Self-directed Learning in the Workplace

Sunyoung Park University of Minnesota

The paper explores the concept of self-directed learning (SDL) in the workplace. This paper introduces a definition and argument for the importance of SDL, presents conditions that promote SDL, and suggests how future issues and implications should be applied for greater understanding and utilization of SDL in the workplace. The significance of the paper is the relationship between organizational context and learning when SDL and the learning organization are linked.

Keywords: Self-directed Learning; Workplace; Learning Organization

Learning is an important component of competitive advantage for organizations. An enterprise's ability to create an environment that promotes learning and development can greatly enhance individual and organizational performance (Ellinger, 2004; Watkins & Marsick, 1992). In addition, non-traditional training and learning approaches, including self-directed learning, have emerged as organizational responses to meet the complex demands associated with the change in the workplace.

Self-directed learning (SDL) has been an influential adult learning concept within the field of adult education for more than three decades. However, according to trends in self-learning and self-development, the workplace culture is becoming increasingly important in the success or failure of meeting learning objectives. As a result, it is necessary to further explore the importance and contributions of SDL and its impact on individual and organizational performance. The purpose of this paper is (a) to clarify the concept of SDL, (b) to explore the contributions of SDL, and (c) to find the critical issues of SDL for human resource development (HRD) practice and future research. The significance of this article lies in presentation of the relationship among SDL, individual, team and organization in way that SDL can contribute to establishing learning organizations. Implications for HRD practice and suggestions for further research are discussed.

Research Questions

The research questions guiding the study were:

- 1. What is self-directed learning?
- 2. What are the contributions of self-directed learning in the workplace?
- 3. What are the issues of self-directed learning in the future?

Methods

I conducted a literature review of existing studies. Google Scholar, ERIC, and EBSCO were used as databases. I searched the appearance of the term, 'self-directed learning' within the title or keywords and limited studies to those conducted between 1985 and 2006. Among the results, empirical studies are excluded. Refereed academic journals were also reviewed, including *Human Resource Development Review*, *Human Resource Development Quarterly*, *Advances in Developing Human Resources*, *Human Resource Development International*, and *Adult Education Quarterly*.

Overview of Self-directed Learning

According to Knowles (1975), SDL assumes that (a) the human being grows in capacity and need to be selfdirecting as an essential component of maturing, and that this capacity should be nurtured to develop as rapidly as possible, (b) learning experiences should be organized as task accomplishments or problem solving learning projects, and (c) learners are motivated by internal incentives, such as the need for self-esteem, the desire to achieve, the urge to grow, the satisfaction of accomplishment, the need to know something specific, and curiosity. Based on Knowles' (1975) assumptions of SDL, the definition of SDL and related conceptions will be explored.

Self-directed learning (SDL) refers to self-learning in which learners have the fundamental responsibility for their own educational experiences. It is a learning process where the student takes the initiative in identifying

Copyright © 2008 Sunyoung Park

learning needs, preparing goals, determining resources and evaluating learning outcomes (Ellinger, 2004). There are two major viewpoints regarding the definition of self-directed learning. One defines self-directed learning, as a process while the other understands SDL as a personal attribute of learners (Ellinger, 2004; Merriam, 2001). Working from the first perspective, many researchers have tried to establish models of the self-directed learning process such as the linear model, the interactive model and the instructional model (Merriam, 2001).

Brockett and Hiemstra (1991), on the other hand, described self-directed learning as a personal attribute possessed by some learners that predisposes them towards taking responsibility for their own learning. Using the personal responsibility orientation model, they emphasized an instructional process dimension and the learner self-direction dimension. This view also focuses more on social context and political action than with traditional individual learning (Ellinger, 2004). In addition, Brookfield (1986) conceived SDL in terms of personal attributes. The self-directed learner pursues "an understanding and awareness of a range of alterative possibilities" for learning and living: where "critical reflection on the contingent aspects of reality, the exploration of alternative perspectives and meaning systems, and the alteration of personal and social circumstances are all present"(p. 58-59). In short, self-directed learning is described as a learning method where employees initiate the learning, determine needs, set learning goals, select strategies, and evaluate outcomes.

