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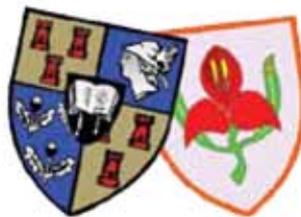


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# Proceedings

## Defence Academies and Colleges 2009 International Conference

“Network Centric Learning: Towards Authentic ePractices”

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# Management Education and Challenges for Staff Development

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## ABSTRACT

The way in which information is shared and managed in the current information society has changed. Managers find it a complex task to deal effectively with the information and communication technology in the digital work environment. Yet they play an important role in effectively implementing changed ways of working and coaching their staff in this regard. In order to obtain insight in the experiences of middle managers with their digital work environment a case study was conducted in the Netherlands defence organisation by means of a combination of in-depth interviews and a questionnaire. Research results suggest that it is necessary to reconsider the curricula of management education. A number of Information Society competencies for managers could be practiced across the curriculum in an e-learning environment. The implications thereof for staff development are considered.

**Keywords:** staff development, management training, information society, e-learning

## INTRODUCTION

Working in a digital work environment is a complex task. A digital work environment is defined in this paper as a work environment where information and communication technologies like hardware, software, the Internet and mobile technologies are used. The information society is seen as a society in which organisations in modern countries currently need to operate in order to be effective and able to compete. Globalization as well as information and communication technologies are important characteristics of the information society (Feather, 2004). Aspects like knowledge management, establishing a learning organisation, finding information on the Internet as well as knowing how to work effectively with the applications in the work environment are especially important in the context of today (Belasen, 2000; Boonstra, 2000). Managers play a crucial part by implementing new ways of working themselves, but also by coaching their staff to participate in the new ways of working (Boonstra, 2005).

Earlier research findings provide some insight with regard to the software applications that managers find important in their work environment and in the competencies that are required by managers to work effectively in the information society (Broos and Cronjé, 2009; Broos, 2007). Some of the information society (IS) competencies of managers could be obtained by using e-learning across the curriculum and an integrated approach in various subjects and work context. Further implementation of e-learning has implications for staff development in management training programmes. In this paper those implications are investigated.

The focus of the literature review is twofold. In the first section the focus is on the changed ways of dealing with information in the information society as well as the role of managers to bring about change and to support their subordinates in the ever-changing ways of dealing with information. Thereafter the focus of the literature review is on the changed role of teachers in an e-learning environment.

## MANAGERS AND CHANGED WAYS OF DEALING WITH INFORMATION IN THE INFORMATION SOCIETY

In order for organisations to participate effectively in the information society it is important that they become adaptive and flexible (Belasen, 2000) and change into learning organisations (Wenger, 2000; Hargrove, 2001). Establishing a learning organisation in which knowledge is effectively managed is difficult and a complex process (Harrison and Kessels, 2004). They claim that changes in processes, product and structures are required as well as changes in management and culture in organisations. The direction set out by the strategic top of the organisation needs to be clear in this regard including a reflection about an integral approach across an organisation whereby selections are made regarding suitable applications to support such initiatives (Boonstra, 2005). Hargrove (2001) and Kamperman (2005) state that learning processes of an organisation need to adjust to the new context of an organisation and visionary objectives. Managers play a crucial role in establishing a successful learning organisation and learning how to participate in a learning organisation is one of the important aspects that needs attention in a training programme for managers (Broos, 2007). Harrison and Kessels (2004) argue that effective knowledge management will not happen automatically, but that a human resource development programme should deal with those aspects.

A sound information management system is crucial towards establishing a successful knowledge environment that underpins integrated and cooperative working according to Haines and Dunn (2003). Certainly it can be argued that managers play an important role in establishing this. It is clear that the culture of a learning organisation needs to support the development and distribution of knowledge in the organisation (Davenport and Prusak, 1997; Rosenberg, 2006). They claim that trust between staff members and also between staff members and line management is important in a spirit of open communication, commitment and a willingness to work together for a common goal. Wenger (2000) argues that this can best be achieved when an organisation is able to design itself as a social learning system and communities of practice are created. He emphasizes the importance of the role of the leader in such communities.

