to the domain, and thereby solve problems in a more focused and relevant way.

The second and third competences, respectively *anticipation/optimization* and *personal flexibility* refer to adaptation to changes and developments at different levels (e.g. job-level, career-level…) necessary for high-quality performance outcomes. Kluytmans and Ott (1999) described "*a willingness and a possibility to adapt to changes in terms of employment, job contents, conditions, or locations*" (p. 263) as an important

component of employability. Examples of such influential work-related changes include, but are not limited to, higher and more complex job demands as expected to help students reach their full potential, reorganization and unemployment. The first competence refers to a self-initiating proactive variant of adaptation, whereas the second is more passive, reactive. Both competences exist in contiguity and are a prerequisite for innovative thinking and acting (Grant and Ashford 2008).

More concretely, *anticipation/optimization* concerns personally and creatively preparing for future work changes to strive for the best job and career outcomes rather than entailing adaptation in its basic form (Bhaerman and Spill 1988; North et al. 1988). Complexity of work and teachers' difficulty to forecast work content leads to employees enacting more and more their jobs and professional life themselves (Weick 1996). In that sense, Fugate et al. (2004) claimed that "*person-centered active adaptation and proactivity conceptually underpin the construct of employability*" (p. 16).

Personal flexibility does not coincide with flexibility at the content level of a job. This concept refers to the capacity for smooth transitions between teaching jobs or schools, but it also encompasses easy adaptation to changes in the school or labor market. Next to creative adaptability, teachers must adapt passively to unwanted changes among their work and labor market environment. Merges and reorganizations are examples of the multiple changes occurring in schools and their environments, calling for personal flexibility at all levels. Furthermore, these changes largely call upon people's resilience. Disappointments emerging from such changes require teachers being able to cope with and recover rapidly from them. Other researchers have deemed this competence as an important part of employability and labeled it adaptability (e.g., Boudreau et al. 2001; Fugate et al. 2004). Highly flexible teachers will gain greater benefit and show further career development. They also get a better understanding of how to take advantage of those changes and embrace them (Van der Heijde and Van der Heijden 2006).

Chapman and Martin (1995) showed that erosion of the traditional dichotomy between principals and teachers leads professionals to participate as a team member, to identify with corporate goals and to accept collective responsibility in the decision-making process. This brings us to our fourth competence: *corporate sense*. Corporate sense extends the school citizenship behavior concept to participation and performance in different workgroups (for example: year of study, school or working teams on the same school subject) (Podsakoff et al. 2000). Several authors have shown a tremendous increase of the number of groups in which teachers belong to in the recent decades (Frese 2000; Seibert et al. 2001). Apart from collaborations at school, employees can be part of numerous networks (project network, occupational network…). Corporate sense builds on social capital inherent to social networks (Mayer and Salovey 1997; Nahapiet and Ghoshal 1998). Corporate sense includes, for example, sharing responsibilities, credits, failures, and experiences. In organizational literature it is demonstrated that corporate sense is necessary for generation, promotion and successful implementation of innovations (Stoffers 2014).

Finally, the fifth and last competence of employability is labeled *balance*. The balance is the capacity to make compromises between opposing school' and teachers' interests. Employability cannot be considered without an honest bilateral relationship between the two, where both parties' investments and profits are balanced (Van Dam and Thierry 2000). Work demands can compete strongly and therefore be hard to

balance. Taking the organizational perspective, the development of employees' employability skills can be supported on the one hand by strategic personnel management and on the other hand by giving self-reliance and self-governance to employees. However, it seems difficult to ask teachers to be fully involved in their jobs and balance their personal interests autonomously at the same time.

The competence-based definition of employability, introduced above, entails different relationships with innovative working behavior. Occupational expertise is claimed to be helpful to mobilize innovative practices (Carmeli et al. 2006). Flexibility and anticipation/optimization are stated to be prerequisites for innovative thinking and acting, by envisioning, selecting and modifying situations to create outcomes (Grant and Ashford 2008). Corporate sense, measured by employee participation and ability to work together with others, is argued to be necessary for all three dimensions of IWB, by the capacity to create, introduce and share new services and ideas (Delaney and Huselid 1996). Stoffers (2014) found significant relationships between employability and IWB in various models using structural equation modeling analysis. Given the competence-based definition of employability implicitly relating to IWB and the previous researches of Stoffers (2014), it is hypothesized that:

H1: Especially occupational expertise, anticipation/optimization, flexibility and corporate sense positively affects teachers' IWB.

Formal and Informal Learning

The professional development of teachers is studied in a multitude of ways, including workplace learning (Avalos 2011). Workplace learning can be defined as "*the multiple ways through which employees learn in organizations*" (Jacobs and Park 2009, p. 134). These multiple ways of learning are often labeled as formal and informal learning (Eraut 2000). Formal learning takes place in a more structured, classroom-like, educational setting (Marsick and Watkins 2001). It's defined as a standard paradigm of learning close to the traditional pedagogical framework of education using interaction (Hager 2004). Generally sponsored or endorsed by the institution, formal learning is formed by planned activities aimed at giving the employees support in acquiring skills and knowledge relevant to their job. Indeed, formal learning was usually the only learning recognized by organizations (Richter et al. 2011). Hence, almost all training and development programs offered by an institution fall into this category. Formal learning takes place in a particular context, with a teacher, it's implicitly conceived that learning occurs in a setting apart from work. It's planned and systematic, leading purposely to the desired knowledge, behavior or certificate (Eraut 2004).

Informal learning is learner-initiated, depending on the learner's needs and fueled by motivation to develop, but also by its involvement of action and reflection and by the less formal, non-classroom-like setting in which it occurs (Tannenbaum et al. 2010). According to Bear et al. (2008), informal learning accounts for up to 75 % of learning in organizations. It allows to overcome some limitations of formal learning programs by providing opportunities for high fidelity practice and learner interactions. This form of learning is important for both parties: it helps schools - thanks to teachers' continuous updates - regarding their knowledge and skills, to ease adaptations

to changing situations and new technologies, as well as it provides higher quality of education (Thurlings et al. 2015). It also helps teachers to cope with current demands of personal initiatives leading to skills beyond the school offers in one's career (Sammons et al. 2007).

Eraut (2004) makes a distinction between different types of informal learning: implicit, reactive and deliberative learning. Implicit learning refers to "*the acquisition of knowledge independently of conscious attempts to learn and in the absence of explicit knowledge about what was learned*" (Reber 1993, p. 23). Reactive learning can be described as near-spontaneous intentional learning, in the middle of the action, as a reaction to an experience. Finally, deliberative learning defines engagement in deliberative activities targeting new knowledge acquisition or problem solving.

Furthermore, a distinction is made between individual and social informal learning (Clough et al. 2008; Froehlich et al. 2015; Kwakman 2003; Noe et al. 2013). More concretely, Froehlich et al. (2015) concretized social informal learning as information, help and feedback exchange with colleagues. Feedback seeking is defined by Ashford and Cummings (1983, p. 466) as a "*conscious devotion of effort toward determining the correctness and adequacy of behaviors for attaining valued end states*". When seeking for feedback individuals can adapt two different strategies (Anseel and Lievens 2006; Ashford 1986): First, by observing situations and how others respond to their behavior. Second, by directly asking others how they proceed. It's a powerful and efficient method to learn in a job (Bamberger 2009). Next, help seeking refers to an adaptative strategy for coping with job difficulties or problems by asking for help (Butler 2007). Finally, relevant information seeking is about asking others for work-related information, not linked to personal practice (Bamberger 2009). It's argued that social informal learning behaviors can improve job performance, especially in knowledge intensive organizations (e.g. Rosette et al. 2015).

