International Journal of Training and Development 8:1
ISSN 1360-3736

Work-related lifelong learning for entrepreneurs in the agri-food sector

Thomas Lans, Renate Wesselink, Harm J.A. Biemans and Martin Mulder

This article presents a study on work-related lifelong learning for entrepreneurs in the agri-food sector. Accordingly, learning needs, learning preferences, learning motivation and conditions in the context of lifelong learning were identified. The results indicate that technology, IT and entrepreneurial competencies will become of increasing importance in the future. Non-formal and informal learning seem to play an especially important role in the competence development of entrepreneurs. Supporting learning in a personal way is a critical factor in stimulating lifelong learning. The results might provide some important starting points for the support of lifelong learning in practice. Investment in new, different, long-term work-related learning arrangements than have been undertaken hitherto is a high priority. Workplace learning for entrepreneurs in the context of lifelong learning should take place in settings where (new) knowledge is constructed in dialogue with the entrepreneurs' environment and where personal competence development is facilitated by experts in learning.

Introduction

The Dutch agri-food sector is one of the most successful export sectors in the Dutch economy, with floriculture (the flower industry) by far the largest exporters, responsible for about 65 per cent of world exports of cut flowers (Porter and Van der Linde,

❒ Thomas Lans, Education and Competence Studies, Wageningen University, P.O. Box 8130, 6700 EW Wageningen, The Netherlands. E-mail: thomas.lans@wur.nl.

1995). How can a sector, in a country that has several natural disadvantages (in terms, for instance of climate and lack of space), be a world leader in the flower industry? One of the most important factors in this success is a special kind of entrepreneurship (Van Oosten, 1998). Growers have innovated every step in the value chain, and learned from their successes and failures. Entrepreneurship is crucial for competitiveness in a period characterised by globalisation, expansion of the importance of information, increased use of communication technology (ICT) and the emergence of technological dynamism (e.g. biotechnology, environmental technologies, computer supported decision systems). The European economy is increasingly knowledge-based and knowledge-driven. As a consequence, in 2000 the Lisbon European Council set a new strategic goal of developing Europe into the world's most competitive and dynamic knowledge-based economy (CEC, 2003a). Europe must increase its knowledge base, invest in educating people and simultaneously develop and utilise new technologies. Human resources are major determinants of the creation of new knowledge and dissemination of research and development activities. Creating a successful knowledge-based economy supported by entrepreneurship requires the development and implementation of strategies and opportunities for lifelong learning (CEC, 2003a).

Already in the 1960s, lifelong learning was an emergent theme embodied in concepts such as '*éducation permanente*' and '*recurrent education*'. According to Wolf (1999) lifelong learning was officially launched at the UNESCO conference in Montreal in 1960. After a relatively quiet period, the concept of lifelong learning is topical again at national and international level. At European level, after the European Year of Lifelong Learning in 1996, the concept was further developed in a Memorandum on lifelong learning (CEC, 2000). The Memorandum offers a structured framework for putting lifelong learning into practice using six key themes: new basic skills for all, more investment in human resources, innovation in teaching and learning, valuing learning, rethinking guidance and counselling, and bringing learning closer to home (CEC, 2000). These key themes each focus on the essential aspects of lifelong learning. Although the themes are intended to form the foundations of lifelong learning, they are not easily translated into everyday practice. For instance, with respect to the first key theme, the idea of new basic skills for all, few initiatives for monitoring and meeting these so-called new skills have been identified (EC, 2001).

In The Netherlands, the principal motives for promoting lifelong learning are economic ones. The 'National Action Program Lifelong Learning' is the political framework on which lifelong learning is based, has been developed and is still developing. Lifelong learning is focused on several target groups: entrepreneurs, employers, employees, the unemployed and people who lack the minimal competencies needed to exercise a certain profession. The significance of lifelong learning gives rise to the need to support this process. The nationally and internationally published memoranda on lifelong learning appear to facilitate and promote lifelong learning among the citizens of Europe. However, the memoranda fail to identify what actions are required to make lifelong learning a reality in everyday life.

This article focuses on the learning of entrepreneurs in the context of lifelong learning. This focus is not merely driven by economic and political interests but also by a scientific interest. Much of the recent literature concerning human resource development (HRD) and workplace learning focuses on the learning of employees, supervisors and managers. Literature on (workplace) learning of entrepreneurs is limited. Furthermore, research on entrepreneurship itself continues to neglect the relationship between learning and entrepreneurship. Hence, more insight is needed in the workplace learning of entrepreneurs. It could be questioned whether current formal education and training activities provide a sufficient basis for the lifelong learning of entrepreneurs. There is a need for a thorough re-thinking of existing learning activities and introducing new ones where necessary (Desci and Tessaring, 2001). As early as 1970, Nadler (in Walton, 1999) stated that is it is a major challenge to assist small organisations in developing their human resources.

In the project described in this article the rearrangement of existing learning arrangements and the development of new ones in the context of lifelong learning for entrepreneurs was the primary objective. The point of departure for these learning arrangements was that more insight should be obtained into the learning of entrepreneurs in the agri-food sector. Answers to the *what* (needs), *how* (possibilities) and *why* (motivations) questions about the learning of entrepreneurs were sought. To answer these questions quantitative interviews accompanied by in-depth qualitative interviews were conducted. The results of the study are presented in this article.

Entrepreneurs' learning

In order to arrive at a better understanding of how entrepreneurs learn, attention should be paid to what entrepreneurship and entrepreneurs entail exactly. Many (young) people have favourable attitudes towards entrepreneurs and entrepreneurship (Davies, 2002). These attitudes are mainly based on an 'over-romanticist' image of the entrepreneur: someone with an important career, or better who is capable of making a lot of money. There is quite a mismatch between this picture and reality. Being an entrepreneur means far more than having the right skills to make money. Various definitions revolve around entrepreneurs and entrepreneurship. In international literature, economists focus on the entrepreneur as the innovator. Keywords of the entrepreneur within the business context are: innovation and creativity. According to Schumpeter (1934), an entrepreneur innovates and creates new combinations, and is therefore not necessarily the director or owner of the business (but the so called 'prime mover' of the economy). Sociology tries to provide insights into the process of entrepreneurship as in the values, beliefs and attitudes fostering entrepreneurial development (Erkkilä, 2000). Behaviourists concentrate more on the competencies of an individual entrepreneur. Gibb (1990) proposes in this context to define the entrepreneur not as a living person performing a set of tasks in a certain role, but as a set of personal attributes and competencies (like flexibility, leadership). In the recent definition of entrepreneurship presented by the European Commission in their green paper on entrepreneurship in Europe (CEC, 2003b) these various aspects seem to be involved in the definition to a certain extent. Entrepreneurship is defined as a certain mindset and process associated with individuals, who possess a set of competencies (e.g. creativity, risk-taking), showing these competencies in distinctive entrepreneurial behaviour (turning a business idea into success), alongside daily management.