A further cultural change is embedding the concept of lifelong learning in the work environment of the manager. In this regard the following quote by Drucker, P. in Davenport and Prusak (1997:28) is important:

*"We will have to learn, before understanding any task, to first ask the question, "What information do I need, and in what form, and when?... The next question people have to learn to ask is, "To whom do I owe which information and when and where."*

An important aspect of learning how to learn is certainly the ability of self-directed learning (Yukl, 2006; Poole and Axman, 2002). In this sense the computer could be seen as a cognitive tool and can be seen as a *"prosthesis for thinking, reasoning, estimating, experimenting and learning"* (Kommers, 2004:24). Yukl (2006) states that even a commitment to lifelong learning will not suffice any longer, but that individuals as well as organisations as a system need to learn how to learn and in this regard it is necessary to redefine and continue to redefine mental

models which he names meta-cognition. In this light it is interesting to note that Oliver (2002) as well as Collis and Margaryan (2005) found in their research that using ICT, changes the way learning takes place in the sense that it has become possible to focus more on the process of learning and finding information instead of learning content. Zaccaro et al (2004) claim in this regard that effective global leadership skills require changed ways of learning and thus different development strategies.

Providing effective performance support for learners and employees in organisations is becoming increasingly important and could complement training (Rosenberg, 2006; Rossett, 2007). As such providing performance support could be seen as a component of knowledge management in an organisation where the learner could access knowledge and information from a variety of resources (Rosenberg, 2003). Managing competencies of employees, taking into consideration the competencies that are needed in the organisation is also a complex task for which the managers are increasingly responsible (Nobre, 2002).

With improvements of the information and communication technology, the global security environment has also changed dramatically (English, 2005). It is thus increasingly important that managers are aware of the importance of managing the information they are responsible for effectively in terms of exclusivity, availability as well as ensuring correctness of information. Managers also play a role in making their staff aware of the ICT security risks (Boonstra, 2005; Siponen, 2001). Bonatti et al (2006) argue that one of the most important causes of computer security violations on the Internet is the lack of technical knowledge of the users.

Broos (in press) validated a model for Information Society (IS) competencies for managers. In this paper a competency is seen as a combination of commitment (attitude), knowledge about as well as skills and behaviour (Hoekstra and Sluijs, 2003).

The main competencies in that model are defined as follows:

- *Having operational knowledge and insight into ICT*

Operational ICT competence is competence in dealing with the digital work environment effectively. This includes knowledge about functionalities and limitations of generic and other applications, hardware as well as networks. It goes beyond mastery of applications (Martin, 2002; Town, 2003; Steyaert, 2000).

- *Finding and evaluating quality information on the Internet when needed*

This requires an understanding of the structure of the Internet in order to find suitable information on the open Internet as well as for those sections that authorization is required. It also requires an understanding of the relative importance of information and sources (Steyaert, 2000; Steyn, 2001; Town, 2003).

- *Learning how to learn*

This includes an understanding of the importance of lifelong learning, but also about how to learn effectively (Hargrove, 2001; Yukl, 2006; Kommers, 2004).

- *Participating in the learning organisation, incl. knowledge management in the wider context of the organisation*

Knowledge management can be seen as the development, sharing, evaluating and applying of knowledge (Weggeman, 2000). Knowledge is seen in this paper as more than information. It includes how and why this information can be used in the work context (Davenport and Prusak, 1997; Belasen, 2000; Senge, 1990). For a learning organisation to exist managers need to understand and support the organisational value of knowledge management as well as become involved themselves (Belasen, 2000; Hargrove, 2001; Boonstra, 2005; Harrison and Kessels, 2004).

- *Participating in communities of practice*

Managers need to understand the need for networking and the usability of sharing work experiences (Wenger, 2000; Preece et al, 2004; Kamperman, 2005).

- *Innovation and change management*

Managers need to know the effect of change and need to be able to deal with change and resistance against change effectively. Understanding the organisational culture is thereby important. Furthermore they need to stimulate an innovative work climate (Belasen, 2000; Hargrove, 2001; Davenport and Prusak, 1997; Burns, 2003; Yukl, 2006; Hoekstra and Sluijs, 2003).