Learning and Employability

Concerning the relation between formal learning and employability, Sanders and De Grip (2004) showed a positive relationship between participation in formal learning courses and employability among low-skilled workers, especially for switching jobs within the company or for a better match with the job. Finally, Van der Heijden et al. (2009) were using regression models and found a positive relationship between the number of days attending job-related formal training and three competences of employability, namely expertise, anticipation/optimization and corporate sense. Froehlich et al. (2014) also showed that formal learning activities in the workplace increase employability, i.e. anticipation and optimization, using structural equation modeling.

Concerning the relation between informal learning and employability, just like with formal learning, Van der Heijden et al. (2009) found a positive relationship when conducting regression analyses. Informal learning was measured in terms of networking inside the university and related to four of the employability competences, namely expertise, flexibility, corporate sense and balance. Moreover, having a broad network outside the university is positively related to anticipation/optimization. Arocena et al. (2007), found that social informal learning has a significant positive correlation with flexibility by strengthening teachers' ability to deal with personal and organizational

changes and transitions, with all the associated benefits for the teachers and the schools. Also, Froehlich et al. (2014) found in a quantitative cross-sectional survey using SEM a positive relationship between social informal learning (i.e. feedback, help and information seeking) and workers' employability in three Dutch and Austrian organizations.

Several studies point out that informal learning is an effective tool to support professional development (Eraut 2004; Lohman 2005; Schulz and Roßnagel 2010). Likewise, most learning in organizations does not occur in formalized learning programs (Flynn et al. 2006; Tannenbaum 1997). Two of the research studies mentioned above, but conducted in settings outside education indicate that informal learning has a bigger impact on employability compared to formal learning (Froehlich et al. 2014; Van der Heijden et al. 2009).

Given these previous research results, e.g. Froehlich et al. (2014) finding larger β for social informal learning than for formal learning, it is hypothesized that informal learning plays a more important role in developing employability competences than formal learning.

H2: Both formal and informal learning activities positively affects employability.

H3: Informal learning has a stronger relationship with employability than formal learning.

Learning and IWB

According to previous research, learning is a main driver for innovative working behavior (Keskin, 2006; Messmann and Mulder 2012). Workers need to acquire and propagate new knowledge to generate and implement news ideas (Calantone et al. 2002; Janssen and Van Yperen 2004). Amabile et al. (1996) explained this by the fact that learning provides a basis for workers' innovations by boosting creativity-relevant skills and knowledge in the occupational domain. In that sense, Tynjälä (2008) found a positive relationship between employees' learning network and innovative activities. Her study showed that employees get space, time and new ideas to innovate and develop practices through network meeting. Hirst et al. (2009) showed that individual learning boost available knowledge and then positively influence creativity and innovation. More concretely, concerning social informal learning, research showed that feedback seeking fosters innovative working behavior, by increasing ideas generation and implementation (Noefer et al. 2009). Research in the educational sector showed that social informal learning and collaboration help teachers to develop and implement innovations (Messmann and Mulder 2011; Mohammad and Harlech-Jones 2008; Schussler et al. 2007). Finally, Gerken (2016) found significant positive relationship between feedback and information seeking and all dimensions of IWB. The role of help seeking was not tested due to bad internal consistency of the scale. In conclusion, learning is essential for teachers to show innovative work behavior, especially social informal learning.

H4: Both formal and informal learning activities positively affects IWB.

H5: Informal learning has a stronger relationship with IWB than formal learning.

Employability as Mediator

We saw previously that learning is positively related to both employability and Innovative working behavior and that employability correlates significantly positively with IWB. Grant et al. (2009) showed that employability depends on workers' initiative for learning because they have to seek for opportunities and deal with problems. Similarly, Murdoch-Eaton and Whittle (2012) suggested that developing employability depends on major learning experiences and leads to new strategies and innovations. Gerken (2016) indicated that lifelong (in)formal learning is the best way to work on employees' employability and that employability is needed to bring innovations at work. Finally, Van Dam (2004) showed that employees who are willing to learn to improve their employability, take more initiative and undertake more employability activities. Given the research discussed above, it is hypothesized that:

H6: Employability competences, i.e. *occupational expertise, anticipation/optimization, flexibility and corporate sense are mediators in the relation between formal and informal learning and innovative work behavior.*

Method

Participants

301 teachers participated in an online survey. Opportunity sampling was used. The researchers sent requests to schools principals, directly to teachers in primary and secondary schools or via social network pages. About half of the teachers in the sample (49.5%) worked in primary schools, whereas 50.5% worked in secondary schools in the French-speaking community of Belgium. The sample consisted of 79.1% women, (85.2% in primary school and 73% in secondary school). These percentages are in line with the statistics for the French-speaking community of Belgium: 82% of the primary school teachers and 63% of the secondary school teachers are women (Fédération Wallonie-Bruxelles, 2015, published in 2016). The age of the teachers in our sample varied from 19 years to 59 years. The mean age was 37.42 years (SD = 11.38). The average number of years in the teaching profession was 14.22 (SD = 11.25). 8 teachers (2.7%) obtained a secondary school degree, 230 teachers (76.4%) had a Bachelor degree and 63 teachers had a Master degree (20.9%).

Instruments

Innovative Work Behavior Innovative work behavior was measured with a validated questionnaire developed by Janssen (2003). The scale consists of 19 items, distributed

across three subscales: idea generation, idea promotion and idea realization (Janssen 2000). Every item was scored on a 6-point Likert scale ranging from 'totally disagree' to 'totally agree'. Idea generation was assessed with 4 items. An example item is: "Creating new ideas for difficult issues". Idea promotion was assessed with 7 items. An example item is: "Mobilizing support for innovative ideas". Finally, idea realization had 8 items. An example item is: "Transforming innovative ideas into useful applications". Cronbach's alphas for the three scales were .83 for idea generation, .92 for idea promotion and .95 for idea realization.

Although the questionnaire was previously used with teachers (Messmann et al. 2010), the questionnaire was translated in French. Therefore, an exploratory factor analysis was conducted. The factor analysis, with maximum likelihood analysis, based on eigenvalues, confirmed the theoretical structure with three factors: idea generation, promotion and realization. Idea promotion explained 55.02% of the variance, idea generation 9.8% and idea realization 5.92% and each had eigenvalue greater than 1.