There are several concepts that are related to and influence SDL, including informal learning, selfmanagement learning (SML), self-monitoring, and motivation. Informal learning contains discovery that is not designed nor expected, and SML is the merger of action learning with self-development (Ellinger, 2004). According to Garrison (1997), SDL includes three overlapping dimensions, which are intimately connected: self-management (task control), self-monitoring (cognitive responsibility), and motivation (initiating the task). These are discussed below:

Self-management focuses on the social and behavioral implementation of learning initiatives, that is, the external activities associated with the learning process. Self-monitoring addresses cognitive and meta-cognitive processes: monitoring the repertoire of learning strategies, as well as, an awareness of and an ability to think about our thinking. Self-monitoring is the process whereby the learner takes responsibility for the construction of personal meaning. Motivation plays a significant role in the initiation and maintenance of effort toward learning and the achievement of cognitive goals. Motivation reflects perceived value and anticipated success of learning goals at the time learning is initiated and mediates between context (control) and cognition (responsibility) during the learning process.

SDL also could be compared with self-regulation learning (SRL) in order to avoid terminological and conceptual confusion. SRL is the learning process which learners actively participate in metacoginitive, motivational, and behavioral way for the attainment of their own goals (Zimmerman, 1989). It would reflective and independent learning (Paris & Newman, 1990) based on the incorporation with social learning, and more focuses on psychological approach in academic settings, including metacognition, self-perception, attribution, motivation, learning strategy, goal and self-efficacy. SRL could be one of approaches for SDL because SDL extends beyond to include the self-regulation of motivation, the learning environment, and social supports for self-directedness, as well as, encompasses the cognitive skills emphasized by metacognition field (Zimmerman, Bandura, & Martinez-Pons, 1992).

On the other hand, researchers have made connections between SDL and diverse variables, including employee development, readiness for SDL, educational level, personality factors, learning styles, creativity, life satisfaction, health promotion and wellness, autonomy, organizational factors, and the relevance of job-related topics which have often inconsistent findings (Ellinger, 2004; Clardy, 2000). Lately, research has explored the emotional and political aspects of SDL (Rager, 2003; Andruske, 2000; Brookfield, 1993). Through the study of women with breast cancer, Rager (2003) suggests that SDL plays a role in meeting the emotional and psychological needs of the learners because the emotion has an impact on SDL experiences. Andruske (2000) and Brookfield (1993) illuminate the different approach of SDL, emphasizing the political function of SDL which can lead the power and control over repressive structures and learning activities in organizations.

SDL is reliant on the notion of self-directedness as a personal attribute of learners, especially to the concept of readiness and autonomy. Readiness refers to an internal state of psychological preparedness for self-directed learning. There are instruments available to assess attitude and skills associated with readiness (Bartlett & Kotrlik, 1999; Guglielmino & Murdick, 1997); a few examples are the Self-Directed Learning Readiness Scale (SDLRS) and the Oddi Continuing Learning Inventory (OCLI). Considerable attention has also been given to the notion of autonomy (Candy, 1991). Autonomous learners are independent, able to make choices and critical judgments, and have the capacity to articulate norms and limits of a learning society.

Consequently, SDL can be understood as integrated learning process which encourages learners to focus on their own learning with strategies, goals and responsibilities, distinguishing from other related concepts with "self'.

SDL in the Workplace

Interest in the work-related implications of self-directed learning has been on the increase (Confessore & Kops, 1998). Adults frequently focus their self-directed learning projects on job-related topics, identifying whether there are patterns to such learning projects is of importance to practitioners and researchers alike (Clardy, 2000). Several studies have noted a number of efficiency and effectiveness reasons for using SDL in the workplace. Some of those reasons are listed below (Merriam, 2001; Piskurich, 1993):

- SDL has greater relevance to the particular needs of the individual learner.
- SDL allows greater scheduling flexibility.
- SDL promotes meta-skills for approaching and solving problems beyond the immediate learning project.
- SDL allows for frequent and timely updating of skills and knowledge.
- SDL can provide more focused learning in highly specialized fields.

It is thought that self-directed learning is more effective in development because this learning paradigm accommodates employees' learning styles and objectives, resulting in increased employee job effectiveness as they learn from their own work experiences directly apply their learning at work (McNamara, 1999). *Conditions Promoting SDL in the Workplace*

It is necessary to recognize workplace factors and conditions that support SDL in order to maximize and optimize the advantages of SDL. Straka (2000) identified ten main enhancers of SDL in the workplace; continuous improvement, involving individuals, taking personal responsibility, harmonious values, leadership that sets an example, valuing differences, communication, taking risks, teamwork, and innovation. He also suggested that workplace conditions that encourage SDL include experienced autonomous employees (able to carry out their work tasks through their own scheduling), experienced competent employees (carry out their work tasks efficiently, as well as, successfully and have an awareness of their effectiveness), and experienced social integration (employees feel integrated in the work community; their efforts are acknowledged by superiors and colleagues).

