Get set! e-Ready, … e-Learn! The e-Readiness of Warehouse Workers

Hermanus B. Moolman
International Healthcare Distributors (IHD), Johannesburg, South Africa // hermanm@ihd.com

Seugnet Blignaut
North West University, Potchefstroom, South Africa // seugnet.blignaut@nwu.ac.za

ABSTRACT
Modern organizations use technology to expand across traditional business zones and boundaries to survive the global commercial village. While IT systems allow organizations to maintain a competitive edge, South African unskilled labour performing warehouse operations are frequently retrained to keep abreast with Information Technology. Organizations require training solutions less costly than standard classroom training, and many companies look towards e-learning as an alternative training solution. We questioned whether warehouse workers representative of many developing African communities demonstrate the cultural habits, skills, aptitude and motivation for complex learning strategies such as e-learning. While exploring the e-readiness of warehouse workers, we compared Reeves’ e-readiness indexes to the rise and fall of a barometer. During a three-phased qualitative study, twenty e-readiness conceptual codes emerged. We found that warehouse workers that regularly encounter computer technology do not suffer technophobia. Encounters with computers positively affect their training preferences and heighten their receptiveness for e-learning. The culture organization holds the key to the e-readiness of the warehouse workers via access, finances and time allocated for training. The viability of e-learning depends on the organization’s e-maturity and guidance to transform the warehouse workers into self-driven trainees.

Keywords

Introduction
In developing countries such as South Africa, supply chain management (SCM) environments use unskilled labor to perform warehouse operations. Information technology (IT) supports business procedures and technological competencies ensure that stock is correctly registered and stored for instant location and distribution. Organizations regularly retrain workers to adapt to technological developments, but few can afford sending their workforce to lengthy training sessions away from the operational environment. Organizations, therefore, introduce e-learning as a training alternative. E-Learning is highly dependent on the warehouse workers’ ability to interact with computers, the Internet, and multimedia. Their attitude and motivation to train independently must also align with the training mode.

Sheila Paxton from Business Wire (2001) maintains organizations err when transferring to e-learning by not preparing their employees to become self-directed learners. Instructional designers and corporate trainers frequently disagree on the appropriateness of e-learning for unskilled labor in developing countries. Industries need a less costly training solution than regular classroom training, and many companies focus on e-learning as an alternative training solution. Because some believe developing learners are ill prepared to use technology, we evaluated e-learning in such environments.

Background

Globalization

Modern organizations use leading-edge technology to expand across traditional business zones and national boundaries to become part of the commercial global village (Bantock, 2004). They become part of the global market by responding to their patrons’ demands through the efficient and effective technology use. Supporting the professional development needs of an organization’s workforce with technology has become important to increase their competitive edge (Poirier, 1999; Turban, McLean, & Wetherbe, 2001; Wagner, 1998). This simultaneously poses both an opportunity and a threat as the business side of the organization may prosper, but its associated people
may be disadvantaged, as they do not have sufficient technology skills to compete on equal footing (Weeks & Lessing, 2002). Van Audenhove (2003) posits that entrenching new technologies, frequently considered the magical gateway to prosperity, may not take human factors into account. This fundamental dualism relates to the competitive and technologically advanced Western approach to developing countries' inadequate infrastructure (Van Audenhove, 2003). The paradox of technology-rich versus technology-impoverished environments is unmistakable; it looms in SCM organizations that rely on members of previously disadvantaged communities to perform technologically-advanced tasks. Although the use of such technology poses a threat to an unsophisticated workforce; at the same time, it also provides opportunity for development. This lack of exposure to technology embodies the digital divide.

The digital divide describes divergence between individuals, communities, cultures and nations at socio-economic levels in terms of access to information and communication technologies and internet use (Weeks & Lessing, 2002). Previously disadvantaged and developing communities with insufficient electronic infrastructures are among those excluded from such opportunities are (Bridges.org, 2001; Digital Opportunity Task Force, 2001). Therefore, South African SCM companies participating on the global market are vulnerable to the effects of this divide.

Terry Bantock from Imperial Logistics (2004) believes that companies gain competitive advantages by using the latest technology and calls for training with technology -- training that promises individualized training for people to become effective workers (Wagner, 1998). Training with technology remains key to closing the digital divide (Czerniewicz & Brown, 2005; Gawe & De Kock, 2002; Herselman & Britton, 2002; Ifinedo, 2005; Van Audenhove, 2003).