Employability Employability was measured with a validated questionnaire developed by Van der Heijden et al. (2009). Each of the five employability competences (expertise, anticipation/optimization, flexibility, corporate sense and balance) was assessed by a subscale. An example item for expertise is "I consider myself competent to have deep and specific conversations in my work area". An example item for anticipation/optimization is "I value the implementation of newly acquired skills and knowledge". An example item for personal flexibility is "I have a good ability to adapt to change in my workplace". An example item for corporate sense is "I share the values, vision and goals of my school". Finally, an example item for balance is "I balanced the time spent in achieving my own career goals and supporting my colleagues". Every item was scored on a 5-point Likert scale ranging from 'not agree at all' to 'totally agree'. Exploratory factor analyses confirmed the five-factor structure. Flexibility explain 20.52% of the variance, balance, 11.08%, anticipation/optimization explain 7.71%, corporate sense 6.44% and occupational expertise 4.5%. Each dimension had eigenvalue greater than 1 Cronbach's alphas for the five scales were .66, .80, .75, .77 and .81, respectively.

Formal Learning Formal learning was assessed by questioning participation in formal learning activities during the previous school year. More specifically, five different questions asked about the time spent in conferences, seminars, courses and training. An example item is: "How long (in hours) did you spend last school year in formal learning activities, such as conferences?" For each item, the teacher indicated if s/he participated in the activity or not. Total score for this variable is calculated by taking the sum of the items. Scores ranged from 0 to 5.

Informal Learning We used an adapted questionnaire developed by Froehlich et al. (2015) regarding respectively feedback, help and information seeking. The questionnaire consisted of 30 questions in total. 15 questions measured the *frequency* of informal learning (rate of occurrence). Each subscale (frequency of feedback seeking, information seeking and help seeking) was measured with five questions, on a 5-point Likert scale ranging from 'almost never' to 'very often'. An example item is: "I asked my colleagues to evaluate my work". The other 15 questions measured the *use* of what

is informally learned (the application for a purpose), again five questions per subscale (use of feedback seeking, information seeking and help seeking) were scored on a 5-point Likert scale ranging from 'not agree at all' to 'totally agree'. An example item is: "I used the received feedback for my professional development".

Exploratory factor analysis (maximum likelihood), based on eigenvalue, confirms the six factors structure. Use of feedback explains 23.87% of the variance, help 7.08% and information 5.33%. For the other dimension, frequency of feedback seeking explains 3.75% of the variance, frequency of information seeking explains 8.38% and frequency of help seeking explains 2.88%. Each had eigenvalue greater than 1. Cronbach's alphas for the frequency scales were .78 for feedback seeking, .62 for help seeking and .76 for information seeking. For the usage scale, Cronbach's alphas were .80 for feedback seeking, .79 for help seeking and .68 for information seeking.

Demographics To control for background information, participants were asked to fill out several questions on their demographics: gender, highest degree, age and the educational level in which they taught (either primary or secondary school).

Procedure

Data collection was done by taking online questionnaire (Qualtrics). Participants received brief information on the general aim of the study and then completed the questionnaire. Completion took around 20 min. Questions were presented in a fixed order: demographics, formal learning, informal learning, employability and IWB. At the end of the questionnaire, participants had the opportunity to indicate an email address if they were willing to receive information about the results. They also had the possibility to comment on the questionnaire.

Data Analysis

First, normality distribution was checked for all employability, IWB and learning variables (all Skewness and Kurtosis indices were between −2 and 2). Second, preliminary analyses were calculated (means, standard deviations and correlations) for all variables under study. Third, linear regression analyses were done in two steps to prepare for the path model. During the first step, five linear regressions were made with all learning activities as independent variables and employability competences as dependent variables. One regression was made for each employability competence. For the second step, three regression were conducted with employability competences as independent variables and IWB as dependent variables. One regression was made for each independent variable. Fourth, a path model was constructed, only considering significant relations found in the regression analyses. The path model was built in AMOS, version 16.0. Path analysis is a statistical methodology using multiple regression analysis and is employed to determine whether a set of data fits well with a particular causal model (Pedhazur 1982). A hypothesized model of relations between our variables is statistically tested to determine the degree of consistency with the data. This is referred to as the goodness of fit. An adequate goodness of fit, established with statistical indices, supports the plausibility of the relation among the variables. For CFI

indices, values greater than .90 are typically considered acceptable degree of consistency (Bollen 1989; Byrne 2001; Hu and Bentler 1999). For well specified models, SRMR indices of .08 or less is an indication of a relatively good fit between observed data and model (Hu and Bentler 1999). Chi-square can be used to test the null hypothesis that the reduced model fits the data as well as does a full, well identified model. In such a model, Chi-square will be equal to zero, since the fit will be perfect. Deleting a (non-zero) path will reduce the fit of the model to data and will increase the value of Chi-Square. This can lead to a less complex model that will give a better explanation of covariances (Hu and Bentler 1999).

Results

Preliminary Analysis

Table 1 shows means, standard deviations and correlations for the variables under study.

Concerning employability and learning, occupational expertise significantly positively correlated with one subdimension of informal learning: use of information. Furthermore, anticipation/optimization and flexibility significantly positively correlated with all subdimensions of informal learning, except for use of help and with formal learning activities. Corporate sense significantly positively correlated with all subdimensions of informal learning but not with formal learning activities. Finally, balance correlated significantly positively with social informal learning dimensions: use of feedback, frequency of help seeking and use of help. All employability dimensions significantly positively correlated with all dimensions of IWB, except for balance and idea generation (Tables 2 and 3).

Concerning IWB and learning, idea promotion significantly positively correlated with all subdimensions of informal learning and idea realization significantly positively correlated with feedback and information seeking (frequency and use) but not with help seeking. Next, idea generation correlated with formal learning activities.

Regression Analyses

Findings show that formal learning activities are significantly related to only one employability competence: anticipation, as well as one IWB dimension: idea generation.

Feedback and information use are correlated each with four of the five employability competences. Feedback use significantly predict occupational expertise, anticipation/optimization, flexibility and balance scores. Information use significantly predict occupational expertise, anticipation/optimization, flexibility and corporate sense. These two informal learning dimensions have good betas and are strong predictors of employability competences.

Feedback use and information use dimensions are correlated positively with anticipation/optimization and help use negatively. Formal learning and information frequency also positively predict anticipation/optimization. Learning formally, seeking information and using social informal learning might therefore

Table 1 Correlations between studied variables

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Formal learning	2.20	1.12	1														
2	Informal learning - Feedback seeking (Freq.)	2.89	.76	.138*	1													
3	Informal learning - Feedback seeking (Use)	3.86	.75	.187**	.404**	1												
4	Informal learning - Help seeking (Freq.)	3.64	.63	.145*	.306**	.369**	1											
5	Informal learning - Help seeking (Use)	3.97	.83	.07	.324**	.545**	.480**	1										
6	Informal learning - Information seeking (Freq.)	3.33	.77	.109	.557**	.466**	.575**	.467**	1									
7	Informal learning - Information	4.12	.59	.044	.206**	.361**	.117*	.255**	.153*	1								

Table 1 (continued)