In addition, McNamara (1999) emphasized the role of supervisors as factors influencing SDL. For example, to encourage employee's self-directed learn in the workplace, supervisors can help learners develop positive attitudes - independence relative to learning, create a partnership with the learner by negotiating a learning contract for goals, strategies and evaluation criteria, and provide staff training on self-directed learning, as well as, broaden the opportunities for its implementation.

Furthermore, Foucher (1995) revealed, through interviews with HR practitioners, four organizational variables that promote individual SDL in the workplace: the presence of a participative management style; a supportive environment in which employees enjoy autonomy, and in which management believes the employees are competent and motivated; support for experimentation and tolerance for error; and support for unplanned, non-sequential learning activities.

In short, individual experiences and support of management has positively influenced on encouraging and promoting SDL in workplace.

Roles and Contributions of SDL in the Workplace

Many scholars has studied about roles and contributions of SDL in the workplace and they have demonstrated that SDL plays an important role in individual and team learning, as well as organizational learning, in the workplace.

SDL in individual learning. SDL can be used as a learning strategy not only to improve self-capacity but also to make a meaningful learning outcome for individuals in knowledge-oriented organizations. Poell and Van der Krogt (2003) noted that workers create individual arrangements to learn and solve work problem, including monitor coherence in activities, agree individual program with manager, and undertake activities individually, through SDL, HRD staff also help workers create a coherent SDL initiative, helping learners conceive of programs, and counseling learners through self-study and problem solving. Clarke (2005) showed that employees in the workplace should be self-directed and independent to successfully achieve their learning outcomes, demonstrating that vocational learners relatively lack self-directed learning skill or propensity. He also noted that SDL at the individual level, with accessing information, plays an important role in measuring workplace-learning outcomes. Some research has suggested that individuals who have developed high self-directed learning skills tend to perform better in jobs that require a high degree of problem-solving ability, creativity, and adaptation to change (Beitler, 2005). Therefore, as individuals "develop their self-directed learning skills, they tend to become more self-confident and more apt to solve problems on their own" (Guglielmino & Murdick, 1997).

SDL and team. Self-directed learning opportunities take place in social contexts through interaction with others (Vann, 1996). Self-directed learners also tend to work together when they are learning. Bartlett and Kotrlik (1999) found that interdependent peer learning and collective help seeking can positively relate to SDL, through developing an instrument that measures SDL. In addition, Guglielmino and Murdick (1997) emphasized that not only group interaction and feedback to the self-directed learner, but also the value of learning networks and the extent to which self-directed learners engage were also important in SDL success measures. Specifically,

interaction and collaboration with others can play a very important role in the SDL process, despite that the main purpose of SDL has been recognized as personal growth. Additionally, Gerber, Lankshear, Larsson, & Svensson (1995) emphasized that SDL through interaction with others in the workplace. They found that (a) the interpersonal observations and communication were seen by many workers as the crucial means for learning most effectively in their particular workplace, and (b) close interaction between workers, their colleagues, local experts and their managers ignite the workers' enthusiasm for a method or approach that will improve their learning capacity.

SDL in organizational learning and the learning organization. SDL plays a fundamental role in developing and fostering learning organizations because it is an integral part of a learning organization's ability to reinvent itself, adapt, and learn in the face of new challenges (Confessore & Kops, 1998). In addition, individual self-directed learning activities promote the continuous development of the learning organization's capacity to manage change. Clardy (2000) examined the voluntary use of self-directed employee learning plans in five organizations and found some correlation between how self-directed employees are motivated to learn and subsequently contribute to an organization's learning environment, and what organizational support, specifically provided by human resource professionals, can enhance this motivation.

The importance of the relationship between organizational context and learning is evident when SDL and the learning organization are linked. Spear and Mocker (1984) claimed that the environment, which they referred to as the organizing circumstance has a significant impact on the type of SDL projects undertaken. They found that the organization's goals, values, and work environment affect the degree to which SDL will take place within the organization.

