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The knowledge revolution and the knowledge economy: the challenge for HRD.

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Introduction

The economy is rapidly being transformed into a knowledge economy. Therefore, individuals, teams and companies need to develop the necessary competencies to be able to participate in a working life that is mainly based on knowledge productivity. Traditional approaches to management, training and development will not provide the learning environment that is required for knowledge work. Therefore, each company needs to design a corporate curriculum that turns the day to day work environment into a powerful learning environment.

The knowledge economy offers the possibility of prosperity to those who can join the new elite of knowledge workers. It also inherently creates new imbalances. The learning environment should help individuals to develop their talents and take part in various forms of knowledge work. The concepts of knowledge productivity and the corporate curriculum raise also the question of how far knowledge productivity can be managed. These concepts may even question the role of managers in a knowledge economy.

Perceptions of the role of human intervention in economic transactions have changed. The emphasis upon individual physical labour and ability to regulate and coordinate transactions has given way to an emphasis upon the potential human contribution to the production and application of

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knowledge. Of the products manufactured and services rendered by organisations, material items (such as commodities), capital and physical labour, are now less significant than the combination of knowledge embodied in the product or service. It is widely accepted that we are moving away from an industrial economy to a knowledge economy. Of course, traditional economic aspects such as labour and materials are still important, but it is now critical to be able to add value to products and services through knowledge (Drucker, 1993). Economic success requires the ability to improve and innovate.

This slow but dramatic change in the economy will have a tremendous impact on organizing work and the meaning of learning. As a consequence, professionals in the domain of human resource development will have to reconsider their role and their potential contribution to a 'knowledge productive' work environment. This chapter aims to explore the changes brought about by the emerging knowledge economy, their implications for the HRD profession and the need for work-related collaborative research.

A knowledge revolution

One of the views underlying the knowledge economy is that the application of knowledge adds more value than the traditional economic factors like capital, raw materials and labour. Many writers have commented on such an economy, using a variety of synonymous terms including: the 'information society' (Giddens, 1994), the 'learning society' (European Commission, 1996), the 'network society' (Castells, 1998), the 'learning economy' (Field, 2000; Lundvall & Borás, 1998), and 'economies of expertise' (Venkatraman and Subramaniam, 2002). In all these concepts learning and collaboration are key aspects. Organisations must learn quickly, drawing on information from many external as well as internal sources, in order to be able to repeatedly improve and innovate. Sustained competitive advantage depends on the rapid generation and application of 'dynamic capabilities', defined as the firm's ability to integrate, build and reconfigure uniquely valuable competencies (Eisenhardt and Santos, 2002). Venkatraman and Subramaniam (2002) argue that the key resources that drive value creation are knowledge and expertise. In economies of expertise strategic capability emerges from knowledge, which is embodied in people. Therefore the authors suggest that we may find a direct and significant link between the talent pool of the employees and the performance of the firm. Here the need for collaboration and networking of employees becomes crucial for the development of an organization.

The Organization for Economic Co-operation and Development (OECD) adopted the idea of an emerging knowledge economy and developed supporting policies in its reports *Lifelong Learning for All* (1996), *Literacy*

Skills for the Knowledge Society (1997) and *Knowledge Management in the Learning Society* (2000). In 2001 two OECD publications, *The well-being of nations: The role of human and social capital* (2001a) and *The new economy: beyond the hype -The OECD growth project*. (2001b) contained a strong plea for major investment in education, training and life long learning to enhance economic growth.

An economic necessity for individual learning

In the current timeframe, it is challenging to investigate the characteristics and requirements of an emerging knowledge economy and its implications for individual development in the context of work-related learning. Such analysis might lead to the fresh hypothesis that externally imposed performance goals, power-based managerial positions and the concept of ownership of knowledge intensive companies in the hands of anonymous shareholders, could well inhibit knowledge productivity.