The South African government introduced legislation for continuous training and development of employees through the Employment Equity Act 55 of 1998 to promote equity in the workplace and to expand the skill-base of the workforce. The Skill Development Levies Act 9 of 1999 obligates employers to pay a one per cent levy for the training and development of their employees. In spite of these measures, South Africa trails when compared to other developing nations. Contrary to developed countries, only ten per cent of organizations effectively develop their employees. The ICT Empowerment Charter pleads for an “entrepreneurial focus” to develop a society that can adapt to modern demands and create jobs and opportunities (ICT Charter, 2004).

**Organizations opt for e-learning**

e-Readiness refers to the availability and access to IT infrastructure, the policies to support and to participate in the international global network. Advantages such as asynchronous training, training at individual pace, just-in-time training, and cost-effectiveness lure SCM organizations to e-learning (Powell, 2000). The opportunity to learn via technology presents an exciting prospect to train warehouse workers with little previous access to computer-based training. For this reason, Sheila Paxton warns that learner-readiness should be determined before organizations introduce computer-based training (Business Wire, 2001).

e-Learning requires that learners use the Internet, collaborate with peers and interact with the trainer for support (Alessi & Trollip, 2001; Anderson & Elloumi, 2004). Experienced e-learners expertly use technology to monitor their training so that they may ultimately become responsible for their own personal and career development: “Electronic learning provides a means of responding to an individual’s self-determined need for improvement wherever there is access to an Internet or a network connection” (Wagner, 1998, p. 11). e-Learners should therefore be ready to adopt the responsibility of a self-driven mode of training (Powell, 2000), and to respond to the challenges of a technologically rich infrastructure. It emphasizes the need for an adept, expert educational and instructional designer as trainer sensitive to warehouse workers’ readiness for learning with technology. Such readiness includes warehouse workers’ ability to adapt to technological challenges, collaborative training, and synchronous as well as asynchronous self-paced training. It also depends on their motivation -- the discipline to learn alone and to respond to online instructions. The e-maturity of the organization also contributes to the readiness of warehouse workers. This includes the availability of infrastructure, clear training objectives, trainer support and guidance, and knowledgeable leadership. Therefore, e-learning not only requires readiness from the learner but also from the trainer and the organization to successfully engage e-learning (Bowles, 2004).
e-Maturity of organizations

The British Educational Communications and Technology Agency (Becta) describes the ability of an organization to utilize computer technology as ICT maturity. This e-maturity includes the computer support to improve processes, products, and delivery of quality services. Five levels of e-maturity ensure optimized use of computer technology: use by individuals, internal co-ordination with business plans, integration into existing processes, network application across the organization, and inclusion of all users (Becta, 2005). The e-maturity of an organization also signals the ease with which it deploys the technology to beneficial areas in the organization. BoozAllenHamilton (2002) describe an e-mature organization as one that encourages ITC skills-development, trusts the Internet, agrees to the inherent costs of technology, supports the benefits of technology, and uses computer technology across the organization. Therefore, the e-maturity of the organization may reflect the potential of warehouse of training with technology.

e-Ready?

e-Readiness can be assessed by evaluating an individual’s technical experience and competency to interact with computers. This competency should be supported by the individual’s capability to direct his or her own training through appropriate knowledge, skills, attitudes, and habits. Guglielmino and Guglielmino (2003) emphasize the importance of assessing a learner’s training style to determine if the learner can direct his own training. However, the training styles of warehouse workers are not easily defined, as they have not been allowed sophisticated training strategies other than regular classroom training (Hoppers, 2002; Ntuli, 2002).

The Student Online Readiness Tool from the University of Georgia, USA (Board of Regents University of Georgia, 2003) is an online e-readiness assessment tool to measure students’ readiness to learn online. The tool includes experience with technology and access to electronic tools. Equally important, it considers their study habits and self-discipline, their lifestyle, and their goals and training experiences.

Additionally, Huang et al. (2004) created an e-readiness assessment tool regularly used by the Asia Pacific Economic Operation, Harvard University’s Centre for International Development, Massachusetts Information Technology, Cisco and PriceWaterhouseCoopers. Features such as infrastructure, service accessibility, Internet use, skills and human resources, organizational competence, and IT diffusion indicate e-maturity.