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	seeking (Use)																	
8	Occupational expertise	3.86	.59	.081	.049	.112	−.007	−.049	−.056	.141*	1							
9	Anticipation and optimization	3.82	.81	.218**	.229**	.294**	.126*	.012	.186**	.378**	.311**	1						
10	Flexibility	3.84	.77	.157**	.191*	.296**	.119*	.107	.221**	.265**	.265**	.436**	1					
11	Corporate sense	4.04	.74	.033	.249**	.249**	.257**	.291**	.292**	.222**	.031	.213**	.292**	1				
12	Balance	2.92	.99	.058	−.094	.147*	.141*	.153**	.074	.002	.145*	.038	.119*	.156**	1			
13	IWB - Idea generation	3.87	1.14	.179**	.116*	.088	−.045	−.090	.018	.246**	.260**	.442**	.358**	.241**	−.011	1		
14	IWB – Idea promotion	4.14	1.09	.108	.280**	.238**	.213**	.114*	.242**	.302**	.162**	.368**	.271**	.513**	.157**	.462**	1	
15	IWB – Idea realization	4.09	1.1	.104	.267**	.283**	.106	.100	.190**	.341**	.252**	.457**	.358**	.366**	.131*	.505**	.806**	1

*$p < .05$; **$p < .01$

Table 2 Regressions analyses of employability competences and IWB dimensions

	Expertise		Anticipation		Flexibility		Corporate sense		Balance		Idea generation		Idea promotion		Idea realization	
	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Formal learning	.045		.142*		.093		−.035		.010		.107*		.029		−.010	
Feedback frequency	.051		.033		.008		.090		−.203**		.059		.136*		.136*	
Help frequency	−.144		−.069		.028		−.037		−.172*		.002		.021		−.021	
Information frequency	−.054		.153*		.092		.180*		.216**		−.133		.015		−.031	
Feedback use	.174*		.218**		.212**		.109		.225**		−.061		−.003		.064	
Help use	−.077		−.205***		−.101		.097		.075		−.099		−.099		−.064	
Information use	.173*		.355***		.198**		.121*		−.066		.097		.155**		.170**	
R^2 of the model		.066		.261		.130		.117		.074						
Occupational expertise											.098		.045		.080	
Anticipation/optimization											.270***		.169**		.239***	
Flexibility											.164**		−.016		.086	
Corporate sense											.181**		.418***		.223***	
Balance											−.044		.104*		.081	
R^2 of the model												.279		.356		.330

The reported regression coefficients are standardized coefficients

*$p < .05$, **$p < .01$, ***$p < .001$

Table 3 Path estimates of the structural equation model

From		To	β	SE	*p*
Feedback use	➔	Expertise	.060	.043	.160
Information use	➔	Expertise	.177	.054	.001
Formal learning activities	➔	Anticipation/optimization	.086	.033	.009
Feedback use	➔	Anticipation/optimization	.194	.058	< .001
Help use	➔	Anticipation/optimization	−.159	.046	< .001
Information use	➔	Anticipation/optimization	.453	.067	< .001
Information frequency	➔	Anticipation/optimization	.129	.058	.026
Feedback use	➔	Flexibility	.208	.052	< .001
Information use	➔	Flexibility	.239	.069	< .001
Information frequency	➔	Corporate sense	.251	.053	< .001
Information use	➔	Corporate sense	.207	.063	< .001
Feedback frequency	➔	Balance	−.249	.075	< .001
Feedback use	➔	Balance	.240	.077	.002
Help frequency	➔	Balance	−.164	.090	.070
Information frequency	➔	Balance	.339	.103	.001
Formal learning activities	➔	Idea generation	.074	.048	.121
Anticipation/optimization	➔	Idea generation	.474	.079	< .001
Flexibility	➔	Idea generation	.214	.078	.006
Corporate sense	➔	Idea generation	.193	.081	.017
Feedback frequency	➔	Idea promotion	.161	.055	.004
Information use	➔	Idea promotion	.190	.082	.021
Anticipation/optimization	➔	Idea promotion	.286	.070	< .001
Corporate sense	➔	Idea promotion	.608	.071	< .001
Balance	➔	Idea promotion	.043	.035	.217
Feedback frequency	➔	Idea realization	.151	.057	.009
Information use	➔	Idea realization	.273	.086	.001
Anticipation/optimization	➔	Idea realization	.439	.073	< .001
Corporate sense	➔	Idea realization	.360	.074	< .001

Three paths (feedback use – expertise, formal learning activities – idea generation and balance – idea promotion) were deleted because they were not significant

allow teachers to be better prepared for future changes while teachers using help from others might be less prepared. The model explained 26.1% of anticipation/optimization variance.

A negative beta is observed for feedback frequency in the predicting model of balance. Asking frequent feedback leads to less balance between organizational and personal interests as to much feedback from others might influence teachers to prioritize organizational goals at the risk of personal goals. Moreover, feedback frequency and information use are both positively linked to idea promotion and idea realization. It is therefore suggested that asking frequent feedback and mobilizing the information collected are beneficial for exchange and implementation of ideas and solutions.

Finally, the employability competences anticipation/optimization and corporate sense significantly and positively predict all IWB dimensions. Explained variances are 27.9% for idea generation, 35.6% for idea promotion and 33% for idea realization.

Path Model

The original model is based on significant relations found on basis of regression analyses. Covariances between errors terms were added to slightly improve the model based on Chang et al. (2013) suggestion. The fit indices indicated that the fit of the hypothesized model is reasonable (χ^2/df = 2.21, SRMR = .06, RMSEA = .06, TLI = .91 and CFI = .96).

The fit indices for the final model were: χ^2/df = 2.19, RMSEA = .06, SRMR = .06, TLI = .91 and CFI = .96 (Fig. 1). The percentage of the response variable variation explained by the model is 4.8 for expertise, 24.1 for anticipation/optimization, 11.3 for flexibility, 9.9 for corporate sense and 8.3 for balance. IWB dimensions percentage of variance are 22.7 for idea generation, 34.8 for idea promotion and 31.2 for idea realization.

On the Relation between Employability and IWB

We found that anticipation/optimization, flexibility and corporate sense play a role in IWB's idea generation. Anticipation/optimization and corporate sense also play a role