- *Competency management*

Competency management means that managers have insight in competences and talents of their staff, have insight in their learning needs and are able to translate this in a development plan furthering the employability. Thereby also considering the competencies required in the organisation (Nobre, 2002; Hoekstra and Sluijs, 2003).

- *ICT security awareness management*

Ensuring security of information in the sense of exclusivity, integrity and availability as well as encouraging ICT security awareness amongst subordinates (Siponen, 2001; Bonatti et al., 2006).

According to Town (2003) a first step in finding a solution for the need for what he calls ‘information literacy’ is that policymakers recognize that the work situation has changed and that adjustments in the training are necessary. The achievement of information literacy should not be seen as merely a training of competence, but needs to be recognized as an educational challenge (Town, 2003). In the final section of the literature review the focus is on the challenges to involve teachers in an e-learning environment in the current information society.

## CHANGED WAYS OF TEACHING IN AN E-LEARNING ENVIRONMENT

An e-learning environment can be seen as a social system (Koper, 2000) and in this light the interaction between the individuals and groups of people are very important. The teacher especially plays an essential role in this system to instruct and initiate activities and is in this sense a lot more than the provider of learning materials (Lam, Nab, Noorderwier and van Tartwijk, 2001). It is important that teachers see themselves as managers in the sense that they facilitate the learning environment and spend enough time guiding and communicating with the learners (Schlusmans, 2001).

Adendorff (2004) claims that teachers are reluctant to implement e-learning environments because they are insecure as to what it is that they need to do. Collis et al. (2000) have indicated in this regard four groups of factors that influence a teacher’s likelihood of making use of technological innovation: environment (institutional culture), educational effectiveness (perceived or expected), ease of use and engagement, by which they mean the individual’s personal response to technology as well as change.

According to Lieberman and Guskin (2002) higher education is marked by new instructional roles in many new educational settings. This is supported by other authors (Adendorff, 2004; McPherson and Nunes, 2004; Merrill, 2002; Turner, 2005). However different authors present the roles of teachers in an e-learning environment differently. A summary of the instructional roles and competencies for teachers in an e-learning environment is presented in table one. The summary is based on the ideas of the authors mentioned above.

Table 1 Summary of instructional roles and competencies for teachers in an e-learning environment

<i>Role</i>	<i>Tasks</i>	<i>Required competencies</i>	<i>Motivation for required competencies</i>	<i>Examples</i>
Administrator	Course administration	Managerial competencies Knowledge of LMS	Managing learning activities, clarifying procedural rules and decision-making criteria.	Keeping course particulars up-to-date.  Placing presentations or video’s of lessons in the e-learning environment for students to review or for students who were not able to attend the presentation.
Social supporter, mentor	Feedback, reflecting, motivating	Didactical principles. Interpersonal competencies	Understanding factors that influence the learning outcome.	Teacher ensures privacy and trust when learners use social software, like web logs. Teachers can review and comment on the progress of projects in a workplace, using blasts (quick forms of communication like an idea, attitude or posing a question).

Instructor. Facilitator of the learning process	Presenting courseware.  Encourage interactivity so that learners construct new knowledge and are thus empowered.	Didactical principles, like setting objectives and problem-analysis.  Instructional design principles.  Technological competencies	Understanding factors that influence the learning outcome.  Understanding instructional strategy principles.  Understanding technological issues like downloading software, incl. e-books.  Understanding educational copyright issues.	Workshop leader both for synchronous (e.g. a virtual workshop) and a-synchronous discussions.  Encouraging communities of learners e.g. (inter)national research projects using wiki's.  Using and adjusting learning repositories. Support could be given by experts.
Information guide	Provide additional information.  Empower students to find information.	Didactical principles  Technological competencies	Understanding factors that influence the learning outcome.  Understanding aspects like the Deep Web and navigation skills.	Links can be provided to additional information.  Answers to frequently asked questions can be placed on-line.  Providing simulations or games.
Evaluator, mediator	Ensure fair play	Didactical principles  Competency profile	Evaluating and reflecting if learning outcomes are achieved and how the course could be improved in future.	Teacher forms a partnership between faculty and co-curricular educators.  Student competency profile.  Online assessment and feedback.  Ethical issues like copyright and plagiarism.