Ifinedo (2005) assessed nine African countries’ e-readiness and compared them to the technologically more advanced countries worldwide. Knowledge, organizational support and provision of an IT infrastructure, along with a skilled workforce determined e-readiness for e-learning. In this study, South Africa emerges as the most e-ready country in Africa as South African organizations operate in environments where connectivity is no longer a major problem. People in South Africa have access to telephones, mobile phones, and personal computers at work as well as at home.

Contrary to this view, critics protect African cultures against progressive Western approaches: “The legacy of Western rationalism is no longer an unchallengeable dominant, and its universal validity is now under question” (Hoppers, 2002, p. 14). Therefore, the integration of technology as an empowering agent into work environments of developing countries must value the culture of the workforce. Warehouse workers’ anxieties, intrinsic fears, hopes, frustrations and training preferences should be honored when introducing e-learning. Learners from developing communities have to confront such barriers in addition to the cultural shock of technology.

Reeves’ model for interactive web-based training

e-Learning requires learners motivated to learn on their own. Reeves’ systemic model of web-based training guides the planning for this requirement. A needs-analysis guides both training managers and instructional designers to match the requirements of a target audience with instructional solutions (Alessi & Trollip, 2001; Anderson & Ellouni, 2004; Choucri, Maugis, Madnick, & Siegel, 2003; Khan, 2005; Mager, 1991; Reeves, 1997). In his model Reeves defines the inputs, processes and outcomes during a need-analysis for web-supported training: aptitude and individual differences, cultural habits of the mind, and the origins and strengths of motivation (Figure 1).
Aptitude is defined as the “characteristics a student brings to a learning environment”. No two individuals learn the same way; therefore, warehouse workers’ “locus of control, learning styles, anxiety, tolerance for ambiguity, prior experiences, interests, attitudes and disabilities” must be understood and addressed (Reeves, 1999, p. 4). Constructivist pedagogy acknowledges individual differences and aims to adapt training environments accordingly. Warehouse workers’ prior knowledge, aptitudes, and motivation need to be considered. “In most educational contexts, we can not be guaranteed that learners will be homogeneous in terms of aptitudes, prerequisite knowledge, motivation, experience, learning styles, eye-hand coordination, etc” (Reeves, 1997 p. 10). Images and interactivity may appeal to some learners; whereas graphics and images might not be conducive to some warehouse workers’ training success (Chang, 2003).

Reeves extended the concept of aptitude to *aptitude and individual differences* to guide instructional designers for e-learning training. “The diversity of students [warehouse workers] in e-learning poses a challenge to the instructor” (Khan, 2005 p. 299). Therefore, a target-group analysis should focus on characteristics such as “age, educational level, cultural background, physical and learning disabilities, experience, personal goals and attitudes, preferences, learning styles, motivation, reading and writing skills, computer skills, ability to work with diverse cultures, familiarity with differing instructional methods and previous experience with e-learning” (Khan, 2005 p. 184).

Anderson and Elloumi (2004) hold the opinion that perception and processing contribute to trainees’ experiences. Perception refers to the way learners make sense of the information, and processing refers to the way the information is understood and utilized. Individual differences include “patterns of thinking and reasoning about information, how individuals process information to make sense of the world, preferences for information processing, and how past skills or ability influence the learning process” (Johnson & Aragon, 2001, online). Therefore, designing for a warehouse worker’s aptitude places a huge demand on instructional design (Alessi & Trollip, 2001; Anderson & Elloumi, 2004).

Culture is one of the most misunderstood influences on training because factors that drive training in some cultures do just the opposite in others (Reeves, 1999). Paxton (Business Wire, 2001) posits that acknowledging cultural influences is essential for warehouse workers’ acceptance of a self-driven training initiative that either encourages or
discourages training. Attempts to prepare training in a technology-driven environment can only be successful when it acknowledges and caters to the multicultural characteristics of the learners (Khan, 2005; Reeves, 1999; Thomas & Inkson, 2004).

Aspects such as age, gender, ethnicity, individuality, and economic and social status should be carefully considered during a needs-analysis to avoid a pedagogic mismatch. To move learners from traditional classroom-training to e-learning may prove challenging. Such progression requires the learners’ psychological, sociological and environmental readiness for training with technology. When cultures that thrive on social support are confronted with the isolation of online training, loneliness can cause learners to withdraw and become unsuccessful (McInerney & Roberts, 2004). Organizational culture burdens learners grappling with diverse values (Jaynes, 1997).