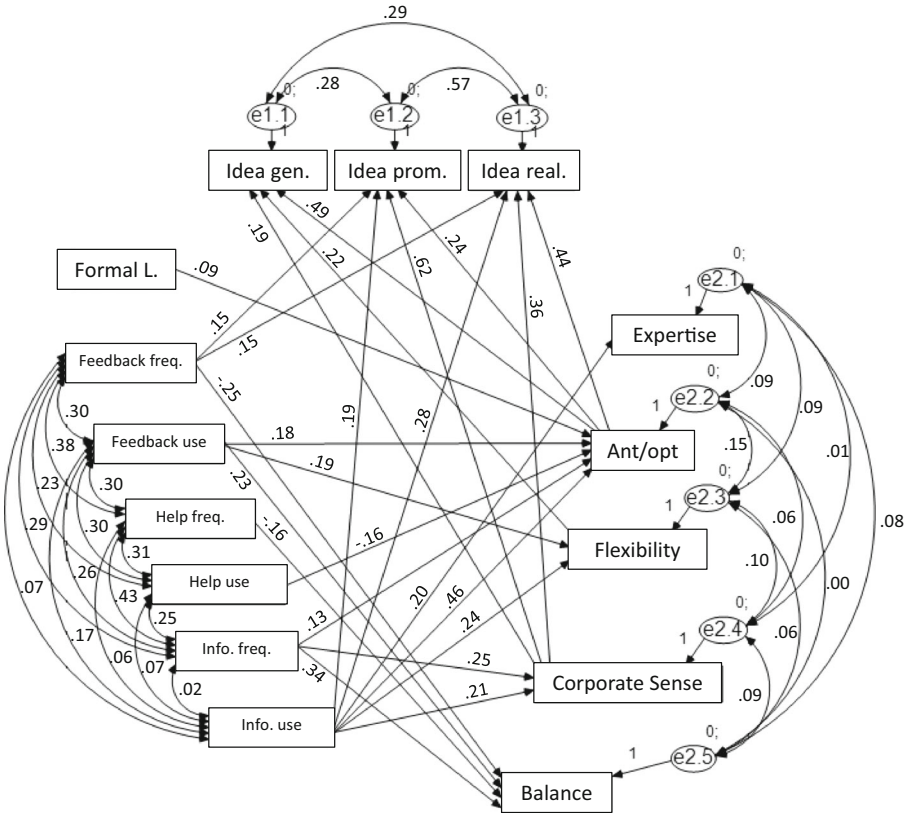

Fig. 1 Final path model

in IWB's idea promotion. Finally, anticipation/optimization, flexibility and corporate sense play a role in IWB's idea realization. Hypothesis 1 was "*Especially occupational expertise, anticipation/optimization, flexibility and corporate sense positively affects teachers' IWB*". Results partially supports *H1*, because expertise does not predict the IWB dimensions and no significant beta was found for flexibility on "idea promotion".

On the Relation between Learning and Employability

We found that only information use plays a role in teachers' occupational expertise. Formal learning activities, information seeking frequency and all dimensions of informal learning use play a role in the optimization and anticipation competence (but negatively for help use). Use of feedback and use of information seeking relate positively to flexibility. Only information seeking frequency and use play a role in corporate sense. Finally, frequency and use of feedback seeking, frequency of help seeking and frequency of information seeking are related to life-work balance. Hypothesis 2 was: "*Both formal and informal learning activities positively affects employability*" and hypothesis 3 was: "*Informal learning has a stronger relationship with employability than formal learning*". We can see that formal learning positively affects only one dimensions of employability (anticipation/optimization) with small but significant β. This partially supports *H2*. Furthermore, informal learning dimensions have higher β and explain a higher percentage of the variance in employability competences. This totally supports *H3*, except for the significantly negative path between help use and anticipation/optimization.

On the Relation between Learning and IWB

Learning did not play a role in IWB's idea generation. However, frequency of feedback seeking and use of information affect IWB's idea promotion and realization. Formal learning does not impact innovative working behavior which makes us to conclude that Hypothesis 4 stating that "*Both formal and informal learning activities positively affects IWB*" is not supported. Hypothesis 5 that *Informal learning had a stronger relationship with IWB than formal learning* is only partially confirmed. Two social informal learning dimensions affect IWB's idea promotion and realization positively. This don't support *H4*. Informal learning has significant positive β with idea promotion and idea realization. This partially supports *H5*.

On the Mediating Role of Employability Between (In)formal Learning and IWB

Three full mediating effects of optimization/anticipation were found between formal learning activities and the three IWB's dimensions. When studying the mediating role of employability between informal learning and IWB, three employability competences played a mediating role.

Optimization/anticipation fully mediated ten relationships. Firstly, three between feedback use and all IWB dimensions. Secondly, three between help use and all IWB dimensions. Thirdly, three between information frequency and all IWB dimensions. Fourthly, one between information use and idea generation. It also partially mediated two relationships, firstly between information use and idea promotion, secondly between information use and idea realization.

Flexibility fully mediated two relationships, with both information use and feedback use on the one hand and idea generation on the other hand.

Corporate sense fully mediated four relationships. We found mediating effects of corporate sense between information frequency and all IWB dimension. Corporate sense also has a full mediating effect between information use and idea generation. Furthermore, corporate sense partially mediated two relationships, one between information use and idea promotion and one between information use and idea realization.

Expertise and balance did not mediate the relationship between informal learning and IWB.

Hypothesis 6 was: "*Employability competences, i.e. occupational expertise, anticipation/optimization, flexibility and corporate sense are mediators in the relation between formal and informal learning and innovative work behavior*". Path model showed some partial and full mediating effect of employability competences between (in)formal learning and IWB dimensions. This partially supports *H6* for anticipation/optimization, flexibility and corporate sense.

Conclusion and Discussion

In the dynamic world of education, teachers' professional development is of utmost importance. Teachers need to innovate and develop abilities to keep up with those changes. Teachers develop themselves professionally by undertaking both formal and informal learning. These formal and informal learning activities can increase their employability and innovative work behavior. More specifically, previous research argued that especially social informal learning strengthens teachers' ability to deal with personal and organizational changes and transitions, with all the associated benefits for the teachers and the schools (Arocena et al. 2007). Therefore, this study aimed to investigate relations between teachers learning, employability and innovative work behavior. We also examined the mediating role of employability between learning and innovative work behavior.

It was hypothesized that social informal learning is more strongly related to employability and IWB in comparison to formal learning. We also hypothesized that employability mediates the relation between learning and IWB. In other words, we argued that it is not only the teachers' formal learning (courses, conferences, etc.) that is linked to their innovative work behavior and employability, but instead we suggested that the undertaking of informal learning activities has greater effects. Thus, we investigated the relations between both formal and informal learning and employability and IWB. Findings supported the idea that formal learning activities improves teachers' anticipation and optimization. This means that formal learning activities can help teachers to be better prepared for future change within the school and the educational world. Findings also supported the idea that social informal learning improves all teachers' employability competences. Moreover, social informal learning activities have a stronger relation with IWB than the formal learning activities undertaken. Furthermore, three competences of employability, i.e. anticipation/optimization, flexibility and corporate sense increase the realization of new ideas on the workplace.

The results allow us to take three main conclusions. First, employability competences can be especially improved by diverse informal learning. Undertaking formal learning activities is only slightly linked to anticipation/optimization. This is in line with previous researches that indicated that informal learning activities increase employees' employability in profit and non-profit organizations (Froehlich et al. 2014). The negative relation found in our research between help use and anticipation/optimization is not supported by previous research. Froehlich et al. (2014) found that formal and informal learning affect anticipation and optimization both positively. It is possible that, for teachers, using someone's help might prevent them from developing the inner capacity to find answers and solutions themselves and from being prepared for future work changes. Furthermore, Froehlich et al. found a positive relation between help seeking and information seeking and expertise and personal flexibility. We only found positive relation between information use and occupational expertise, but not between other dimensions of social informal learning dimensions and occupational expertise. These different findings might come from differences within the occupational setting. Teachers may ask and use help in a different way and for other reasons then to develop their occupational expertise.

We found positive relations between feedback and information use on the one hand and flexibility on the other hand. Furthermore, the informal learning dimensions have strong relationships with all five employability competences, especially information use. It means that undertaking informal social learning activities leads towards highly developed employability competences than formal learning activities. Furthermore, social informal learning showed strong correlations with two of the three IWB dimensions while formal learning activities do not show significant paths. A possible explanation might be that formal learning offers tools to prepare for future changes but does not sufficiently encourage and trigger teachers to think outside the box. Social informal learning is fueled by learning motivation and involves personal initiative, action and reflection. Interaction with colleagues can especially help teachers to promote ideas and to find ways to implement them.