The defence of such propositions resides in the economic necessity for an individual-centred perspective on HRD, with a strong emphasis on the emancipated and autonomous professional. Such a perspective is not restricted to the highly educated service worker: even manual workers must be cooperative, responsible, creative and autonomous (Salling Olesen, 2000). It could be argued that the cultural shift from social solidarity and collectivity to individual life styles and independent membership might hamper the socially embedded process of knowing. However, the social context of an organization should counterbalance the potential risk of individual self-centeredness, and should foster networks that find their cohesion through the mutual attractiveness, reciprocal appeal, shared interest and the passion of their members (Kessels, 2001). Traditional virtues like obedience and loyalty do not propel improvement and innovation. Human capital as a resource for organisational performance will not be enough. It needs to be supported by social capital, based on shared responsibility, integrity, trust, respect for human dignity and environmental awareness (OECD, 2001a). All these elements require high levels of critical individual learning.

HRD in Europe

Human Resource Development is not an exclusive corporate interest. More than ever before, individuals want to master their own lives and expect to contribute to the economy and society. The International Labour Organization (2002) places the individual at the centre of the knowledge and skills-based society and reports impressive growth results in Danish enterprises that combined learning activities and innovation. In Sweden, the Adult Education Initiative (AEI) is the largest adult education investment initiative ever undertaken in the country and explicitly puts the focus on the

individual. In Europe, the development of individuals as active citizens of society is given a central place in statements of learning and education objectives (European Commission, 1996). Learning opportunities and decent work underpin individuals' independence, self respect and well-being, and, therefore, are the key to overall quality of life. The European Council held a special meeting on 23-24 March 2000 in Lisbon to agree a new strategic goal for the European Union in order to strengthen employment, economic reform and social cohesion as part of the knowledge-based economy. Investing in people, is the focal point in the Union's policies, not only to play an important role in the knowledge economy, but also to resolve existing social problems of unemployment, social exclusion and poverty. Economic growth, innovation, social cohesion and lifelong learning are considered as inseparable (Lisbon European Council, 2000). More recently, the 2002 European Council in Barcelona stressed the importance of the education and training in the achievement of the Lisbon ambitions, by setting a new overall goal 'to make Europe's education and training systems a world quality reference by 2010' (Commission of the European Communities, 2002). These policies put Human Resource Development at the core of a learning society and a knowledge economy.

Knowledge management: an anachronism

The managerial tendency of the last fifty to eighty years has been based upon routine work and mass production, an approach characterised by standardisation with a focus upon efficient procedures and regulations controlled by the 'brains' at the top of the organisation, who set the strategy. The problem with this is that in the knowledge economy, where the complexity of work increases and the role of knowledge creation is gaining importance, (top) management is no longer equipped to direct and control the organisation in a traditional way. Management now has to be done at every level, and it also requires a contribution of knowledge from all employees at all levels. As a consequence an entirely new approach to employing and managing workers is called for. The old work contract was based upon obedience and loyalty, in return for a decent salary and the company taking care of you and managing your performance. As soon as employees offer an entirely different input to the company, in terms of contributing ideas and proposals to improve and radically innovate, they become part of the collective ambitions of the organisation. This is already happening in consultancy businesses and small knowledge intensive networks.

When capital is displaced by the capability to create knowledge, the legitimate base for a company shifts from ownership by anonymous

shareholders to knowledge workers. This leaves managers in an insecure position: the traditional role of middleman between capital and labour becomes obsolete, and controlling brainwork is hardly possible any more. Many recognize the importance of organisational knowledge and the capability to develop new knowledge, but they often apply the traditional management principles to exploit this potential resource. From a classical business perspective it was inevitable that 'knowledge management' entered the organisational area. Yet the move to the knowledge economy has been accompanied by an *engineering* approach to knowledge management, based upon building knowledge systems, extracting knowledge and making it explicit - which is far from *knowledge sharing*. When in the new economy knowledge comes to be regarded as an individual capability that cannot be directed, handled, controlled and assessed in a manner familiar to managing financial capital, commodities and physical labour, then knowledge management will appear to be an anachronism, using an outdated term to facilitate a new phenomenon.