When designing online training, designers and trainers must consider cultural influences and need to understand how learners perceive the intervention from their cultural point of view (Reeves, 1999). Khan regards the acknowledgement of cultural differences as an ethical issue. Cross-cultural miscommunication may occur “when at least one of the parties trying to exchange information is unaware of, or chooses to disregard, a significant difference in expectations concerning the relationships between communicators” (p. 295). Thomas and Inkson (Thomas & Inkson, 2004) acknowledge that cultural values differ, especially those relating to business and communication. They warn that awareness of intercultural biases, understanding knowledge-transfer to other cultures, or lacking recognition of cultural orientations that influence behavior leads to trainees feeling threatened. In addition, Ntuli, Hontoundji and Hoppers (2002) believe that African culture often perceives Western culture as a threat.

Motivation must be one of the most important aspects of training. Intrinsic motivation -- originating from within the learner, and extrinsic motivation -- originating from the trainer or a successful performance, are equally important (Anderson & Elloumi, 2004; Reeves, 1999). Some question whether novice learners receive sufficient guidance or if learners know the training goals they pursue. Kahn (2002) lists the following key elements to motivate learners during e-learning: a positive training climate to set the scene for e-learning, meaningful content to increase the relevance of the training. He also emphasizes choices that signal that learners are in control of their training, curiosity that creates interest in the training, peer-support to enable learners to progress without instructor facilitation, and goal-orientated training as extrinsic motivation for training.

Reeves’ three input factors sensitize instructional designers and trainers to the kind of participation expected from a developing community confronted with e-learning. Therefore, even if warehouse workers share qualities with the culture of the organization, and they are similarly motivated, they still respond to challenges as individuals.

Methodology

International Health Distributors (IHD) comprises approximately five hundred employees, of which two-thirds are warehouse workers. IHD distributes pharmaceutical products to the entire Southern African region via distribution centers situated in the five cities in South Africa. The warehouse workers are multi-racial, mostly black, between eighteen and sixty years old and of both genders. Their limited educational qualifications represent developing communities-of-work across Africa. These learners display distinctive habits, are motivated in unique ways and embrace different training styles. Therefore, before implementation, it is vital to perform a comprehensive target-group analysis to determine their acceptance of e-learning. We positioned the focus of this target-group on the zone between Reeves’ input and processes factors (Figure 2). Warehouse workers’ skills and experiences can either contribute to or constrain their level of e-readiness – resembling the rise and fall of atmospheric conditions. Hence the comparison with constantly-shifting barometer readings.

During the qualitative interpretive study, the data set consisted of interviews with subject-matter experts (SMEs), warehouse workers, and their line-managers; observation of the warehouse workers while engaging with mainframe business-systems and workplace tutorials; and warehouse workers’ responses to open-ended questions in a survey.
During phase one we generated consensus understanding of e-readiness by SMEs through a Delphi technique (Stuter, 2002). This analysis produced six sets of categorized codes. As they originated from theory and practice, we referred to these as the theory codes: technical experience, affective experience, aptitude, motivation, access, and organization. From these theory codes we devised six questions that guided our exploratory investigation on the e-readiness of warehouse workers:

1. How does access to technology contribute to the e-readiness of warehouse workers?
2. What technical experience do the warehouse workers have with technology?
3. What affective experience do the warehouse workers have with technology?
4. How did computer interaction affect the aptitude of the warehouse workers?
5. What origins of motivation induce warehouse workers to become e-ready?
6. How does organizational culture influence the e-maturity of the warehouse workers?

During phase two, we culminated the interview data in an integrated dataset on Atlas.ti™, a computer-assisted qualitative data analysis system. With the six questions in mind, we deductively coded and categorized the interviews with the warehouse workers, line-managers, and SMEs; observations of the warehouse workers while engaging with mainframe business systems and tutorials; and warehouse worker’ responses to an open-ended survey questions according to the theory codes. This analysis enabled us to obtain an initial understanding of the warehouse workers’ e-readiness.

During phase three we followed inductive reasoning during a grounded-theory approach for the conceptual analysis of the data set. This analysis resulted in twenty categorized conceptual e-readiness codes revealing the e-readiness patterns of warehouse workers. These findings explicate the changing levels of the e-readiness barometer (Figure 2).

**Findings**

The findings relating to the six theory codes are presented according to the six questions guiding the investigation.