Our second main conclusion is that a distinction needs to be made between different types of social informal learning activities and their frequency and use given the differentiated impact on employability and IWB. It was found that especially information use played an important role in teachers' employability and IWB. The use of information is related to higher levels of expertise, anticipation/optimization, flexibility and corporate sense. It also influences idea generation and realization. Seeking information is therefore the most effective way for teachers to improve their employability competences and provoke innovative work behavior.

Third, it can be concluded that some employability competences mediate specific relationships between the undertaking of learning activities and innovative working behavior. These findings are in line with indications given by previous research done in others profit and non-profit organizations, even if direct evidence of employability as mediator was not reported (e.g. Gerken 2016; Murdoch-Eaton and Whittle 2012). For example, Gerken (2016) found a positive significant relation between formal and informal learning and employability. However, also here informal learning had a bigger impact on employees' employability. She also found that informal learning influences employees' IWB and argued that employability might lead to more IWB however employability as a mediator was not tested.

Limitations and Suggestions

The study results should be interpreted keeping three major limitations in mind. First, participants participated voluntarily in the research. In that case it is possible that they had a greater commitment to continuous development and workplace learning than their colleagues who did not participate in the study. Future research could avoid this potential selection-bias by randomly selecting teachers in randomly selected schools and trying to augment the response rate of the randomly selected teacher group. Related to that, only self-reports were taken into account. Although it is believed that the learner him/herself is in the best position to indicate how much he/she learns and how, in the future multiple raters, such as colleagues and the principal could be taken into account, for example to score teachers' employability competences and IWB. Second, our research included primary and secondary school teachers from the French-speaking community of Belgium. This allows us to generalize the research results to both primary and secondary school teachers. However, still differences exist between primary and secondary school teachers, for example what concerns their tasks, day schedules or innovations they are dealing with. Primary school teachers cover different school subjects, have in general only a class and must show different skills than secondary teachers. Secondary school teachers have a specific school subject and often change class groups. Furthermore, their students have different abilities than primary students and use diverse tools and media. In this sense teachers have different innovations to deal with. Focusing on these differences and specificities is an opportunity for future research. Finally, this research is cross-sectional and did not allow us to look at teachers' progress over time. Further researches investigating teachers' evolution can bring a lot to the field.

Practical Implications

For schools, principals and teachers it is important to be aware about the important role social informal learning plays in teachers' employability competences and IWB. Given the importance of it, schools and their principals should pay more attention to supporting teachers' social informal learning. The present results showed that of the three dimensions of social informal learning concretized by Froehlich et al. (2015), both use of information and use of feedback seeking are the most powerful in fostering employability competences. In line with Noefer et al. (2009), we found that the role of feedback and information is important for stimulating innovative work behavior and employability competences. In this way, the research of Noefer and colleagues was cross-validated in primary and secondary education. Installing a warm learning climate which allows teachers to ask for information and feedback and then dare to put into practice the feedback they received, even with the risk to make errors, could help. Supporting teachers' informal learning can also be done in the workplace (e.g. Avalos 2011) for example by setting-up a discussion corner in the teacher staff room, where there is one single coffee machine, that brings teachers together to discuss, collaborate and share information. Also, mentoring systems could be put in place, to make room for information, help and feedback exchange. However, increasing teachers' collaboration is not the only way to foster social informal learning (e.g. Kyndt et al. 2016). The

non-teaching staff or people outside the school can also be useful for social informal learning. For example, a school psychologist can give useful feedback to a teacher concerning a class situation, or a comedian friend can give valuable information on acting. Also family and friends can give ideas, feedback or advice. Finally, in order to foster informal learning in schools, inter-schools digital platforms supporting information sharing and feedback exchange could be installed.

Taking our research results into account, the kind of interventions mentioned above should create a playground for informal learning and lead toward more employability and IWB. Hirst et al. (2009) found a significant positive relation between on the one hand learning boosting available knowledge and innovation on the other hand.Furthermore, our results showed that formal training should especially be stimulated if teachers need to be able to anticipate to changes or innovations. Formal learning helps teachers to better anticipate and optimize. However, while schools spend money and time on formal learning activities, it is not always the most efficient way for stimulating teachers' expertise growth, flexibility and IWB. Instead informal learning is found to be more efficient and can cost less, especially with small changes (for example, having team meeting during lunch time). It gives teachers control over their learning and allows them to effectively work on their specific learning needs.

We advise educational policy and schools to support teachers' social informal learning to improve their ability to innovate and to deal with future challenges such as the multicultural society and differentiation in the classroom.

References

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal, 39*(5), 1154–1184.

Anseel, F., & Lievens, F. (2006). Certainty as a moderator of feedback reactions? A test of the strength of the self-verification motive. *Journal of Occupational and Organizational Psychology, 79*(4), 533–551.

Arocena, P., Núñez, I., & Villanueva, M. (2007). The effect of enhancing workers' employability on small and medium enterprises: evidence from Spain. *Small Business Economics, 29*(1–2), 191–201.

Ashford, S. (1986). Feedback-seeking in individual adaptation: a resource perspective. *Academy of Management Journal, 29*(3), 465–487.

Ashford, S., & Cummings, L. (1983). Feedback as an individual resource: personal strategies of creating information. *Organizational Behavior and Human Performance, 32*(3), 370–398.

Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and teacher education, 27*(1), 10–20.

Bamberger, P. (2009). Employee help-seeking: antecedents, consequences and new insights for future research. *Research in Personnel and Human Resources Management, 28*(1), 49–98.

Bear, D. J., Tompson, H. B., Morrison, C. L., Vickers, M., Paradise, A., Czarnowsky, M., & King, K. (2008). *Tapping the potential of informal learning: an ASTD research study.* Alexandria: American Society for Training and Development.

Bhaerman, R., & Spill, R. (1988). A dialogue on employability skills: how can they be taught? *Journal of Career Development, 15*(1), 41–52.

Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods & Research, 17*(3), 303–316.

Boudreau, J. W., Boswell, W. R., & Judge, T. A. (2001). Effects of personality on executive career success in the United States and Europe. *Journal of Vocational Behavior, 58*(1), 53–81.

Bunce, D., & West, M. (1994). Changing work environments: innovating coping responses to occupation stress. *Work and Stress, 8*, 319–331.

Butler, R. (2007). Teachers' achievement goal orientations and associations with teachers' help seeking: examination of a novel approach to teacher motivation. *Journal of Educational Psychology, 99*(2), 241.

Byrne, B. (2001). Structural equation modeling with AMOS, EQS, and LISREL: comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing, 1*(1), 55–86.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management, 31*(6), 515–524.

Carmeli, A., Meitar, R., & Weisberg, J. (2006). Self-leadership skills and innovative behavior at work. *International Journal of Manpower, 27*(1), 75–90.

Cappelli, P., & Crocker-Hefter, A. (1996). Distinctive human resources are firms' core competencies. *Organizational Dynamics, 24*(3), 7–22.

Chang, H. T., Hsu, H. M., Liou, J. W., & Tsai, C. T. (2013). Psychological contracts and innovative behavior: a moderated path analysis of work engagement and job resources. *Journal of Applied Social Psychology, 43*(10), 2120–2135.