The research results on SDL in the workplace demonstrate the importance of the learning organization concept and its link to SDL. Confessore and Kops (1998) pointed out that the characteristics in the work environment that encourage SDL are very similar to those described as occurring in learning organizations. They summarized five characteristics as facilitating SDL and learning organizations as follows: (1) tolerance for errors, support of experimentation and risk taking, and an emphasis on creativity and innovation; (2) the use of a participative leadership style and delegation of responsibility to organizational members; (3) support for learning initiatives that are linked to the organization's goals and values; (4) encouragement of open communication and of information systems that provide for collaboration and teamwork and that use both internal and external learning resources; and (5) provision of opportunities and situations for individual learning. Similarly, Baskett (1993) found the following workplace factors that enhance self-directed learning in organizational level: (1) opportunities for employees to contribute to the organization's goals and values; (2) an environment of trust and mutual respect; (3) support for risk taking and innovation, and (4) collaboration among organization members.

Future of SDL in the Workplace

A number of trends are emerging from the research on self-directed learning. According to Ellinger (2004), the vast research on SDL includes multiple descriptive studies that have examined the concept and prevalence of SDL: studies that have verified that SDL activities or interests exist and studies that examine how learners engage in SDL and identify resources; perceptions about SDL differ among teachers and learners; models of the process and instructional approaches; personal attributes associated with SDL and competencies for SDL; and the development and testing of measurement instruments to assess readiness for SDL and individual initiative and persistence in continuing professional education. However, based on the concept and prevalence of SDL, research trends and issues in SDL focus on the workplace can be summarized into the following areas (Merriam, 2001; Garrison, 1997; Hiemstra, 1994):

- The feasibility of self-directed learning meeting some job-related training needs in industry
- The relationship of self- directed learning to job requirements (The work setting and SDL)
- Better understand the role of technology in self-directed learning
- · Enhancing self-directed learning by better understanding environmental factors
- Ways need to be found whereby organizations and educators can facilitate self-directed learning and enhance critical thinking skills without impinging on the value of self-directed or spontaneous learning
- How competencies necessary for effective self-directed learning are developed, and how the quality of self-directed learning resources can be measured
- Ways for learners and others to evaluate the value and effectiveness of self-directed learning need to be developed
- What the critical practice of SDL looks like in practice
- Understanding the cognitive and motivational dimensions of self-directed learning
- How contextual factors interact with the personal characteristics of self-directed learners
- The critical role of SDL in building learning organizations

Implications for HRD Practice

Based on review and exploration of SDL, this paper can offer several implications to HRD practice in terms of learning environments and responsibilities of HRD to enhance SDL in organizations.

First of all, HRD practitioners need to should recognize the importance of learning environments that support the SDL of employee's and to pay more attention to developing SDL activities for employees to complete common organizational goals. For example, the department of HRD can develop more sophisticated plans to create learning opportunities and environments, and communicate with employees to improve SDL activities with the organization's goals in mind through collaboration with other departments. HRD professionals would encourage team and group to engage and support SDL activities through mutual collaboration such as communication among their members. Although individuals initiate their own learning, regardless of the conditions that exist in an organization, SDL is more likely to occur in supportive environments (Confessore & Kops, 1998). There are several studies that SDL can contribute to enhancing learning environment in nursing and medical education (Asch, Saltzberg, & Kaiser, 1998; Distlehorst & Barrows, 1982; Patterson, Crooks, & Lunyk-Child, 2002).

Moreover, HRD professionals must consider their roles and responsibilities to encourage and facilitate SDL within organizations. For instance, HRD professionals can communicate and interact with employees regarding their SDL, act as a learning resource, regardless of training programs and emphasize learning for employees to provide advice and support for self-directed learning - an external stimulator. According to Park and Kwon (2005), employees' self-directed learning readiness has something to do with valuation of individual differences, teamwork, individual involvement and risk taking. HRD practitioners also need to recognize the degree of employees' self-directed learning readiness, and would help employees to analyze their own learning needs, use learning resources properly, determine the effort and time for learning, engage SDL activities actively and reflect their learning process and results.

Furthermore, there needs to be more HRD-oriented tendencies to integration and implementation between SDL and HRD in all aspects of organizational issues, contextual factors, technology, cultural issues, political, and ethical issues. According to Ellinger (2004), the ethical issues are associated with encouraging SDL among learners who may be uninterested, unwilling, or unable to engage in SDL in the context of their work organizations. Such learners could be studied to explore the ethical implications of SDL under those changing organizational conditions.