The problem within the research history of the Dutch primary production sector is that the terms entrepreneur and owner of a business have been used confusedly, often with a difference in their meaning. In many of these Dutch studies the owners of the business are labelled as 'entrepreneur', although they do not necessarily show entrepreneurial behaviour or possess entrepreneurial competencies. Since the research focuses on entrepreneurs the question arises: how to differentiate between owners of a business and entrepreneurs? Carland *et al*. (1984) and Ginsberg and Buchholtz (1989) also state the importance of differentiating between the entrepreneur and the owner/manager of the company. In our perception entrepreneurs discern themselves from 'ordinary' owners of a business on two main characteristics. First of all, entrepreneurs *innovate*. This characteristic is based on Schumpeter's definition and distinguishes entrepreneurs from managers. However, a good innovator is not by definition someone who is able to turn a business idea into a success. There is more to entrepreneurship than just innovating. In a survey among 1500 Dutch farmers Diederen *et al.* (2000) considered determinants and effects of innovation at the farm level. They concluded that innovators differ from early adopters in behavioural characteristics such as the way they cooperate, and the time they spend on education and consultation. This suggests that entrepreneurs also show distinct behaviour patterns: they *learn*. Several authors indicate that entrepreneurs are excellent learners (Eggers and Smilor, 1996; Gielen *et al.*, 2003; Kupper *et al.*, 2003). But how do they learn, and what makes them 'different' learners than other workers?

Three types of learning can be discerned (CEC, 2000): formal learning, non-formal learning and informal learning. Formal and non-formal learning can be recognised by the specific intention to learn. Formal learning takes place in education and training institutions, leading to official diplomas and qualifications. Non-formal learning takes place alongside the mainstream systems of education and training and does not typically lead to formalised certificates. Non-formal learning may be provided in the workplace and by activities of civil society organisations and groups (such as youth organisations, trade unions and political parties). It can also be provided through organisations or services that have been set up to complement formal systems (such as arts, music and sports classes or private tutoring to prepare for examinations). Informal learning, on the other hand, is defined as unstructured, unintentional, implicit learning that occurs, for example, during work or during cooperation with others (Tjepkema, 2002).

Research results on the learning of workers in general ascribes great importance to non-formal and informal learning. Walton (1999) argues that small and medium-size enterprises (SMEs) are less likely to engage in formal education. Formal education is still highly focused on theoretical concepts (instead of being task- or problem-orientated) and on transferring knowledge. Possible explanations for low participation in formal learning activities are unfamiliarity (lack of awareness), indistinctiveness, financial barriers, wrong perception of critical success factors, uncertainty and lack of evidence that training works in small firms (IOO, 2000; Lange *et al.*, 2000; Walton, 1999). The value of non-formal and informal learning of workers also becomes visible in more empirical studies. Eraut *et al.* (1998) concluded that learning of strategic competencies usually takes place in informal settings. Cheetham and Chivers (2001) in their study of 452 professionals (in six professions) showed that the three most powerful forms of informal learning are: learning on-the-job, learning from (more experienced) colleagues, and working as a member of a team. Recent literature on the learning of entrepreneurs also emphasises the value of non-formal and informal learning. Eggers and Smilor (1996) state that entrepreneurs are excellent resource architects, maximising every kind of resource, learn from everything and everybody, for instance friends, colleagues, but also competitors, suppliers, customers. In a recent study conducted by Elsey and Sirichoti (2003) among Thai farmers, the adoption of a broad innovation in integrated pest management (IPM) was investigated. The authors conclude that the learning of entrepreneurs is often related to direct needs, experience and possibilities in the enterprise.

The learning of entrepreneurs involves a great deal of work-related learning, indicating that learning can be typified as non-formal or informal. Although learning in small enterprises is often an individual affair, the learning of entrepreneurs especially is a highly social process as well. This importance is also observed in the research of Gielen *et al.* (2003) among small agricultural companies in The Netherlands. The authors make a distinction between the learning of workers and employers, stating that workers learn by sharing knowledge in the work team and employers learn by creating networks of colleagues and advisors. Kupper *et al.* (2003) state in their research that the learning of entrepreneurs is all about sharing ideas, creativity, looking for new combinations (boundary crossing), trying new things and learning from each other's successes and mistakes. Stahl (1999) also states that learning in SMEs demand a great deal of learning as an integrated activity within the enterprise and its environment. Learning from people outside one's own organisation seems important in this context.

There also seem to be relationships with such concepts as the learning organisation (Senge, 1990) and the knowledge creating company (Nonaka and Takeuchi, 1995). Although both are still concepts with a certain amount of ambiguity and confusion around them and associated with large organisations with HRD departments rather than empirically proven theories, they provide some important ingredients of a learning company. An organisation learns (however big or small) through its members and is therefore affected by the learning of the individual, directly or indirectly (Leitch *et al.*, 1996). The resemblance between the two theories is that learning enterprises are

continually open to new information, creating the companies' own knowledge and perceptions (Nyhan, 1999). An effective learning organisation senses and adopts changes in its environment. It emphasises the importance of the external environment, customer and supplier knowledge, for instance (Skyrme and Amidon, 2002). Very few empirical studies have been undertaken in SMEs to investigate the role of organisational learning for instance with regard to performance and effectiveness (Chaston *et al*., 2002; Lietch *et al*., 1996). The Chaston *et al*. (2002) survey ($n = 188$) among small UK firms revealed that small entrepreneurial firms tend to reflect an orientation towards acquiring knowledge from external resources and a strong commitment to exploiting new knowledge. This is in contrast with their less innovative counterparts. These findings suggest that learning in business is about creating your own knowledge and perceptions in dialogue with the environment (see also Biemans, 1997; Duffy and Jonassen, 1992; Vygotsky, 1978).