In research conducted by Cronjé et al (2006) the importance of the roles and competencies of the facilitator was emphasized as one of the factors that motivated learners to continue with online courses. Teachers should continually reflect about the educational process in order to participate effectively in this process (McPherson and Nunes, 2004).

## METHOD

The research was conducted in the Netherlands defence organization by having twenty in-depth interviews with experienced managers from a variety of function areas, in order to obtain a expert perspective from the work field, followed by a questionnaire that was send to an a-select random sample of 700 managers in order to obtain an overall perspective from the work field. The questionnaire was completed by 246 respondents. The demographic variables of the respondents are representative for the research population. The questionnaire was designed based on the results of a literature review. The research results were analyzed using a combination of qualitative and quantitative techniques (Broos, 2007).

## EXPERIENCES AND COMPETENCES OF MANAGERS IN THEIR DIGITAL WORK ENVIRONMENT

Managers spend on average between 20 and 22 hours per week working on a computer. Most have the opinion that ICT in their work environment has made them more productive, although about a third of the managers lose production time because they are not familiar enough with the software applications they are required to use. Most managers are fairly confident in using ICT in their work environment; however there are a substantial number of managers that are not confident in using ICT. The lack of confidence is often caused by a lack of knowledge about ICT and not being able to find required information using the Internet.

In general it can be said, based on the results from the interviews that applications change with time and are dependent on the choices that are made by the strategic top in the organisation. The need for specific applications is dependent on the main function area, but in general can be said that the company's Intranet, the generic office programs especially a spreadsheet, a presentation program and the Internet are important in a digital work environment for managers. Information management systems, tools to organize thoughts and project planning software are not widely used yet, but managers that use them find them increasingly important (Broos, 2007).

Managers need to be able to think systematically in terms of the information processes and translate this into relevant information products. Those processes and products are different for different function areas. Furthermore, managers needs to communicate in a socially acceptable way using e-mail dependent on the role, position, the situation and the topic. It is important to communicate effectively using the technology. An example is to present management information in a correct format, avoiding unnecessary information.

The respondents to the questionnaire were asked to evaluate their competence in a number of items on a scale from 1-5, where a score of 1 indicates 'does not apply' and 5 indicates 'applies entirely'. The items were obtained by combining the results from the literature and the in-depth interviews. The expectation thereby was that the managers should score at least 4 (this corresponds to the option 'applies mainly'). Since, in addition to being competent themselves, they are also the coach in those areas for their subordinates. The results are shown in figure one.

Figure 1. Competence of managers regarding the IS competencies

A: Having operational knowledge and insight into ICT (mean 3.6; s.d. 0.6)

B: Finding and evaluating quality of information on the Internet (2.8;0.8)

C: Attitude towards learning (4.2;0.8)

D: Participating in the learning organisation (2.7;0.8)

E: Knowledge management in own work unit (3.4;0.9)

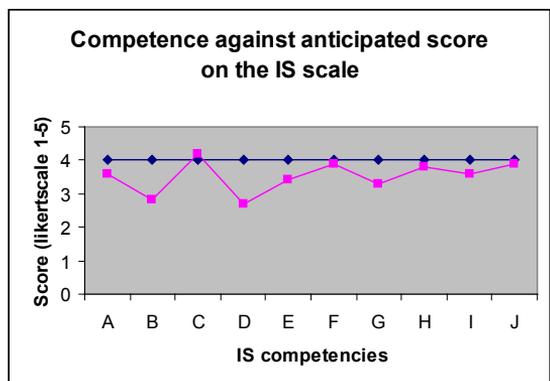
F: Innovation and change management (3.8;0.6)

G: Participating in communities of practice (3.3;0.8)

H: Competency management (3.8;0.8)