**How does access to technology contribute to the e-readiness of warehouse workers?**

Access to computer technology is critical to realize e-learning and to bridge the digital divide. A pattern emerges from the analysis that indicates access to the infrastructure leads to encounters with computers, thereby enhancing...
computer skills, opening new opportunities, and positively influencing the training preferences of the warehouse workers. Access to computers positions the warehouse workers to face the challenges of the information era:

*Most companies have a network, and PC’s. That's where you start. That's what you need, a network so that you can communicate with the server. You know our network here currently and the infrastructure is quite advanced (Network manager observation).*

**What technical experience do the warehouse workers have with technology?**

The warehouse workers regularly encountered the mainframe business system and personal computers as part of their jobs. They expressed little anxiety while working and learning with these technologies. They believed their computer literacy skills adequate and displayed a positive attitude toward working with computers:

*He typed with one hand only, using only his middle finger to type, right hand resting between the numeric keypad and the mouse. Then he put his right hand on the mouse and started. He had a confident manner in which he used the mouse, not hesitant at all (Observation).*

Computers changed the warehouse workers’ training preferences towards training with computers and increased the viability of e-learning. However, this also indicated that guidance and support required for training strategies would differ from regular classroom-based support.

**What affective experience do the warehouse workers have with technology?**

The warehouse workers did not suffer technophobia. Regular use of computers enhanced their technical experience and developed their literacy levels and skills with computers. This resulted in enhanced confidence and acceptance of possible training with computer technology. Even when a slow network system frustrated them, the warehouse workers remained positive. Such was their confidence that they rarely expressed displayed technophobia (Gupta, 2001):

*Judging her behavior and response to the PC, she clearly has no fear for the machine. Although she never learnt to use the Windows menus, but she knew that she had to use the menus to successfully find her application (Observation).*

**How did computer interaction affect the aptitude of the warehouse workers?**

An interrelating pattern of technical and emotional readiness emerged from the analysis. Regular encounters positively influenced the aptitude of the warehouse workers, and daily exposure to computer technology resulted in increased computer literacy. Additionally, their emotional aptitude reflected a positive attitude towards computers -- they experienced less anxiety, learned more about technology, and believed that self-driven training might be a future option in their vocational development.

*He was not a young man. When he looked up he used the bottom part of his glasses. He tilted his head backwards to enable himself to read the screen. This did not hinder him at all. He read from a document and typed the figures on the keyboard in front of him (Observation).*

**What origins of motivation induce warehouse workers to become e-ready?**

Various in-house aspects motivated warehouse workers to become involved in e-learning. Encounters with computers acted as an extrinsic motivator to use technology for more than just work-related tasks. Also, using computers contributed to their intrinsic motivation by allowing the workers to be more successful in their jobs and to try out new procedures:

*I found that warehouse workers with very limited skills enjoyed the challenge and wanted to improve their PC skills. Motivation wasn’t really an issue (Line-manager).*
Financial support, technology access, guidance and support, learning plans, training time, facilitator and management guidance, and online electronic support emerged as important motivators. The organization remained the critical motivator to create a receptive attitude towards e-learning.

**How does the organization’s culture influence the e-maturity of the warehouse workers?**

Our investigation recognizes the augmented role of the organization to the e-readiness of the warehouse workers. As employees they depend on direction from the organization not only to provide the infrastructure and access, but also to provide maturity in using the infrastructure and managing their training and vocational plans. It demands exposure, guidance and support, training time, financial support, in addition to facilitation and knowledge of e-learning from the organization. The e-maturity of the organization determines the viability of the e-learning strategy.

The warehouse workers received access to IT that explained their encounters with IT. These led to the development of their IT and basic computer literacy competencies. It contributed to their aptitude to interact with computers and their confidence that technology can enhance their vocational and development learning plans. Although their skills and aptitudes developed, the warehouse workers still depended on the organization to provide leadership and expertise to become successful e-learners:

*Maybe I'm not sure about my career. I want to speak to someone who will motivate me. Not only motivating verbally but giving me some document from the network - you can choose this, do this, trying to collect some information, and it's like setting some goals (Warehouse worker).*

From the inductive conceptual analysis of the data (phase three), we compiled an inventory of twenty categorized conceptual codes of e-readiness. We tallied all the responses on a grid. The y-axis represents the six theory codes, and the x-axis illustrates twenty conceptual codes of e-readiness (Figure 3).