The agri-food context

To understand the learning behaviour of entrepreneurs in the Dutch agri-food sector, it is necessary to consider the broader socio-economic context of the agricultural knowledge system, trends and developments in the sector. Economic liberalisation, mass-individualism in society and information and communication technology (ICT) have revolutionised industry and business, changing existing relations between countries, communities, enterprises and individuals (Van Oosten, 1998). In the agri-food sector the effects of the shift towards an open market and the knowledge economy have been noticeable as well. The Dutch Ministry of Agriculture defines the agri-food sector as all economic activities in the production, processing and distribution of agricultural products (food and non-food) of domestic and foreign origin (Ministry of Agriculture, Nature Management and Fisheries, 2000). After the Second World War, food security was one of the most important factors in agriculture. This manifested itself in increasing demand for animal and horticultural products. The establishment of the European Union (formerly ECC) improved transport facilities and the establishment of the Ministry of Agriculture as we still know it today, contributed to this increasing demand for agricultural products. By supplying products in standardised quality at low costs, Dutch farmers were able to respond adequately to this increasing demand. European agricultural politicies provided a stable internal market and guaranteed prices. The so-called 'triad' of research, extension and education contributed to this, providing a strong knowledge network, diffusing new agricultural technologies very effectively. Increase in size of farms and decreasing labour intensity were a result of this successful knowledge system. To give an indication: the acreage of flower production in greenhouses increased 14-fold between 1950 and 1985, whereas the average number of people working in Dutch agriculture decreased by 70 per cent since 1950 (Van den Ban and Bauwens, 1988).

For a long time, the triad of research, extension and education determined the learning of entrepreneurs in the Dutch agri-food sector. The numerous small Dutch agricultural firms were not inclined to behave entrepreneurially or to innovate (Diederen *et al*., 2000). In the 1990s the situation changed as economic liberalisation reduced protection of agricultural markets. This development, accompanied by the privatisation of the agricultural knowledge infrastructure and extension, social-economic politicies and postmodern society, demanded a completely different approach from farmers with regard to their competence development (Mulder *et al*., 2002). The linear knowledge transfer model of research–extension–education was replaced by an unstable, interactive innovation arena (Gielen *et al*., 2003). Knowledge became more than ever an element of competition in agriculture.

Simultaneously, society is changing and developing at an increasing rate, companies must adapt to the vagaries of the market and changing consumer habits, enhanced environmental regulations, new requirements for product quality, chain management, food safety, sustainability, and so on. The goals are not exactly determined, content is changing from time to time, but the orientation is obvious: innovation in its broadest

sense. It is in this context not enough any more to master the right skills and knowledge to grow plants: integrated, multidisciplinary, transferable competencies will be important to cope with these changes.

These transferable competencies become clearly visible in several recent agricultural orientated studies. Theuws *et al*. (2002) in their research proved that in the field of integrated crop protection there is a significant correlation between innovative strategies of agricultural enterprises and the competencies of the entrepreneurs involved. Transferable competencies, in particular learning and organisational competencies, seem to be crucial in adopting innovative strategies in integrated crop management. In the work of Verstegen *et al*. (2003) among Dutch greenhouse farmers, several factors with regard to barriers to energy saving were investigated in semi-structured interviews. It is not the lack of production or technical competencies that form the barrier for energy saving innovation strategies, but the lack of more strategic entrepreneurial competencies such as organising and planning. Whether the concern is energy saving, water management or integrated crop management, similar entrepreneurial competencies seem to be important. Entrepreneurial competencies, such as social and communication competencies, strategic-efficiency competencies (e.g. problem solving) as well as organisational competencies, can be described as transferable. Few entrepreneurs will possess all the necessary competencies to function adequately in this system, so they will have to acquire them through various learning activities, starting in initial education. These competencies must be constantly relearned, adapted and improved throughout life (Janssens, 2002).

Hence, lifelong learning for entrepreneurs should ideally by defined as (CEC, 2000; CEC, 2003a; Wolf, 1999; Longworth and Davies, 1996):

- a continuous, stimulating and supporting process, initiated in regular education,
- supporting needs, possibilities and experiences of persons,
- to develop the ability to acquire competencies necessary for personal development and professional functioning in the own organisation and the rapidly changing society.

The framework described is a theoretical description of how lifelong learning for entrepreneurs could take shape in the light of recent theoretical perspectives. From a political point of view, putting lifelong learning into practice usually implies efforts to stretch funding to cover new areas of lifelong learning. But of more importance, what does the learner want for him/herself? What items are, according to the learners themselves, of importance in the future? Which changes are desirable? How do learners see their own lifelong learning paths being developed? Answers to these questions have to be found in order to stimulate and support lifelong learning in practice. Based on the theoretical framework outlined and the specific agri-food context the following research questions have been formulated:

(i) What are the learning demands of entrepreneurs in the agri-food sector? (learning demands);
(ii) In what way do entrepreneurs in the agri-food sector prefer to learn? (learning preferences);
(iii) Which factors influence learning in the agri-food sector? (learning motivation and conditions).

Methodology

The research focuses on entrepreneurs in the primary sector. The primary sector employs 50 per cent of all the labour working in the agri-food sector. The sector consists of numerous small- to medium-sized enterprises and in contrast to the food sector (retail), is not dominated by a few large companies. The primary production sector comprises arable farming, livestock production, horticulture and forestry. The total population consisted of 89,580 enterprises in 2002. A random sample of this population should theoretically be the best method for selecting the subjects for interviews.

But there are some future developments that should be taken into consideration in selecting the subjects for interview. The very heterogeneous group of almost 90,000 enterprises is decreasing by two to three per cent every year. Moreover, 55,000 of the entrepreneurs are over 50 years old and 60 per cent of them are likely to have no successor (Ministry of Agriculture, Nature Management and Fisheries, 2000). That is why there are considerable differences in future prospects between the various parts of the sector. Future reports conducted by the Dutch Ministry indicate that subsectors with high (e.g. floriculture, ornamental culture), medium (e.g. poultry, vegetables under glass) and low (e.g. fruit growers, pig farmers) future development potential can be discerned. Subsectors with a medium or high future prospect are very likely to have a positive future prospect, whereas subsectors with a low future prospect are not very likely to survive in the future. In the light of the developments outlined, and the focus on long-term learning, a randomised population sample of enterprises in the agri-food sector was not taken, but a purposeful selection procedure was adopted instead. The selection procedure involved two steps:

1. *Selection of the type of enterprises.* Selection was based on the future prospects outlined. Only subsectors with at least a 'medium' future prospect were included in this study. Subsectors with a 'low' future prospect were omitted from the sample. This pre-selection was also a first selection for entrepreneurs as opposed to owners.
2. *Selection of the entrepreneurs.* The selection of entrepreneurs was based on appraisal by experts in the field. The experts paid particular attention to whether the owner could properly be labelled as an entrepreneur, whether there was a successor, innovativeness and attention to learning and continuous development of themselves and their employees.

In the first instance eight entrepreneurs were selected. All the entrepreneurs were willing to participate in interviews. During the project it proved possible to select and interview an additional group of 17 entrepreneurs with regard to research question number two (learning preferences). The enterprises were distributed over three different subsectors: vegetable growers (2), ornamental culture (6) and floriculture (17). The firms of the respondents varied in size from one-man businesses to firms with over 30 employees. The turnover of the companies varied between 200,000 and three million Euro per annum (see Table 1).