Chapman, G. M., & Martin, J. F. (1995). Computerized business games in engineering education. *Computers & Education, 25*(1–2), 67–73.

Clough, G., Jones, A. C., McAndrew, P., & Scanlon, E. (2008). Informal learning with PDAs and smartphones. *Journal of Computer Assisted Learning, 24*(5), 359–371.

Delaney, J. T., & Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal, 39*(4), 949–969.

Dumont, H., Istance, D., & Benavides, F. (Eds.). (2010). *The nature of learning: using research to inspire practice*. Paris: Educational Research and Innovation, OECD Publishing.

Engeström, Y. (1999). Innovative learning in work teams: analyzing cycles of knowledge creation in practice. *Perspectives on Activity Theory, 19*(38), 377–404.

Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. *British Journal of Educational Psychology, 70*(1), 113–136.

Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education, 26*(2), 247–273.

Fédération Wallonie-Bruxelles. (2016). *Les indicateurs de l'enseignement 2015*. Bruxelles: administration générale de l'Enseignement.

Fenwick, T. (2003). Innovation: examining workplace learning in new enterprises. *Journal of Workplace Learning, 15*(3), 123–132.

Flynn, D., Eddy, E. R., & Tannenbaum, S. I. (2006). The impact of national culture on the continuous learning environment: exploratory findings from multiple countries. *Journal of East-West Business, 12*(2–3), 85–107.

Frese, M. (2000). The changing nature of work. In N. Chmiel (Ed.), *Introduction to work and organizational Psychology* (pp. 424–439). Oxford: Blackwell.

Froehlich, D. E., Beausaert, S., Segers, M., & Gerken, M. (2014). Learning to stay employable. *Career Development International, 19*(5), 508–525.

Froehlich, D. E., Beausaert, S., & Segers, M. (2015). Age, employability and the role of learning activities and their motivational antecedents: a conceptual model. *The International Journal of Human Resource Management, 26*(16), 2087–2101.

Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: a psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior, 65*, 14–38.

Fuller, J. B., Marler, L. E., & Hester, K. (2006). Promoting felt responsibility for constructive change and proactive behavior: exploring aspects of an elaborated model of work design. *Journal of Organizational Behavior, 27*(8), 1089–1120.

Gerken, M. (2016). *How do employees learn at work?: understanding informal learning from others in different workplaces.* (Doctoral thesis). University of Maastricht. Netherlands.

Grant, A. M., & Ashford, S. J. (2008). The dynamics of proactivity at work. *Research in Organizational Behavior, 28*, 3–34.

Grant, A. M., Parker, S., & Collins, C. (2009). Getting credit for proactive behavior: supervisor reactions depend on what you value and how you feel. *Personnel Psychology, 62*(1), 31–55.

Guerriero, S. (2017). *Pedagogical knowledge and the changing nature of the teaching profession*. Paris: OECD Publishing.

Hager, P. (2004). The conceptualisation and measurement of learning at work. In H. Rainbird, A. Fuller, & A. Munro (Eds.), *Workplace learning in context*. London, New York: Routledge.

Hirst, G., Van Knippenberg, D., & Zhou, J. (2009). A cross-level perspective on employee creativity: goal orientation, team learning behavior, and individual creativity. *Academy of Management Journal, 52*(2), 280–293.

Hoeve, A., & Nieuwenhuis, L. F. (2006). Learning routines in innovation processes. *Journal of Workplace Learning, 18*(3), 171–185.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55.

Jacobs, R. L., & Park, Y. (2009). A proposed conceptual framework of workplace learning: implications for theory development and research in human resource development. *Human Resource Development Review, 8*(2), 133–150.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness, and innovative work behavior. *Journal of Occupational and Organizational Psychology, 73*, 287–302.

Janssen, O. (2003). Innovative behaviour and job involvement at the price of conflict and less satisfactory relations with co-workers. *Journal of Occupational and Organizational Psychology, 76*(3), 347–364.

Janssen, O., & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader-member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal, 47*(3), 368–384.

Keskin, H. (2006). Market orientation, learning orientation, and innovation capabilities in SMEs: An extended model. *European Journal of innovation management, 9*(4), 396–417.

Kluytmans, F., & Ott, M. (1999). Management of employability in the Netherlands. *European Journal of Work and Organizational Psychology, 8*(2), 261–272.

Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education, 19*(2), 149–170.

Kyndt, E., Gijbels, D., Grosemans, I., & Donche, V. (2016). Teachers' everyday professional development: mapping informal learning activities, antecedents, and learning outcomes. *Review of Educational Research, 86*(4), 1111–1150.

Lohman, M. C. (2005). A survey of factors influencing the engagement of two professional groups in informal workplace learning activities. *Human Resource Development Quarterly, 16*(4), 501–527.

Marsick, V., & Watkins, K. (2001). Informal and incidental learning. *New Directions for Adult and Continuing Education, 2001*(89), 25–34.

Mayer, J., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence: implications for educators* (pp. 3–31). New York: Basic Books.

Messmann, G., & Mulder, R. (2011). Innovative work behaviour in vocational colleges: understanding how and why innovations are developed. *Vocations and Learning, 4*(1), 63–84.

Messmann, G., & Mulder, R. H. (2012). Development of a measurement instrument for innovative work behaviour as a dynamic and context-bound construct. *Human Resource Development International, 15*(1), 43–59.

Messmann, G., Mulder, R. H., & Gruber, H. (2010). Relations between vocational teachers' characteristics of professionalism and their innovative work behaviour. *Empirical Research in Vocational Education and Training, 2*(1), 21–40.

Miles, R. E., & Snow, C. C. (1996). Twenty-first-century careers. In M. B. Arthur & D. M. Rousseau (Eds.), *The boundaryless career: a new employment principle for a new organizational era* (pp. 97–115). New York: Oxford University Press.

Mohammad, R. F., & Harlech-Jones, B. (2008). Working as partners for classroom reform. *International Journal of Educational Development, 28*(5), 534–545.

Molleman, E., & Timmerman, H. (2003). Performance management when innovation and learning become critical performance indicators. *Personnel Review, 32*(1), 93–113.

Murdoch-Eaton, D., & Whittle, S. (2012). Generic skills in medical education: developing the tools for successful lifelong learning. *Medical Education, 46*(1), 120–128.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review, 23*, 242–266.

Noe, R. A., Tews, M. J., & Marand, A. D. (2013). Individual differences and informal learning in the workplace. *Journal of Vocational Behavior, 83*(3), 327–335.

Noefer, K., Stegmaier, R., Molter, B., & Sonntag, K. (2009). A great many things to do and not a minute to spare: can feedback from supervisors moderate the relationship between skill variety, time pressure, and Employees' innovative behavior? *Creativity Research Journal, 21*(4), 384–393.

North, J., Mallabar, M., & Desrochers, R. (1988). Vocational preparation and employability development. *Child Welfare, 67*(6), 573–586.

Pedhazur, E. J. (1982). *Multiple regression in the behavioral sciences*. New York: Holt, Rinehart & Winston.

Podsakoff, P., MacKenzie, S., Paine, J., & Bachrach, D. (2000). Organizational citizenship behaviors: a critical review of the theoretical and empirical literature and suggestions for future research. *Journal of Management, 26*, 513–563.