![Figure 3: Patterns of e-readiness transpired through theory and conceptual codes](image)

Although the responses captured in each cell in Figure 3 represent an important pattern of understanding, we selected seven emergent findings to report in this paper. Even though we highlight areas with a high frequency of warehouse-workers’ responses, we want to emphasize that numbers and frequencies do not drive qualitative research. All findings are equally important, and factor analysis is not yet possible.
Computer use and experiences with IT

Warehouse workers’ experiences as a working community concur with the concept community of practice. They share the objectives of the organization and participate in regular technology operations (Lesser & Storck, 2001; Smith, 2003; Wenger & Por, 2004). These business procedures are systems-driven and systems-supported and require basic computer knowledge and skills. Consequently, warehouse workers have already become part of the “Network Society” (Huckle, 1997) - an indicator of readiness for e-learning:

Yes, we do receive e-mail, especially now with the company policy from HR to highlight to us what goes on with the meetings and so on. I don't have a problem with that. I read all the e-mails but I don't even know how to send them (Warehouse worker).

The three conceptual codes, experiences with IT, computer use and computer literacy indicate a high rate of recurrence from the SMEs, warehouse workers, and their line-managers. The three conceptual codes reflect the encounters of the warehouse workers with diverse technology – sensitizing them to the potential of technology. Interviews and observations confirm that the warehouse workers regularly engage with mainframe business-systems and sporadically with computer-assisted training systems. Examples of such computer-based training systems include the Adult Basic Education and Training (ABET) program and a workplace-related tutorial. Some warehouse workers receive e-mail on a regular basis and occasionally reply to and send messages. Although the warehouse workers regard computers as workplace tools, they are not in awe of them and also do not hesitate to use them for recurring tasks. Many own or use mobile phones and often send and receive text messages.

The warehouse workers’ encounters with technology accrue the experiences with IT. These culminated experiences positively influence their general technology-literacy and aptitudes with technology. This finding concurs with Irving & George’s (2000) view that increased use of computers leads to increased independent training. Although the required aptitude for fully-fledged e-learning is still limited, the important baseline skill of getting acquainted with computer technology has been achieved. We observed that the warehouse workers were accustomed to mouse and keyboard operations. They read and responded to instructions on computer screens and eagerly interacted with e-mail. Despite individual differences when the warehouse workers responded to these challenges, we observed overwhelming enthusiasm and determination to interact with computers. Therefore, warehouse workers’ daily encounters with and their active use of technology in the workplace has already developed sufficient general computer literacy skills to dispel arguments that they are not ready for the challenges of e-learning.

Anxiety and attitude

Khan (2005) argues that inexperience may lead to developing learners’ anxiety, thereby requiring more support. In our investigation, the warehouse workers do not experience anxiety to such an extent that it prevents interaction with computer technology. They never complain of fear of the technology. Their daily responsibilities require them to logon to the mainframe, and they complete procedures on equal footing with administrative staff:

They’re beyond the fear of the machinery already ... (Line-manager).

Johnson and Aragon (2001) report that different skills and capabilities construct knowledge from computer-based content. When introduced to a tutorial the warehouse workers appear unsure and anxious. However, the unfamiliar tutorial does not prevent them from interacting with the content. Anxiety, when confronted with an unfamiliar training strategy, is understandable -- considering that regular classroom training was their only frame of reference.

The SMEs believe that anxiety is not a major issue, and most agree that guidance and support from a knowledgeable trainer is crucial to surmount warehouse workers’ anxiety. Conversely, instead of displaying anxiety, some warehouse workers naively over-estimate their capacity to train with computer technology. Their prior encounters with technology make them confident of coping with the demands of e-learning. However, the warehouse workers enjoyed the interaction with the tutorial and expressed the desire to further train with computer-based programs. In conclusion, the warehouse workers present an affect ready for e-learning.

Managerial responsibilities

The inception of learning plans is an initiative of the South African government’s Skills Development Act 97 of 1998. It requires all organizations to compile employee development paths to establish employees’ progression to
formal qualifications. However, human resource managers generally are not knowledgeable about e-learning, and the majority of warehouse workers do not have a learning plan.

But, I don't know really. I don't know how you drive it, I don't know much about e-learning, I must be honest (Line manager).

Even though the line-managers argue that learning plans are compiled when required, some concede that this developmental aspect is often neglected. Nevertheless, none of the interviewed line-managers regard the preparation of learning plans as their primary duty. They also are not proficient in providing relevant training to developing warehouse workers to diminish the effects of the digital divide in the organization. Training with technology is an involved process and needs professional management and facilitation (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Bowles, 2004; Khan, 2005).