Given the difficulty of (especially) learning in informal and non-formal ways, former interview-based studies were examined in relation to the interview methods and techniques used in order to arrive at reliable interview techniques (Eraut *et al*., 1998). In the light of insights from these studies the following interview procedure was designed:

Table 1: Average turnover, number of employees, age and number of years owner of the enterprise of the interviewed entrepreneurs (with standard deviation)

Detail	Average (standard deviation)
Turnover (in million Euro per annum)	1.3 (1.0)
Number of employees	8.5 (10.2)
Age (in years)	41.9 (9.9)
Number of years owner of the enterprise	18.6 (9.4)

1. A semi-structured interview questionnaire, with open-ended as well as closed questions. Although the total sample size was relatively small, content validity as well as reliability were taken into account.
2. Learning needs, possibilities and motivations are difficult to measure with structured questionnaires. This is also noted by Björnavåld (2001). Learning, especially in non-formal and informal ways, is highly contextual in its character. Rowen (1995, in Walton, 1999) emphasises the significance of checking and validating quantitative studies (by obtaining information on the basis of direct questioning) due to the hidden character of learning in informal ways, especially in SMEs. Learning is often regarded as reproducing, not as knowledge construction. Respondents in the pilot interviews indicated that often they do not regard informal learning as learning. To overcome this, qualitative questions were also included. This method seemed to work well, but complicated the quest for reliability and, especially, validity. Validity and reliability of perceived learning needs were enhanced by consulting experts in agri-food. With regard to learning possibilities and learning motivations, reliability is sought in interview techniques used by other researchers and cross-validation by other groups of experts.

In the questionnaires, the three research questions mentioned above were placed centrally.

Firstly, the respondents were asked what learning demands they had for the future. Learning demands were defined as: basic and generic skills and knowledge for which learning is required in the context of personal development and functioning in their own organisation and/or the rapidly changing society. Man (2002) refers to this as the 'voice of the customer'. Since this description is rather abstract, a list of several basic skills and knowledge possibilities was given. This list was based on the memorandum on lifelong learning, which distinguishes five basic skills for everybody in the first 'key message'. More specifically, the skills mentioned by the European Communities are IT skills, foreign languages, technological culture, entrepreneurship and social skills (CEC, 2000). An advantage of working with this set of skills is that they cover most key areas required for participation in the highly competitive and changing knowledge society and economy. For the interviews these skills were described as follows:

(a) IT skills: the entrepreneur (or employee) is able to identify the latest information and communication technologies, uses them and puts them into practice.
(b) Technological focus: the entrepreneur (or employee) can estimate new technologies at their true value and is able to make this new technology accessible for him/herself and his/her colleagues, when necessary.
(c) Communicate in different languages: the entrepreneur (or employee) is able to learn a foreign language when needed, and is able to apply it verbally, as well as in writing, in the company's processes.
(d) Social skills: the entrepreneur (or employee) knows how to associate with others, and is able to work with others and in groups.
(e) Entrepreneurship: the entrepreneur (or employee) is able to identify opportunities for him/herself or the organisation and dares to take action and responsibilities to eventually gain profit for the organisation.

The interviewees' learning needs in the five areas identified were assessed by means of a five-point scale, ranging from not important at all (1) to very important (5). Interviewees were asked to clarify their choices, give examples and discuss the results in the follow-up interview. To enhance the validation of the outlined learning needs, five experts in the agri-food sector were also the subject of this part of the interview. The experts were asked to validate the learning needs and then asked to complete the questions concerned with this part of the interview. The reliability was in this case based on the inter-rater agreement, expressed as the correlation coefficient (r).

Turning to the learning preferences, the main question was: 'in what way(s) do you prefer to learn?'. To investigate the learning preferences, one should first look in detail

at what kind of learning possibilities there are. To assess the interviewees' learning possibilities a list of several learning possibilities was generated. The list was based mainly on a study conducted by Cheetham and Chivers (2001), the work of Eraut *et al*. (1998) and our own experiences in Dutch agriculture. In the pre-testing it became clear that the list was quite comprehensive. The details of this list are given in Figure 1. The respondents had to complete the list of learning possibilities by rating the different possibilities on a five-point scale, ranging from not at all (1) to less-to-more, very much preferred (5). The results of these questions were explained and discussed in fuller detail in the subsequent in-depth interview.

Finally, learning motivation and learning conditions were addressed. Why do professionals want to learn and which factors influence their learning? Learning motivation and environmental factors affecting learning have been derived from the literature (Mulder and Witziers, 1997; Eraut *et al*., 1998) and our own experience. Mulder and Witziers (1997) identify six categories of learning motivations in their study. In their study of 120 managers, professionals and technicians, Eraut *et al*. (1998) distinguish two types of environmental factors influencing learning: factors in the micro context (factors in the immediate working environment of the workplace) and factors in the macro context (factors beyond the immediate working environment). In this study, motivation as well as learning conditions in the micro and macro context were investigated. Learning motivations were assessed in a preliminary list of possibilities, but the issue was expanded in the follow-up qualitative in-depth interview.

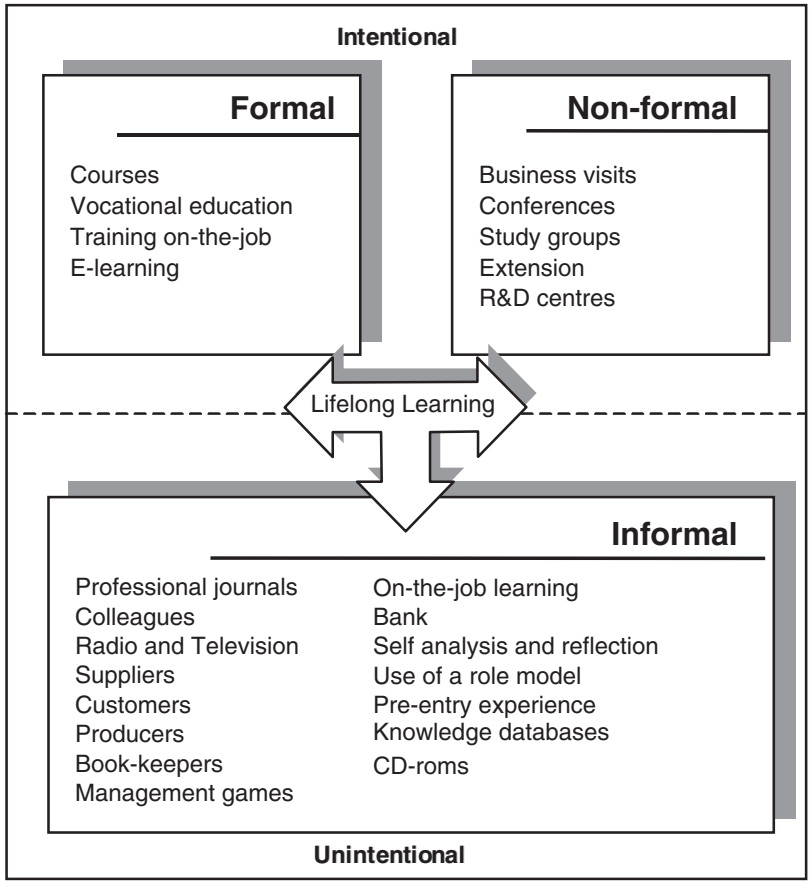

Figure 1: Learning possibilities.