Recommendations for Future Research

Based on this study, future research would be conducted in terms of the factors influencing on SDL, and the goal of learning. Above all, researchers could explore diverse factors influencing on SDL in terms of organizational and individual level. Considering some factors are already mentioned and implied in the above section, organizational factors enhancing SDL would include the policy and system for learning, job design, organizational culture, the degree of use of technology, support of management and so on. Individual factors could be work experiences, the position (roles and responsibilities), education level, cognitive level, motivation, attitude, and so on. For example, Lohman (2005) found the environmental factors inhibiting HRD professionals from involving in informal learning. These factors include an unsupportive organizational culture, the unwillingness of others to participate in informal learning activities, and the inaccessibility of subject matter experts. Based on the assumption that SDL is a part of informal learning and the findings of Lohman (2005), the study of environmental and organizational factors influencing on SDL in both positive and negative way could be conducted.

It could be also interesting to explore if the strengths and contributions of SDL according to goal and context could be different. Although SDL has been positively influenced on individual learning, team activities, and organizational learning, few findings of research provide that how SDL has been understood and evaluated in different context and goals. Nieuwenhuis and Woerkom (2007) identified four goal rationalities for learning to discuss the learning potential of workplace: preparation (learning as a preparation for work), optimization (learning for effective task execution), transformation (learning for innovation), and personal development (learning for personal goals). When learning goal rationalities for optimization and personal development are conflicted or the goal of transformation has a priority in the workplace, SDL might be recognized and evaluated differently according to the context.

Conclusions

This paper introduced the definition of SDL, provided an overview regarding the importance of SDL and the

conditions needed for promoting it within an organization. It examined roles and contributions of SDL from individual and organizational perspectives, and suggested how future issues and implications can be applied for understanding of SDL in the workplace. However, there is a criticism of SDL. For example, Brookfield (1984) illuminated the criticism of SDL: (a) the emphasis on middle class adults as the sampling frame for studies of SDL, (b) the exclusive use of quantitative or quasi-quantitative measures in assessing the extent of learning and the concomitant lack of attention to its quality, (c) the emphasis on the individual dimensions of SDL to the exclusion of any consideration of the social context in which it occurs, and (d) to the absence of any extended discussion of the considerable implications raised by these studies for questions of social and political change.

In summary, SDL can be explained as an activity for which the learner takes the initiative and responsibility for the learning process and plays a significant role in developing and maintaining individual learning in support of the learning organization. Therefore, considering critical possibilities for SDL to contribute to workplace effectiveness, future studies should look at how to improve organizational capacity, as well as, individual abilities through SDL.

References

- Andruske, C. L. (2000). Self-directed learning as a political act: Learning projects of women on welfare. In T. J. Sork, V. Chapman, & R. St. Clair (Eds.), *Proceedings of the 41st Annual Adult Education Research Conference* (pp. 11-15). Vancouver, Canada: University of British Columbia.
- Asch, E., Saltzberg, D., & Kaiser, S. (1998). Reinforcement of self-directed learning and the development of professional attitudes through peer- and self-assessment. *Academic Medicine*, *73*(5), 575-584.
- Bartlett, J. E., & Kotrlik, J. W. (1999). Development of a self-directed learning instrument for use in work environments. *Journal of Vocational Education Research*, 24 (4), 185–208.
- Baskett, M. (1993). Workplace factors that enhance self-directed learning: A report of a project on directed learning in workplace. Montreal: Group of Interdisciplinary Research on Autonomy and Training, University of Quebec. (ERIC Document Reproduction Service No. ED359354)
- Beitler, M. (2005). Strategic organizational learning. Greensboro, NC: Practitioner Press International.
- Brockett, R. G., & Hiemstra, R. (1991). Self-direction in adult learning: perspectives on theory, research, and practice. London and New York: Routledge.
- Brookfield, S. (1984). Self-directed adult learning: A critical paradigm. Adult Education Quarterly, 35(2), 59-71.

Brookfield, S. (1986). Understanding and facilitating adult learning. CA: Jossey-Bass.