We recorded high frequencies of responses when we related the theory code *origins of motivation* to the conceptual codes of *managerial contributions, guidance and support* and *knowledge of e-learning* (Figure 3). These affirmations not only confirm the value of the three conceptual codes as motivators, but they also indicate the critical value of achieving e-learning as a training strategy for the development of warehouse workers. The warehouse workers depend on the leadership from the organization to transform them from guided-learners to self-driven learners. They depend on training plans to match their current jobs with realistic future goals.

*The personal development plan, initiated by the line manager is crucial. They need to know what is the next rung in the ladder - where are they going to? (Subject matter expert).*

Despite the warehouse workers’ experience with technology and their accumulated computer literacy, they are dependent on leadership to become successful and self-driven learners - a reliance that demands both responsibility and “e-knowledge” from trainers and line-managers.

*So, sometimes you find that you’re motivated, you got the interest, but the organization is not supportive. There are things that we do not have control of. You can control the personal development, but the structures of the organization must actually be supportive (Warehouse worker).*

Organizations’ limited experience with and expertise on the value of e-learning often lead to a “one-size-fits-all” training approach. Irrelevant training initiatives are consequently offered. Line managers often referred to the Adult Basic Education (ABET) programme “Takalani” – comparing the training to a children’s educational television programme (Science in Africa, 2001).

**Infrastructure and connectivity**

Global industry leaders must conform to the demands of global competition to be on the leading edge of the SCM industry, to have current product information, and to adhere to modern business procedures for success (Turban et al., 2001). The infrastructure manager of IHD confirms that the organization adhered to these requirements and attracted numerous international patrons. Modern organizations’ capabilities are rated by their connectedness to other resources and role-players in the global network (Board of Regents University of Georgia, 2003; Business Wire, 2001; Choucri et al., 2003; Huang et al., 2004; Ifinedo, 2005). All agree that the infrastructure of an organization is crucial to compete and survive in the global village, but the infrastructure should also benefit employees.

Warehouse workers connect to the organizational computer network and communicate with peers and management across the internet. High frequencies occur when the conceptual code *connectivity* relates to the theory codes *technical experience* and *motivation* (Figure 3). This connectivity and access to the infrastructure motivates workers and adds to their technical experience required for e-learning. Warehouse workers in an e-ready and e-mature environment can compete globally:

*If an IT illiterate learner gets the opportunity to learn and work on the PC, they are often more motivated than others who have the necessary skills. They see it as a way to close the skills and knowledge gap (Subject matter expert).*

**Training preferences adapt with new skills**

A preference can only be valid with comparable options. The warehouse workers’ hardly had any experience with other training modes, and therefore preferred classroom-training. We took this paradox into account throughout our
interviews and observations and survey with the warehouse workers. Responses indicated that most of the warehouse workers preferred guidance rather than training on their own. On the other hand, almost all the warehouse workers wished to interact with computer-based training programs. We also recognized that quality e-learning was what they envisioned when making their demands due to inadequacy of their previous experience with e-learning. Aspects such as online social-interaction, web-based reflection, individual differences, peer-assessment, and simulation of real-life contexts remain beyond their imagination. In spite of their self-declared preference for classroom training, the motivational indicator for the conceptual code \textit{classroom training} rank second lowest on the \textit{origins of motivation} row (Figure 3). Johnson and Aragon (2001) maintain that developing learners transform from a classroom-driven model and become self-reliant and active learners when confronted with well designed e-learning.

Despite the unfamiliarity, the warehouse workers were not reluctant to try out the tutorial and progress on their own. Working on their own was also not that new as they drafted for the ABET program and three times a week trained during allocated time. They enjoyed the interaction with the ABET-activities:

\textit{These guys, if you consider the cultures where they came from. Ten years ago they would sit back and be afraid that they will make mistakes. Today they confront the computer and say “Hey, how does this thing work? I’d also like to try it out} (Warehouse worker).

Figure 3 confirms this pattern when the theoretical code affective experience relates to the conceptual codes \textit{classroom training} (213 responses) and affective computer use (426 responses). Although the warehouse workers indicate their eagerness to learn with computers, it may be too early to regard this eagerness as a training preference.