Results

In this section the results of the study will be presented. Firstly, the learning needs that emerged from the study will be described. Secondly, the perceived contribution of different learning possibilities will be presented and thirdly the results on learning motivation and conditions will be described.

Learning needs

The entrepreneurs indicate that the most important learning needs for the future are competencies with regard to new technologies and IT competencies (Table 2). Communication in different languages is rated lowest. The perceived learning needs rated by the entrepreneurs shows great similarities with the ratings scored by the experts. Correspondence between the two raters was $r = 0.78$. In the subsequent discussion, the following explanations for the five future needs identified were given. To compete in a free market, adopting new technologies is a necessity for survival. Especially in horticulture, growing plants is becoming more and more a high-tech business, in which the latest developments in, for example, energy saving, watering systems, climate control, involve high-tech innovations. In order to keep up with the more stringent demands of the consumer and retailer with regard to food safety and sustainability (science-based control systems like HACCP, to guarantee food safety and to trace 'weak links' in the food chain), new technology development and adoption of new technologies is necessary in the future.

Information and communication technology (ICT) will become more important in all kinds of decision support systems in the primary production sector, but also in using simulation models for finding a solution to more complex problems where there is no standard answer available. In addition to more technical applications of ICT, the computer also becomes more important as a source of information. There is a rising number of courses, management games and databases supported by ICT and e-learning. However, apart from working with computers for internal processes in their company (e.g. climate computers), working with the computer as a source of information is not widely adopted in The Netherlands. The primary sector is relatively IT illiterate compared to other SMEs, but is catching up quickly.

Communication skills, especially in combination with leadership and persuasive powers are rated highest in the field of social skills. Leadership and persuasive powers are becoming more important, since the average primary production firm is still growing, in size as well as in employment. Entrepreneurs become aware of the importance of recruiting and selecting, and more important retention of highly-qualified workers. Entrepreneurship, or rather enterprising skills and competencies, become more important as well, according to the respondents. In addition to the internal environment of the company, the external environment becomes of greater importance. One of the entrepreneurs interviewed explained:

> *Entrepreneurs in the agri-food sector still tend to look inside their own world of agriculture and food. The networks in the agri-food business are very internal focussed. We should pay more attention to entrepreneurs in other businesses, since in the entrepreneurial essence it does not matter in what sector you operate.*

Table 2: Learning needs, rated on a five-point scale: 1 = not important at all; 5 = very important (n = 8).

Skills	Average score
Technological focus	4.1
IT skills	3.9
Entrepreneurship	3.9
Social skills	3.8
Communicate in different languages	2.7

Globalisation demands more externally-orientated strategies. Dutch primary producers have been able to compete in national and international markets from a producer orientation view for years. However, conditions are changing and the future requires a shift from a producer-orientated production to a customer-orientated mode. To be able to compete world-wide in a customer-orientated environment, more complex types of innovation will be needed: innovations which include partners in supply chains (in and outside the sector), networks and stakeholders from governmental and social organisations.

The complexity of these types of innovations requires 'new' enterprising skills and competencies of entrepreneurs in the agri-food sector. To summarise these findings, important competencies in this context are (see also Kupper *et al*., 2003):

- courage and risk-taking
- adopt innovations
- network management
- strategic orientation
- systems thinking
- creativity
- conflict management
- value clarification
- communication skills
- leadership
- knowledge sharing
- learning orientated
- reflecting on success and failures.

Skills with regard to foreign languages (English, German, French and Spanish) scored relatively low. English and German got the highest rating of the four. Although the Dutch agri-food sector is strongly export-minded, the vast majority of all goods exported, are exported to other European countries. Globalisation is happening, but is developing gradually. However, the ongoing process of internationalisation and production in customer-oriented mode (as described above) will put more emphasis on communication in foreign languages.

Learning preferences

All interview respondents had completed secondary vocational or technical education. The majority of the entrepreneurs spend more than one hour a month on deliberate learning. The results were striking. At first sight, when the average scores of each learning preference are ranked from high to low, the average role of informal learning seems no more important than the role of formal learning. Both have a high average rank value (Figure 2). Entrepreneurs seem to be attracted to non-formal ways of learning. Apparently some structuring and coaching and facilitating of the learning is highly appreciated.

However, from the discussions that were held afterwards, it appeared that entrepreneurs do not directly recognise informal learning as real learning. When the definition of informal was explained to them, they appeared to be much more involved with informal learning than they would have thought beforehand. This picture becomes even clearer when the top 10 of the learning activities in the three different discerned groups is constructed based on the average (absolute) scores. The top 10 learning preferences does not include any formal learning (Figure 3); non-formal and informal learning activities prevail. One entrepreneur summarised the problem with formal learning as follows:

> *In formal courses, in integrated pest management for instance, you spend three days in a classroom and perhaps one day out in the field. You will always see that just on that day that you are out in the field all the insects that you should be looking for in your crops are on holiday.*

Moreover, in relation to formal learning, the entrepreneurs interviewed prefer to learn in traditional courses taught in agricultural colleges. They generally regard e-learning