I: ICT security awareness management (3.6;0.8)

J: Creating an innovative work environment (3.9;0.6)



In figure one can be seen that the mean scores on the competencies 'Having operational knowledge and insight into ICT', 'Finding and evaluating quality of information on the Internet', 'Participating in the learning organisation', 'Knowledge management in own work unit', 'Participating in communities of practice' as well as 'ICT security awareness management' are considerably lower than expected. The standard deviation of the scores also indicates that more than half of the managers are in need of performance support. Remarkable is that although managers are aware that it is important that the organization becomes an effective learning organisation, they score on average relatively low on the scale for 'Participating in a learning organisation'.

It has also become clear from this research that communication using technology is not per definition the same as communication through languages (Hart-Davidson, 2001). A number of participants have indicated that they find it difficult to represent data effectively using the technology. In general it became clear from the interviews and the comments written on the questionnaires that the managers understand the importance of the new ways of working and are dedicated to creating and participating in a learning organisation. Life-long learning is seen as an important aspect with benefits for the organisation but also for individual careers and the careers of their subordinates.

However, there are also a number of obstacles varying from cultural issues for example that it is better for the career not to share lessons learnt and thereby indicating that mistakes have been made, to perceived ownership of knowledge. Some of the managers regard their experience, knowledge and even information as their property and as such provide them with a sense of power. This is also found in other organisations by Davenport and

Prusak (1997) who found that jealousy over resources and political battles frustrate the sharing of information. They claim that organisations need to develop an overall strategy for the use and sharing of information in which these aspects are taken into consideration. Some important questions in this regard are whether information must be seen as a commodity or a process, and whether it belongs to an individual or to the organisation by which the individual is employed.

The Intranet of the organization is seen by some managers as a means to store and distribute organisational knowledge, but some managers are also using a communal database to share information and best practices and manage the knowledge of the organisational unit they are responsible for. A number of knowledge management systems are in use whereby best practices are shared, and some communities of practice are established. Generally it was agreed that knowledge management is crucial for the organisation.

Generalizing from the case study there exist a need to include the following items in a training programme for managers.

- Functional knowledge of ICT
- Office applications

The expectation is that these skills are sufficiently mastered during high school; however it is important to make sure that the students have mastered those applications sufficiently. A list of specific performance criteria in each of the applications could be compiled and the competence of each student regarding those items should be evaluated during the course of the study.

- Searching and evaluation skills using the Internet

Students need to find and evaluate critically the information relevant to their research and future work field.

- Management of information and information management systems

Students should have insight in the difference between data and management information and being able to present the information that they are responsible for in a suitable format as well as interpret information presented effectively. Furthermore, students should be given an opportunity to experience with information management systems in the context of their future work field.

- Communication on various levels using e-mail and other applications

This aspect is emphasized by a number of interviewees who are of the opinion that students need to learn how to communicate appropriately using digital media.

- How to participate in a learning organization and knowledge management initiatives as well as and communities of practice
- ICT-security awareness

In general, interviewees indicated that they prefer that IS- competencies are developed *integrally in the context of the various subjects and the role of the leader needs to be emphasized throughout*. ICT needs to be seen as a tool to achieve effective leadership especially with regard to dealing with information and communication. In the training environment an integrated e-learning approach could be used to enhance most of the above items. This implies that the teaching staff needs to become involved in order to provide opportunities for the trainees to develop competence in those areas. In the last section of this paper the involvement of the academic staff in an integrated programme to support the development of IS competencies for managers is discussed.

## INVOLVEMENT OF ACADEMIC STAFF IN AN E-LEARNING ENVIRONMENT

The teaching staff is an essential role player in implementing an e-learning environment (Reeves et al, 2005). Using the literature review, insight is obtained in factors that have an influence on learning and teaching in an e-learning environment and it can be concluded that teachers in an e-learning environment require different competencies compared to a face-to-face situation. It is important therefore that teaching staff members are properly prepared to deal with this adjusted way of teaching.