\textbf{Access to computer technology as origin of motivation}

Reeves (1999) lists origins of motivation as the most important aspect when planning e-learning. From our analysis the conceptual code \textit{experiences with IT} (Figure 3) in relation with the theory code \textit{motivation} present a high score of responses. Access to computer technology motivates the warehouse workers both extrinsically and intrinsically to become independent learners. The three conceptual codes, \textit{experiences with computers, computer use, computer literacy and skills and abilities}, all strongly relate to \textit{motivation}.

Access and the ability to work with computers affect the warehouse workers intrinsically through their attitudes, frustrations, anxieties and training preferences. The exposure to computers determines warehouse workers’ use of computers; they access mainframe business procedures, display mouse and keyboard skills, and follow hyperlinks. They also read instructions online, which improve their overall literacy. In addition, they use e-mail and engage in tutorials and ABET programs -- aspects that contribute to their embrace of computer technology. Access to computer technology changes their attitudes as well as their anxiety and frustrations when using computers:

\textit{Many people have a fear of computers when they start. They think of the computer, and wrongly assume that they need to know it before being able to use it} (Warehouse worker).

It appears that the warehouse workers’ pride in their capabilities motivates them. Almost all the interviewed respondents expressed enthusiastic requests for more regular and extensive interaction with computers at work. Some displayed an urgency to complete the self-driven ABET program to develop their capacity. However, this naiveté suggests that their vocational and personal development should be guided with care and empathy.

\textbf{The organization holds the final key}

Only the organization can fulfill warehouse workers’ potential to training with technology. More than fifty per cent of the responses in our analysis indicate warehouse workers’ dependency on an e-mature organization. Access to computer technology provides the opportunity for vocational and personal development of employees, but areas such as expert advice, financial support and assistance, informed career guidance, and relevant learning plans all reside with the organization.

An organization should display financial, transformational and e-learning leadership to transform warehouse workers from passive followers to active initiators. Although we indicate the presence of a culture of training, the focus and direction of management remains obscure. Even though warehouse workers had the privilege of up to six hours of
training per week, the line-managers said they were not equipped to manage this requirement. As warehouse workers do not have the personal capacity to finance external training, the organization’s training budget should provide for training. Expert training managers should play a mayor part in structuring an e-learning initiative for the organization:

Critical. It’s critical. It should not be forced, but the management should support the e-learning initiative, and only then would it be received by the workers (Subject matter expert).

Some respondents questioned the purpose and relevancy of the ABET program. In contrast to their line-managers, several warehouse workers indicated that they did not own a formal learning plan. They also conceded that they needed guidance and support with e-learning. A knowledgeable facilitator is therefore vital to ensure that relevant training focuses on vocational capacity-building and personal development. These findings emphasize that a well-executed needs-analyses is essential to align organizational visions with employee training-needs (Bowles, 2004).

We have indicated that warehouse workers depend on the organization to transform them into self-driven e-leaners. We concur with the arguments of Powell (2000) that organizational readiness should be established before the implementation of e-learning, and that managerial support is crucial for the success of e-learning. The e-maturity of an organization, management’s expertise, and a knowledgeable training management team determine the successful implementation of e-learning for warehouse workers.

Conclusion

Our findings describe how IT exposure can prepare a community of practice in a developing context for e-learning. We indicate that the warehouse workers were affectively and technically ready as well as cognitively motivated to embark on guided e-learning. Organizations not only have the opportunity, but also the obligation to empower and develop warehouse workers through training with IT while also managing high distribution costs. Several issues for future research emerged.

Reeves (1999) describes three outcomes for web based learning: knowledge and skills, robust mental models and higher order outcomes. Further research to establish to what extent does e-learning develop previously disadvantaged communities’ higher order thinking, and how learning technology can help them construct mental models is eminent. Reeves (1999) also describes origins of motivation as one of the main inputs that influence group analysis when planning web-based training. This study has barely addressed these aspects. We also need more information on how to design e-learning programs that also involve instructional designers in the planning of intrinsically motivational e-learning strategies for developing communities. Guidelines for designing across cultural differences of mind and habit will be invaluable to trainers and instructional designers alike.

Developing countries focus on basic requirements such as food and shelter. Workers therefore seek jobs before education. However, commercial organizations have emerged in a new role of providing education to its workers while competing for market shares through technology. This challenge to develop workers places a critical responsibility on the e-maturity of organizations to appoint leadership to establish and deliver e-learning.

References