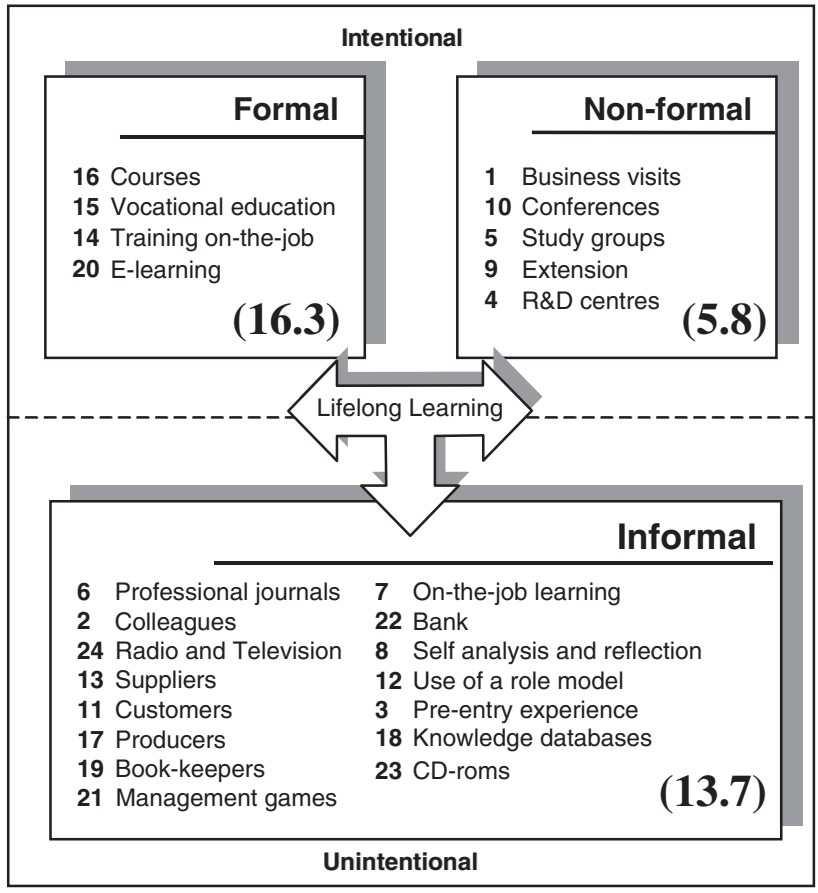

Figure 2: Learning preferences. The numbers indicate the rank scores from 1 to 24 (1 = highest importance . . . 24 = lowest importance), based on the average (absolute) scores rated by the respondents. The average rank score per learning type is indicated between brackets (n = 25).

as hype, and do not see themselves following any IT courses, simply because of lack of time. As one of the entrepreneurs explained:

> *The problem with e-learning specific in this profession is that people lack time and capacity to organise and plan e-learning activities. The daily hectic of working with living organisms makes it hard to find the time to 'sit back' behind a computer following a specific course.*

Research and development (especially applied research institutes), study groups and business visits are the three most important non-formal learning possibilities for competence development according to the interviewees (Figure 3). The (traditional) agricultural study groups set a good example of collaborative learning. These study groups consist of members who have similar farms (or greenhouses) and who organise meetings to discuss problems on-the-job. Learning on-the-job, learning from colleagues, pre-entry experience are most frequently mentioned as informal ways of learning. Also frequently mentioned are learning from professional journals and self-analysis and reflection.

Learning motivation and learning conditions

With regard to the learning motivation of the interviewees, learning seems to be directly related to affiliated personal interest and motivation. Most frequently men-

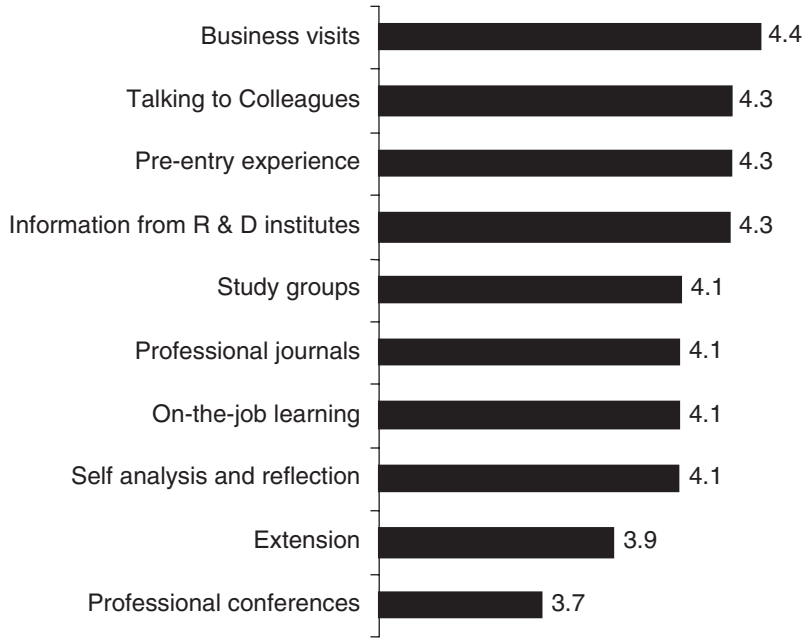

Figure 3: Top 10 learning preferences of entrepreneurs (n = 25), rated on a five-point scale (1 = not at all . . . 5 = very much preferred).

tioned is motivation with regard to personal development. Learning is regarded as useful in enhancing personal capacities, and for gaining more experience in a certain field of interest. Learning in order to improve income or to improve promotion prospects is mentioned by only one respondent. Personal development demands a learning climate which stimulates learning. This environmental factor in the micro context is most frequently mentioned. Another important factor in the micro context is the use of appraisal and feedback on the competencies that have been acquired. Important environmental factors in the macro context are the introduction of appraisal systems for learning, and structured systems or protocols to support and stimulate learning in the organisation.

Conclusions: towards long-term learning trajectories

In the study described, the learning of entrepreneurs in the context of lifelong learning was the centre of concern. The agri-context of the entrepreneurs can be characterised as a knowledge economy, since the sector faces serious challenges with regard to ICT, globalisation and new technologies. Knowledge and, more importantly, the utilisation of new knowledge is becoming an important factor to be competitive and respond adequately to these changes. Entrepreneurship plays an important role in the quest for and utilisation of new knowledge. Keywords in this context are innovation and learning. The focus on the learning of entrepreneurs in the context of lifelong learning is interesting not only from an economic and political point of view, but also from an educational perspective as well. This is because the focus in most educational studies concerning lifelong and workplace learning is on the learning of employees, managers or supervisors of enterprises. Too little attention is paid to learning in entrepreneurial research.

Accordingly, the learning characteristics of entrepreneurs were the point of departure for this study. Learning needs, preferences and motivations were investigated to gain better insight into the learning of this group, with the eventual aim of stimulat-

ing provisions of support for them in lifelong learning in the future. The results of this study indicate that technology, IT and enterprising competencies will become of increasing importance in the future. The need for IT competencies and technology-related competencies can best be explained as a result of the developments outlined in the sector. The shift from a production orientation (dominated by production) to a customer orientation (market differentiation and creating more value for customers) demands new, specialised production techniques and computerisation of processes. Innovation in a knowledge-based economy, economic liberalisation and the increase in labour cost also demand (new) entrepreneurial competencies such as network orientation, leadership and courage and risk-taking. The lack of interest in languages can be explained by the way agriculture, and more specifically horticulture, organises exporting. They sell their products at the highest possible price to auction houses, which are responsible for the distribution, sales and marketing of fresh produce. However, a growing number of entrepreneurs is establishing branches world-wide, adding also other links in the distribution chain to their enterprises (Van Oosten, 1998). This will certainly increase the demand for foreign languages.