- Brookfield, S. (1993). Self-directed learning, political clarity, and the critical practice of adult education. *Adult Education Quarterly*, 43(4), 227-242.
- Candy, P. C. (1991). Self-direction for lifelong learning: A comprehensive guide to theory and practice. San Francisco, CA: Jossey-Bass.
- Cho, D. (2002). The connection between self-directed learning and the learning organization. *Human Resource Development Quarterly*, 13(4), 467-470.
- Clardy, A. (2000). Learning on their own: Vocationally oriented self-directed learning projects. *Human Resource Development Quarterly*, 11(2), 105-125.
- Clarke, N. (2005). Workplace learning environment and its relationship with learning outcomes in healthcare organizations. *Human Resources Development International*, 8(2), 185-205.
- Confessore, S., & Kops, W. (1998). Self-directed learning and the learning organization: Examining the connection between the individual and the learning environment. *Human Resource Development Quarterly*, 9(4), 365-375.
- Distlehorst, L. H., & Barrows, H. S. (1982). A new tool for problem-based, self-directed learning. *Journal of Medical Education*, 57(6), 486-88.
- Ellinger, A. (2004). The concept of self-directed learning and its implications for human resource development. *Advances in Developing Human Resources*, 6(2), 158-177.
- Foucher, R., & Tremblay, N. (1993). Self-directed learning in the workplace: a framework for analysis, in H. B. Long and associates (eds) *Emerging perspective of self-directed learning*. Norman: Oklahoma Research Center for Continuing Professional and Higher Education of the University of Oklahoma, 229 – 245.
- Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. Adult Education Quarterly, 48(1), 18-33.
- Gerber, R., Lankshear, C., Larsson, S., & Svensson, L. (1995). Self-directed learning in a work context, *Education* + *Training*, 37(8), 26–32.
- Guglielmino, Paul J. & Murdick, Robert G. (1997). Self-directed learning: The quiet revolution in corporate training and development. SAM Advanced Management Journal, 62(3), 10-18.
- Hiemstra, R. (1994). Self-directed learning. In T. Husen & T. N. Postlethwaite (Eds.), *The International encyclopedia of education* (2nd edition). Oxford: Pergamon Press. Retrieved August 30, 2007, from <u>http://home.twcny.rr.com/hiemstra/sdlhdbk.html</u>

Knowles, M. (1975). Self-directed learning: A guide for learners and teachers. NJ: Cambridge Adult Education. Lohman, M. C. (2005). A survey of factors influencing the engagement of two professional groups in informal workplace learning activities. *Human Resources Development Quarterly*, 16(4), 501-527.

- McNamara, C. (1999). Strong value of self-directed learning in the workplace: How supervisors and learners gain leaps in learning. Retrieved August 30, 2007, from http://www.managementhelp.org /trng_dev/methods/slf_drct.htm
- Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. In S. B. Merriam (Ed.). *The new update on adult learning theory. New Directions for Adult and Continuing Education*, no. 89. San Francisco, CA: Jossey-Bass.
- Miao, Y. (2000). Supporting self-directed learning processes in a virtual collaborative problem based learning environment. In *Proceedings of the 2000 Americas conference on information systems (AMCIS'2000)*, 1784-1790, Long Beach, California, U.S.A.
- Nieuwenhuis, L. F. M., & Woerkom, M. V. (2007). Goal rationalities as a framework for evaluating the learning potential of the workplace. *Human Resources Development Review*, 6(1), 64-83.
- Paris, S. G., & Newman, R. S. (1990). Development Aspects of Self-Regulated Learning. *Educational Psychologist*, 25(1), 87-102.
- Park, J., & Kwon, D. (2005). Employees' perceived work environment and self-directed learning readiness in Korean companies. *Human Resource Development International*, 7(3), 333–350.
- Patterson, C., Crooks, D., & Lunyk-Child, O. (2002). A new perspective on competencies for self-directed learning. *Journal of Nursing Education*, 41(1), 25-31.
- Piskurich, G. M. (1993). *Self-directed learning : A practical guide to design, development, and implementation.* San Francisco, CA: Jossey-Bass.
- Poell, R. F., & Van der Krogt, F. J. (2003). Learning strategies of workers in the knowledge-creating company. *Human Resource Development International*, 6(3), 387-403.
- Rager, K. B. (2003). The self-directed learning of women with breast cancer. Adult Education Quarterly, 53(4), 277-293.
- Straka, G. A. (2000). Conditions promoting self-directed learning at the workplace. *Human Resource Development International*, 3(2), 241-251.
- Vann, B. A. (1996). Learning self-direction in a social and experiential context. *Human Resource Development Quarterly*, 7(2), 121–130.
- Watkins, K., & Marsick, V. (1992). Toward a theory of informal and incidental learning in organizations. International Journal of Lifelong Learning, 11(2), 287-300.
- Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, *81*(3), 329-339.
- Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: the role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, 29(3), 663-676.