Reber, A. (1993). *Implicit learning and tacit knowledge: an essay on the cognitive unconscious*. Oxford: Oxford University Press.

Révai, N., & Guerriero, S. (2017). Knowledge dynamics in the teaching profession. In S. Guerriero (Ed.), *Pedagogical knowledge and the changing nature of the teaching profession* (pp. 37–71). Paris: OECD Publishing.

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.

Rodriguez, D., Patel, R., Bright, A., Gregory, D., & Gowing, M. K. (2002). Developing competency models to promote integrated human resource practices. *Human Resource Management, 41*(3), 309–324.

Rosette, A., Mueller, J., & Lebel, R. (2015). Are male leaders penalized for seeking help? The influence of gender and asking behaviours on competence perceptions. *The Leadership Quarterly, 26*(5), 749–762.

Sammons, P., Day, C., Kington, A., Gu, Q., Stobart, G., & Smees, R. (2007). Exploring variations in teachers' work, lives and their effects on pupils: key findings and implications from a longitudinal mixed-method study. *British Educational Research Journal, 33*(5), 681–701.

Sanders, J., & De Grip, A. (2004). Training, task flexibility and the employability of low-skilled workers. *International Journal of Manpower, 25*(1), 73–89.

Schein, E. (1996). Career anchors revisited: implications for career development in the 21st century. *The Academy of Management Executive, 10*(4), 80–88.

Schulz, M., & Roßnagel, C. S. (2010). Informal workplace learning: an exploration of age differences in learning competence. *Learning and Instruction, 20*(5), 383–399.

Schussler, D. L., Poole, I. R., Whitlock, T. W., & Evertson, C. M. (2007). Layers and links: learning to juggle 'one more thing'in the classroom. *Teaching and Teacher Education, 23*(5), 572–585.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: a path model of individual innovation in the workplace. *Academy of Management Journal, 37*(3), 580–607.

Seibert, S., Kraimer, M., & Liden, R. (2001). A social capital theory of career success. *Academy of Management Journal, 44*, 219–237.

Stoffers, J. (2014). *Towards an Employability mediation model of Innovative work behavior enhancement a study in small and medium-sized enterprises* (unpublished doctoral thesis). Radboud Universiteit Nijmegen, Nijmegen.

Tannenbaum, S. I. (1997). Enhancing continuous learning: diagnostic findings from multiple companies. *Human Resource Management, 36*(4), 437–452.

Tannenbaum, S. I., Beard, R. L., McNall, L. A., & Salas, E. (2010). Informal learning and development in organizations. In S. W. Kozlowski & E. Salas (Eds.), *Learning, training, and development in organizations* (pp. 303–332). New York: Routledge.

Thurlings, M., Evers, A. T., & Vermeulen, M. (2015). Toward a model of explaining teachers' innovative behavior a literature review. *Review of Educational Research, 85*(3), 430–471.

Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational Research Review, 3*(2), 130–154.

Van Dam, K. (2004). Antecedents and consequences of employability orientation. *European Journal of Work and Organizational Psychology, 13*(1), 29–51.

Van Dam, K., & Thierry, H. (2000). Employee mobility in perspective: an overview of employee mobility research. *Gedrag & Organisatie, 13*, 29–49.

Van Damme, D. (2014). Framing the issues: Teacher professionalism and the knowledge dynamics in the profession in S. Guerriero (Chair), Teachers as Learning Specialists – Implications for Teachers' Pedagogical Knowledge and Professionalism. Symposium conducted at the meeting of the OECD's Centre for Educational Research and Innovation and the Flemish Department of Education and Training, Brussels.

Van de Ven, A. H., & Polley, D. (1992). Learning while innovating. *Organization Science, 3*(1), 92–116.

Van der Heijde, C., & Van der Heijden, B. (2006). A competence-based and multidimensional operationalization and measurement of employability. *Human Resource Management, 45*, 449–476.

Van der Heijden, B., Boon, J., Van der Klink, M., & Meijs, E. (2009). Employability enhancement through formal and informal learning: an empirical study among Dutch non-academic university staff members. *International Journal of Training and Development, 13*(1), 19–37.

van der Rijt, J., Van den Bossche, P., van de Wiel, M. W., Segers, M. S., & Gijselaers, W. H. (2012). The role of individual and organizational characteristics in feedback seeking behaviour in the initial career stage. *Human Resource Development International, 15*(3), 283–301.

Weick, K. E. (1996). Enactment and the boundaryless career: organizing as we work. In M. B. Arthur & D. M. Rousseau (Eds.), *The boundaryless career: A new employment principle for a new organizational era* (pp. 40–57). Oxford: Oxford University Press.

West, M. A. (1989). Innovation amongst health care professionals. *Social Behaviour, 4*, 173–184.

West, M. A., & Farr, J. L. (1990). *Innovation and creativity at work: psychological and organizational strategies*. Chichester: Wiley.

Wright, P. M., & Snell, S. A. (1998). Toward a unifying framework for exploring fit and flexibility in strategic human resource management. *Academy of Management Review, 23*(4), 756–772.

Antoine Lecat is a PhD student at the Faculty of Psychology and Educational Sciences, Université catholique de Louvain, Belgium. His thesis subject is "On the determinants of teachers' formal and informal learning, their employability and innovative working behavior in various career phases". In 2013 Antoine Lecat obtained his Master's degree in Psychology and Educational Sciences at Université catholique de Louvain. Two years later, he began a PhD thesis on teachers' formal and informal learning.

Simon Beausaert is associate professor in the field of workplace learning at the Department for Educational Research and development, School of Business and Economics, Maastricht University, The Netherlands. His current research focuses on supporting (in)formal learning and assessment for learning at the workplace, and their relation with employees' professional development, employability and innovative working behavior. In 2008 Simon Beausaert obtained his Master's degree in Educational Sciences at the Catholic University of Leuven, Belgium. One year earlier he joined the department Educational Research and Development of the Faculty of Economics and Business Administration, Maastricht University as a junior researcher. In 2011 he finished a PhD research that focused on the use of Personal Development Plans (PDPs) in the workplace. Two years later he started a post-doc on the learning of aging employees, their employability and innovative working behavior, which resulted in a tenure track of five years as assistant professor. Nowadays he is the program coordinator of the Management of Learning Master and is responsible for various educational innovation projects at the university. He is often consulted by companies on how to support (in)formal learning at the workplace, employability and innovation, assessment for learning and activating didactical methods.

Isabel Raemdonck is associate professor in adult education and learning at the Faculty of Psychology and Educational Sciences, Université catholique de Louvain, Belgium. Her current research focuses on adult self-directed learning, employability and aging. In 1998 Isabel Raemdonck obtained both her Master's degree in Educational Sciences and her University Degree in teaching at Ghent University, Belgium. Two years later, she obtained her post-university certificate in Human Resources Management. In 2016, she finished a PhD research on self-directedness in learning and career processes, working as Assistant Academic Staff at Ghent University. After that, she worked as assistant professor in Corporate Learning at Leiden University. Nowadays, she is associate professor in Adult Education and Learning at Université catholique de Louvain.