According to the respondents there are many learning possibilities to develop these competencies. Non-formal and informal learning seem to play an especially important role in the competence development of entrepreneurs. Study groups, business visits, research and development institutes, professional journals, pre-entry experience, learning on-the-job, learning from colleagues and self-analysis and reflection are the most powerful forms of non-formal and informal learning. It is especially important to notice that informal learning is often not regarded as learning. Researchers in this field should be well aware of this point.

Possible explanations for the preference for non-formal and informal learning activities are that the non-formal and informal learning activities are often much quicker, more specific and give faster results than formal education and training. Moreover, formal education and training is to a large extent based on (mono) disciplinary courses, enhancing employability and upgrading the education level of in particular employees and not of entrepreneurs. The general reasons for the lack of interest in formal education mentioned in the literature on SMEs (IOO, 2000; Lange *et al*., 2000; Walton, 1999) seem to apply to some extent to this group.

The results also indicate that the entrepreneurs seem to prefer learning activities that are focused on networks outside their own enterprise (study groups, resource and development institutes, colleagues). Gielen *et al*. (2003) back this conclusion in their study. Entrepreneurs have to make daily decisions to realise their own goals as well as, for example, possible decisions with regard to the adoption of (more) productive technologies, decisions with regard to management and human resources. It will seldom be possible to find one learning avenue (for instance an extension agent) which provides all the answers to the learning needs (Van den Ban, 1998). Networks outside the enterprise seem to be very important for the learning of entrepreneurs, although the entrepreneurs themselves indicate that the current networks outside the agri-food sector should be improved.

The overall distinct preference for non-formal learning activities suggests that some structuring of the learning from, for instance, colleagues, researchers and competitors, is appreciated. Supporting learning in an individual way is a critical factor in stimulating lifelong learning. Personal motivation seems to be the most important factor why people want to learn. The increasing need for competencies such as courage, risk-taking, creativity, conflict management and value clarification puts more emphasis on self-analysis, reflection and personal development in the broadest sense. In general it can be said that external motivation (such as a promotion, or a higher salary) is not as powerful as personal, internal, motivators (self-esteem, quality of life) (Knowles *et al*., 1998). In other research personal motivation was also found as being the most frequently mentioned (Mulder and Witziers, 1997).

The need for (usable) knowledge and competencies, the preference for learning in dialogue with others in semi-structured settings and the personal drive to learn might provide some important starting points for the support of lifelong learning in prac-

tice. First of all the development of these competencies should be focused on recognising and approving non-formal and informal learning activities, learning activities where learning and working are integrated. Entrepreneurs indicate that they often do not recognise these activities as learning. However, it could be argued that just recognising and approving these learning activities are not enough to acquire the competencies mentioned and to stimulate continuous learning. Some broadening of the workplace is necessary. Three important arguments for this can be given. First, when introducing new technologies and IT competencies, an effective knowledge system between the various stakeholders is important. The classic research–education–extension triad seems to be inadequate to fulfil the requirements of this century. High innovativeness is all about crossing borders, opening new windows of opportunity in domestic and foreign markets. Secondly, the focus on competencies, rather than specific knowledge, attitudes or skills for professionalisation demands more complex, continuous learning environments. And finally, the issue with regard to personal motivations for learning (the joy of learning), learning should be more integrated with the particular person's environment. Investment in new, different, long-term work-related learning arrangements than have been undertaken hitherto is a high priority. Workplace learning for entrepreneurs in the context of lifelong learning should take place in settings where (new) knowledge is constructed in dialogue with the entrepreneur's environment and where personal competence development is facilitated by experts in learning. However, this structuring should not conflict with the unique character of learning in non-formal and informal settings. The learner should still be able to design or change his or her own learning environment. Learning environments in which education and training institutes, research and development institutes and (groups of) entrepreneurs cooperate and fulfil the above-mentioned conditions are being developed at this very moment. Such arrangements can create very powerful learning arrangements both in the working careers of entrepreneurs and in the context of lifelong learning. Not many studies have been conducted in this field. Little is known about the effects of non-formal and informal learning on the long term, effects for instance with respect to return on investment. Further insights in how to structure and measure non-formal and informal learning activities, the development of suitable structured learning environments and eventually analysis of the long-term effects of these learning trajectories are therefore required.

Acknowledgements

We thank Dr. ir. Anne W. van den Ban (Professor Emeritus, Wageningen University, The Netherlands) for his helpful comments on the manuscript. The study that is described in this contribution was funded by the Ministry of Agriculture, Nature and Food Quality in The Netherlands.

References

Ban, A. W. van den (1998), 'Supporting farmers, decision making processes by agricultural extension', *Journal of Extension Systems*, **14**, 55–67.

Ban, A. W. van den and Bauwens, A. L. G. M. (1988), 'Small farmer development; experiences in the Netherlands', *Quarterly Journal of International Agriculture*, **27**, 215–27.

Biemans, H. J. A. (1997), *Fostering activation of prior knowledge and conceptual change* (Nijmegen: University of Nijmegen).

Björnavåld, J. (2001), 'Making learning visible: identification, assessment and recognition of non-formal learning', *European Journal of Vocational Training*, **22**, 24–32.

Carland, J. W., Hoy, F., Boulton, W. R. and Carland, J. A. (1984), 'Differentiating Entrepreneurs from small business owners: a conceptualization', *Academy of Management Review*, **9**, 354–9.

CEC (2000), *A Memorandum on lifelong learning* (Brussels: Commission of European Communities).

CEC (2003a), *Communication from the Commission; investing efficiently in education and training: an imperative for Europe* (Brussels: Commission of European Communities).

CEC (2003b), *Green paper on entrepreneurship in Europe* (Brussels: Commission of European Communities).