However, the concepts of knowledge productivity and the corporate curriculum do raise the question of how far knowledge productivity can be managed. These concepts may even question the role of managers in a knowledge economy. Managerial ability to develop strategies, procedures and control work processes turned top management into the ruling business class of the twentieth century, a position that they inherited from the company owners. In exchange for security and material support employees carried out their jobs in a disciplined and obedient fashion. As knowledge productivity becomes the driving force in the twenty first century, and as this knowledge production will be found at every level of economic activity, knowledge workers and autonomous professionals will take charge. The corporate curriculum, as a collective learning space, might become the binding force of knowledge networks, and smart communities that heavily depend on shared intrinsic motivation and personal affinity with the content of the job.

Knowledge productivity and HRD

Although the capability of knowledge creation already plays an important role in the new economy, the breakthrough of the knowledge revolution will occur as soon as we are able to apply knowledge systematically to the production of knowledge (Drucker 1993). Understanding the processes of knowledge productivity (Kessels, 1995; Kessels & Keursten, 2002), organizing a knowledge productive work environment and supporting employees in their ongoing work-related learning will probably become one of the main challenges for HRD.

Where knowledge is dominant - not just among upper management but at all levels of organisations - daily operations should be designed to support *knowledge productivity* (Kessels, 2001). This process entails signalling, identifying, gathering, absorbing and interpreting relevant information, using this information to develop new capabilities and applying these capabilities to incremental improvement and radical innovation of operating procedures, products and services. Learning processes support most of the elements in the description of the concept of knowledge productivity. In fact the process of knowledge productivity is a way of facilitated individual, team and organisational learning. These notions on the development of knowledge and making it productive are closely related to human resource development if not at the core of it. In the years ahead, knowledge productivity will become an increasingly critical economic factor. Understanding how knowledge productivity arises and the competence to promote knowledge productivity are becoming critical capacities for participation and survival in a knowledge economy.

The knowledge productivity concept is based on the view that knowledge is a personal competence. More specifically when 'knowledge' is defined in terms of a personal, individual capability, capacity, craftsmanship or expertise, it involves a subjective skill that is inextricably linked with the individual(s) concerned (Malhotra, 2000). The objective is not merely to apply rules and procedures in dealing with standard problems but also to improve on such rules, analyse new situations, devise new concepts and improve understanding of the mental and learning processes underlying the capabilities stated. Thus, knowledge development is seen as a combination of individual knowledge application within teams and the company's coordination capabilities in providing the direction and resources for these teams. As Tomassini (2002, p. 96) concludes: 'the firm is a mechanism for the governance of economic activities, coordinating processes that integrate the knowledge of different individuals for the production of goods and services'.

An environment for knowledge work

For organisations, knowledge becomes productive when the creation and application of knowledge results in gradual improvements and radical innovations of operating procedures, products and services. These processes take place in collaborative work relationships. Knowledge work and learning cannot be enforced on the basis of power, control or contract. It requires a shared ambition that is attractive, comprehensible and meaningful for both employees and the organization. New ways of organizing work for knowledge production need to be developed. The idea that management does not set the goals nor determines the direction of employee development

is central to the concept of knowledge production and the supporting learning. Knowledge workers and autonomous professionals take charge of their own development. The main principles for this concept are self-control and self-organization, integration of working and learning, coaching, leadership and collaboration. Such learning processes take place among staff members and clients in the course of their work. In addition, people are becoming increasingly aware that learning for knowledge work may be stimulated and supported through a variety of means other than formal training programs. Options include issuing special assignments, changing positions or seconding staff members, and actively participating in quality teams and discussion groups. Alternative possibilities entail organizing the work through project management and equipping the workplace with electronic performance support systems (Winslow & Bramer, 1994).

Given the vital importance of the learning processes involved, leaving the necessary learning to random opportunity would be imprudent. A systematic approach with a clear purpose therefore appears necessary. Yet the feasibility of managing such learning processes is open to question and is hardly possible in the manner in which we are accustomed to running other industrial processes. Ascertaining knowledge creation appears far from simple, as the necessary learning processes will not appear on command. Alternatives have been presented by Tjepkema (2002) when she studied the learning infrastructure of self-managing work teams. In fact her research introduced a different language to describe the nature and quality of a work-related learning environment. Adopting a socio-constructivist approach, shed uses terms such as a 'rich landscape for learning' where learners become motivated, not on the basis of hierarchy and power, but through relevant, authentic and meaningful work, in collaboration with colleagues. Instead of 'managing' the required learning processes, nurturing and supporting the learning ecological system is advised.