In order to prepare the teaching staff sufficiently to participate in this programme, it is proposed that a development programme for teaching staff will be made available. In this regard it is recommended a learning organization evolves where staff development and –support should be in constant demand.

From research done by Steyn (2001) about staff development it can be concluded that existing attitudes and learning cultures do not allow for self-development and that comprehensive staff development interventions are necessary. However, he has concluded that this is a complex problem and that different staff members will have different preferences in terms of developmental approach. Therefore, it is advisable that a variety of methods are used. Some examples are workshops and establishing communities of practice where best practices are discussed. Hence an ideal situation appears to be to create a learning organisation where as many staff as possible can seize opportunities and participate to create a blended learning environment where the students could develop the IS competencies that they need. In this light the results of the research done by Agelink (2004) are also relevant. He concluded that a community of practice for teachers offers advantages for the organisation, the teachers as a team as well as for individuals.

According to Steyn (2001), time constraints of teachers who want to become involved in such a development programme need to be solved. Furthermore, the increased workload as a result of participating in new ways of teaching needs to be taken into consideration (Adendorff, 2004). Another hindrance of teachers becoming involved in new initiatives is often a lack of confidence (Burns, 2003). This is a further motivation for a staff development intervention. Burns claims that teachers need to be empowered by giving them proper training, making resources available and giving encouragement so that teachers can become creative. He argues further that creative teachers can inspire students to become creative themselves and prepare them to become creative leaders. Creativity is one of the most important competencies of leaders in the current information society (Robbins and Coulter, 2003; Zaccaro et al 2006; Burns, 2003 and Yukl, 2006). According to De Villiers (2002) creativity could be enhanced in an e-learning environment. She claims that creative and innovative learning experiences motivate the students to participate as well as stimulate creative cognitive processes.

McPherson and Nunes (2004) argue that if learners are expected to develop high cognitive skills such as reflective analysis and meta-cognition, teachers should have these skills themselves. Zaccaro et al (2006) claim that adaptive performance like handling emergencies, crisis situations or unpredictable work situations could be enhanced using simulations and gaming.

To implement a successful digital learning programme across the curriculum it is important to ensure that the quality is acceptable. Geerligs, Mittendorf and Nieuwenhuis (2004) found in this regard that when the quality of such innovations is not ensured innovations often do not last. In this sense it is also important to make sure that the participating teachers are able and motivated to deliver the required quality (Fresen, 2005).

## **DISCUSSION AND RECOMMENDATIONS FOR FURTHER RESEARCH**

The conclusion can be drawn from this research that when the technology is available it does not automatically happen that people know how to use it effectively. This is in accordance with the experience of Harrison and Kessels (2004) and Davenport and Prusak (1997). Furthermore, from this research can be concluded that it is important for managers to learn how to use software effectively in the context of their work situation. This is in accordance with the research results from den Boer and Hövels (2003). Hence, it appears to be important to design a specific learning programme so that learners could master the new format, content and variety of dealing with information effectively in the information society (Town, 2003) in the context of the work field. However, such a learning programme needs to be re-evaluated over relative short periods of time, along with corresponding competency models (Zaccaro et al., 2006).

Furthermore it needs to be noted however that innovation and change in education is a difficult process and that it has a serious impact on all the actors (van der Klink, Kallenberg and Valcke, 2002). The teachers should be given time and support when they participate in an e-learning environment. Education should thus be seen as a process (Plomp, 2006) and a development programme for teachers also needs to be continually evaluated and adjusted where necessary.

Since adaptivity, creativity and learning how to learn are seen as essential competencies for leaders in a fast changing environment (Yukl, 2006; Zaccaro et al, 2006; Hargrove, 2001; Robbins and Coulter, 2003) it appears important to obtain further insight in how those competencies could be developed and what the role of an e-learning environment could be in supporting the development of those competencies. Ausubel (2000) claims in this regard that creativity can only be achieved through continuing attention.

It appears worthwhile to research what kind of information, communication and technological online performance support would be useful to managers and how this could be made available in the digital work environment. This could limit the amount of training time away from the workplace and could provide support at the time that it is required (Rosenberg, 2006; Rosett, 2007).

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