Chaston, I., Badger, B. and Sadler-Smith, E. (2002), 'The organisational learning system within small UK manufacturing firms', *International Journal of Training and Development*, **3**, 269–77.
Cheetham, G. and Chivers, G. (2001), 'How professionals learn in practice: an investigation of informal learning amongst people working in professions', *Journal of European Industrial Training*, **25**, 248–92.
Davies, H. (2002), *A review of enterprise and economy in education* (Norwich: Crown).
Desci, P. and Tessaring, M. (2001), *Training and learning for competence: Second report on vocational training research in Europe: executive summary* (Luxembourg: CEDEFOP).
Diederen, P., Van Meijl, H. and Wolters, A. (2000), *Eureka! Innovatieprocessen en innovatiebeleid in de land- en tuinbouw* (The Hague: LEI).
Duffy, T. M. and Jonassen, D. H. (1992), 'Constructivism: new implications for instructional technology', in T. M. Duffy and D. H. Jonassen (eds), *Constructivism and the technology of instruction: a conversation* (Hillsdale: LEA).
EC (2001), *National actions to implement lifelong learning in Europe* (Brussels/Thessaloniki: Eurydice/CEDEFOP).
Eggers, J. H. and Smilor, R. W. (1996), 'Leadership skills of entrepreneurs: resolving the paradoxes and enhancing the practices of entrepreneurial growth', in R. W. Smilor and D. L. Sexton (eds), *Leadership and entrepreneurship: personal and organizational development in entrepreneurial ventures* (Westport: Quorum Books).
Elsey, B. and Sirichoti, K. (2003), 'The theory and practice of workplace learning in the adoption of integrated pest management by tropical fruit growers in Thailand', *Journal of Workplace Learning*, **15**, 53–62.
Eraut, M., Alderton, J., Cole, G. and Senker, P. (1998), *Development of knowledge and skills in employment: Research report no. 5* (Brighton: University of Sussex Institute of Education).
Erkkilä, K. (2000), *Entrepreneurial education – mapping the debates in the United States, the United Kingdom and Finland* (New York/London: Garland).
Gibb, A. (1990), 'Entrepreneurship and intrapreneurship – exploring the differences', in R. Donkels and A. Miettinen (eds), *New findings and perspectives in entrepreneurship* (Aldershot: Gower).
Gielen, P. M., Hoeven, A. and Nieuwenhuis, L. F. M. (2003), 'Learning Entrepreneurs: learning and innovation in small companies', *European Educational Research Journal*, **1**, 90–106.
Ginsberg, A. and Buchholtz, A. (1989), 'Are entrepreneurs a breed apart?: a look at the evidence', *Journal of General Management (UK)*, **15**, 32–40.
IOO (2000), *Kennisoverdracht en het MKB; kennisthema ten behoeve van de derde ICES-KIS investeringsimpuls* (Zoetermeer: Economisch onderzoek voor de publieke sector).
Janssens, J. (2002), *Innovations in lifelong learning: Capitalising on ADAPT* (Luxembourg: CEDEFOP).
Knowles, M. S., Holton, E. F. and Swanson, R. A. (1998), *The adult learner*, 5th edn (Houston, TX: Gulf Publishing).
Kupper, H. A. E., Lans, T., Mulder, M. and Biemans, H. J. A. (2003), *Inspirerende leeromgevingen voor innovatieve ondernemers* (The Hague: SIGN/Innovatienetwerk).
Lange, T., Ottens, M. and Taylor, A. (2000), 'SMEs and barriers to skills development: a Scottish perspective', *Journal of European Industrial Training*, **24**, 5–11.
Leitch, C., Harrison, R., Burgoyne, J. and Blantern, C. (1996), 'Learning organisations: the measurement of company performance', *Journal of European Industrial Training*, **20**, 31–44.
Longworth, N. and Davies, W. K. (1996), *Lifelong learning: new visions, new implications, new roles for people, organisations, nations and communities in the 21st century* (London: Kogan Page).
Man, J. (2002), 'Six sigma and lifelong learning', *Work Study*, **51**, 197–201.
Ministry of Agriculture, Nature Management and Fisheries (2000), *Facts and Figures 2000* (The Hague: LNV).
Mulder, M. (2001), 'Competence development – some background thoughts', *The Journal of Agricultural Education and Extension*, **7**, 147–58.
Mulder, M. and Witziers, B. (1997), *Levenslang leren: hoger opgeleiden en hun plannen: Intermediair opleidingen enquête* (Amsterdam: Intermediair).
Mulder, M., Lans, T. and Schlooz, P. M. T. (2002), *Kenniscirculatie tussen onderzoek en onderwijs; enkele ideeën op weg naar een expertisecentrum kenniscirculatie* (Wageningen: Wageningen University).
Nonaka, I. and Takeuchi, H. (1995), *The knowledge-creating company: How Japanese companies create the dynamics of innovation* (New York/Oxford: Oxford University Press).
Nyhan, B. (1999), 'Building learning organisations: putting theory to test – lessons from European companies', *European Journal of Vocational Training*, **16**, 14–23.
Oosten, H. J. van (1998), 'Horticultural research in the Netherlands: changes and challenges for 2010', World conference on horticultural research, 17–20 June, Rome.

Porter, M. E. and Van der Linde, C. (1995), 'Green and Competitive: Ending the Stalemate', *Harvard Business Review*, **73**, 120–34.
Schumpeter, J. A. (1934), *The theory of economic development* (Cambridge, MA: Harvard).
Senge, P. M. (1990), *The fifth discipline: the art and practice of the learning organisation* (New York: Doubleday).
Skyrme, D. J. and Amidon, D. M. (2002), 'The learning organisation', in S. Little, P. Quintas and T. Ray (eds), *Managing knowledge: an essential reader* (London: Sage).
Stahl, T. (1999), 'Stimulating regional innovativeness: the learning region', in B. Nyhan, G. Attwell and L. Deitmer (eds), *Towards the learning region: education and regional innovation in the European Union and the United States* (Thessaloniki: CEDEFOP).
Theuws, L. W., Buurma, J. S., Smit, A. B., Vernooy, C. J. M. Van Woerden, S. C., Poot, E. H. and Van Roestel, A. J. J. (2002), *Ondernemerstypen en kennisverspreiding rond geïntegreerde teelt* (The Hague: LEI).
Tjepkema, S. (2002), *The learning infrastructure of self-managing work teams* (Enschede: Twente University Press).
Verstegen, J. A. A. M., Westerman, A. D., Van Ravensbergen, P. and Bremmer, J. (2003), *Ondernemen met energie: gedragsonderzoek naar de drijfveren van glastuinders ten aanzien van energiebesparing* (The Hague: LEI).
Vygotsky, L. (1978), *Mind and society* (Cambridge, MA: Harvard University).
Walton, J. (1999), *Strategic Human Resource Development – small and medium-sized enterprises and Human Resource Development* (Harlow: Pearson Education).
Wolf, H. (1999), *Beeld van een instelling in de voorhoede van de onderwijsvernieuwing* (Heerlen: Open Universiteit Nederland).