Knowledge work probably requires a transformation of work processes. Tapscott describes this transformation as follows:

When knowledge is the basis of value creation, work and learning are the same. Knowledge workers, whose "products" often don't exist in the physical world, have a different relationship to their work and their employers, and different expectations about their professional growth.
(Tapscott, 1999: ix)

Similarly one of the main conclusions of Stewart and Tansley's research on training in the knowledge economy is that this transformation has major implications for HRD:

Informal and work-based learning is of increasing importance in the knowledge economy. Highly developed learning skills are necessary to maximise the potential offered by conscious and deliberate learning through work.

(Stewart and Tansley, 2002: ix).

With her pioneering book on building and sustaining the sources of innovation, Leonard (1998) was among the first to probe the relationship between successful innovators and the way they create, nurture, and grow the experience and accumulated knowledge of their organisation. Her research at Harvard on behavioural interaction with technology led her ultimately to a powerful conclusion on enthusiasm for the knowledge content of every activity, that could easily form the core of modern Human Resource Development theory:

This love of learning is woven throughout the organization, whether the activity be problem solving across internal boundaries, creating knowledge through experimentation, importing from outside, or transferring it to other sites and nations. People who are knowingly engaged in building core technological capabilities are *curious*: they are information seekers. There is a sense of enjoyment in the work - the lightness of step that suggests that building knowledge not only makes good business sense but is *fun*.

(Leonard, 1998: 261. Italics in original)

These statements, findings and conclusions reinforce the main point that in a knowledge economy the characteristics of work processes can best be described in terms of learning processes, and that these do not appear on command, and require a mutual interest of employee, team and organisation.

Principles for work-related learning in a knowledge economy

The traditional approaches to management, training and development will not provide the learning environment that is required for knowledge work. Therefore, each company should consciously develop an integrated plan for learning, 'a corporate curriculum' (Kessels, 2001) that turns the day to day work environment into a powerful learning environment. On the basis of the argument made in the previous sections, participants in a knowledge economy who wish to integrate the necessary learning in their actual work, need to adopt a number of learning strategies that involve reflecting on the meaning of their actual work in relationship to their talents and capabilities. These learning strategies also include regular discussions on how to turn the work environment into a rich and interesting setting. As teamwork is so

important, members need to on confer how to improve their collaboration and making it more appealing. Individual professionals will search for the hidden factors that inhibit and support their motivation, involvement and commitment. In fact, these strategies aim at enhancing the learning infrastructure of knowledge work.

These considerations and strategies lead to three development principles for knowledge work that refer to the social context, the personal affinity with domain specific content, and deliberate interventions to support the learning culture:

- *Enhancing reciprocal appeal (the social context)*
Knowledge-productive workplaces are rich learning environments in which the social context fosters collaborative efforts. No single manager, instructor or trainer, is exclusively responsible. Participants work hard to maintain their reciprocal appeal, which means that they do their best to provide each other with a fruitful learning environment. Important characteristics of this social context for learning seem to be: reciprocal respect, appreciation and integrity, ample security and openness for constructive feedback and confrontations. The communicative and interactive skills of the participants are required to meet high standards. The need for reciprocal appeal is a keenly understood self-interest. Knowledge workers who are dissatisfied with the current learning environment cannot hold others responsible for improving it. If they are unable to improve the interactive setting, they have no choice but to seek out more appropriate surroundings. Teams may lose valuable colleagues this way, while overly eager 'job hoppers' fail to cultivate their own appeal for others
- *Searching for a passion (the content component)*
People are clever only if they want to be. Nobody can talk somebody else into curiosity, motivation, interest and ambition. One cannot be 'smart against their will' (Kessels, 2002). Discipline, loyalty and obedience may be welcome and valuable support systems for overcoming a temporary hurdle or an impasse. Without any substantive drive, however, they are likely to lead to mediocrity at best. Knowledge-productive environments encourage cultivation of a personal, substantive theme. Such an individual theme and passion for work inspires curiosity and enables information to be traced more quickly. It facilitates establishing connections with attractive, professional networks and stimulates exceptional achievements where others might give up. Knowledge workers need to become competent to navigate through the diffuse arena of affinity, motivation, passion and ambition to be able to develop and apply their capabilities in a productive way.
- *Enticement towards knowledge productivity (supporting the learning culture)*

Cultivating reciprocal appeal serves primarily to create a favourable social context and a rich learning infrastructure, while searching for a passion establishes the foundation for substance and subject matter expertise. However, promoting knowledge productivity also requires the competence to work deliberately and systematically on the quality of the social context and the substantive component. The desire to manage, control and monitor in these matters is becoming increasingly difficult to fulfil. The growing interest in self-guidance is apparent in both work and learning contexts. If we touch here on issues that cannot be managed in the traditional way this raises the question of how we can tempt or entice each other towards knowledge productivity? The main objective is to develop the capability to design a work environment that fosters the development of capacities like learning to learn, organising reflection, increasing reflexivity and basically applying knowledge to knowledge development.

These three principles for knowledge development directly support the learning infrastructures needed for the successful establishment of communities of practice as described by Wenger (1998) and Wenger and Snyder (2001), the ethical, social and psychological attributes of the social relationships in networks as identified by Lundvall and Borrás (1997) and the development of social capital marked by trust, cooperation and mutual sharing as explained by Putnam (1993) and Nahapiet and Ghoshal (1998) .

In a knowledge economy, where improvement and innovation is required for long term survival, standardization is not the goal, but rather the extraordinary, the surprising, the artistic. This assumption not only affects managerial thinking, but influences our perception of the characteristics of almost every employee and knowledge worker. As a result, one of the arguments in the upcoming debate is that the required knowledge for improvement and innovation is basically an individual, subjective competence. Team learning and organizational learning provide the context for individual knowing. The knowledge economy will probably require the autonomous, independent individual to undertake learning for personal growth (Merriam and Caffarella, 1999). However, this will happen in a context of communicative rationality: a process of reaching understanding through the cooperative negotiation of common definitions of a situation (Habermas, 1984). Here the paradox of emancipation comes into play. Howell (2001) observed that when workers become active participants in process improvement, they also take on more and more responsibility. Doing so, they inevitably start questioning whether their interests match the interests of the organisation.

Knowledge development, improvement and innovation require a high level of personal involvement from employees. This capability cannot exist without critical reflection and emancipation. Emancipated employees will critically examine the corporate goals, the ethics of governance and shareholder property of their knowledge work. In a knowledge economy, corporate success and individual emancipation will be difficult to separate. Are top managers and shareholders able and prepared to pay this price for sustainable economic growth?

Individual knowing at the basis of knowledge productivity

From such a perspective it is evident that the focus in HRD should shift to the individual, to individual learning, objectives, motivation and conditions. This means that work-related learning will inevitably comprise reflection, learning from mistakes, critical opinion sharing, challenging groupthink, asking for feedback, experimenting, knowledge sharing and career awareness. These characteristics of critical reflective work behaviour are identified in the research of Van Woerkom (2003) and point towards an emancipated, autonomous professional as the main protagonist in a knowledge intensive work environment.

Such work environments should encourage employees to become self-directed learners 'to pursue their interests, to find personal meaning, and to adapt to and change their life circumstances. adult learners are assumed to be capable of framing their own choices, reflecting on their options, and making responsible, informed decisions that serve their interest.' (Percival, 1996, 138).

When the knowledge economy thrives on the basis of individual learning and critical knowing, this has major implications for organizing work, establishing knowledge networks and promoting professional development.

The deliberate choice of incorporating personal meaning, the social context and ethical values within the concept of knowledge productivity supports the prevalence of tacit knowledge. However its inherent social embedding and implicit character rather than the formal scientific knowledge expressed in peer reviewed research and protected patents, will be central to organisation based-knowledge development.

Implications for Human Resource Development

Research on knowledge development in the context of organisations is making it increasingly clear that far more attention needs to be focused on how to bring workplace communities of practice together in a shared organisational purpose, without, however, destroying the unique self-regulating properties that make them so attractive to individuals and so powerful in driving the knowledge process. This realisation lends further weight to earlier conclusions that the emphasis in knowledge-creating

organisations should be less on devising management systems to ‘control’ learning or to ‘manage’ knowledge, and more on encouraging people to think creatively and provide the skills and support systems to share and apply their findings to benefit the organisation.

The concept of the corporate curriculum requires the HRD function to produce and promote processes and initiatives to support the acquisition of subject matter expertise, learning to identify and deal with new problems, cultivating reflective skills, acquiring communication and social skills, supporting self-regulation of motivation, affinities and emotions, promoting peace and stability, and stimulating creative turmoil (Kessels, 2001).

It is quite widely agreed that HRD professionals need to become learning facilitators, and learning architects who can promote strategically valuable knowledge. (Stewart and Tansley, 2002; Tjepkema, Stewart, Sambrook, Mulder, ter Horst and Scheerens, 2002). The move away from training and the view that HRD is an organisation-based process is widely recognized. McGoldrick, Stewart and Watson (2002: 396) conclude: ‘...that HRD will be increasingly concerned with facilitating the learning of individuals, teams and organizations through the design, structuring and organization of work itself.’

The concept of the knowledge productive work environment not only focuses on the social aspects of a favourable learning climate, but also on the need for individuals to explore and invest in their personal domains of interest, and to create meaningful work (Kessels and Keursten, 2002). To do so HRD is not an objective science of ‘social engineering’ but has a strong philosophical dimension which needs to be made explicit. When exploring knowledge as a social process of ‘knowing’ the key issue will become rather the *emancipation* of the knowledge worker – engendering a new freedom for knowledge workers, as it is they who are at the centre of knowledge development. Qualities of social capital, trust, respect, integrity, ethics, meaningful work, affective involvement and practical wisdom assume key significance, in order to generate knowledge that will bring benefits to all parties, whether in the board room or in the workplace.

This way of reasoning brings us back to the roots of Adult Education focusing on individual learning experiences (Lindeman, 1926), critical consciousness and liberation (Freire, 1970), interventions for promoting well-being (Ten Have, 1975), emancipatory learning and critical theory (Habermas, 1984), critical, reflective thinking and analysis (Brookfield, 1987), the direct facilitation of the development of individuals through improving the educative quality of their environment (Knowles, 1990), and lifelong learning and the new educational order (Field, 2000).

This case for a critical and individual development perspective, leading to the emancipation of knowledge workers may engender a strong reminiscence of the radical and politically engaged adult educators of the 1970's. However, the argument developed here is not a naïve u-turn to a socialist, communist or anarchistic past, in a period of economic crises, following the collapse of an over-enthusiastic free market play.

Promoting the development in organisations of an appropriate learning culture does not only require critical thinking and emancipatory learning. When the focus shifts from the external and internal transfer of explicit knowledge to the social construction of tacit knowledge among members of informal networks (Brown & Duguid, 1991), more emphasis has to be placed on creating favourable conditions for learning in the workplace than on organising the provision of formal training. The new literature on technological change, improvement and innovation emphasizes an evolutionary process, which takes the form of the steady accumulation of a tacit capability through work-related learning processes. Thus, public knowledge can only be effectively exploited by firms that develop learning processes embodied in a form of social organisation. Even economists start to acknowledge that successful linkage between science, research and technology requires face-to-face contacts in communicating the results of complex learning processes which embody a tacit element (Cantwell, 1999). Improvement and innovation require individual learning in a favourable social context.

The agenda for HRD

In conclusion, the argument of this chapter is that HRD should build expertise in a number of domains. Firstly, it should contribute to an understanding of the process of knowledge productivity, improvement and innovation, and the support of learning. Secondly it should develop interventions to facilitate the learning functions of the corporate curriculum for knowledge work, and with an emphasis upon the learning infrastructure (Tjepkema, 2002) and critical reflective work behaviour (Van Woerkom, 2003). Thirdly it should start a dialogue on the need for emancipation as a prerequisite for sustainable growth. Finally it should promote the development of social capital in which knowledge networks are embedded.

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