Refereed Article

Development of the Employee Lifelong Learning Scale (ELLS)

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Abstract

The purpose of this study was to develop an instrument to study learning motivation in employee groups. Three frameworks were influential in this process; Person-Environment Fit, Super's Life-Span, Life-Space approach to careers and the empirical research of Livneh. Subject Matter Expert (SME) interviews were conducted with adult education specialists as part of the survey development process. Surveys were sent to three organizations that represented different occupational types. Results indicated that three learner types can be differentiated: Fearful Instrumentalists, Ambitious Instrumentalists and Passionate Visionaries. Discussion focuses on the implications and limitations of this study and addresses further research needs in the area of lifelong learning.

Development of the Employee Lifelong Learning Scale (ELLS)

The purpose of this research project was to develop a measurement instrument with which to study learning motivations in employee groups. Promoting lifelong learning has received increased attention recently from the educational and business communities (e.g., Hiemstra, 2002). This interest can be linked to changes in the business community and the evolving profile of available employees in North America. More than seven million jobs have been lost in North America since 1987 (Muchinsky, 1997) and they are not coming back. Although other jobs are emerging to take the place of jobs that no longer exist (Statistics Canada, 1998), the nature of work has changed. Organizations must remain flexible and responsive to their marketplace if they are to thrive; consequently they no longer promise lifelong, or even extended, employment. The message

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seems to be that employees who are valuable today may be obsolete tomorrow if they do not constantly strive to keep their skills current (e.g., Allred, Snow, & Miles, 1996; Arthur & Rousseau, 1996; Brousseau, Driver, Eneroth, & Larsson, 1996; London, 1992). Thus, the need for continual learning has been an important result of the changes taking place in the corporate community. Employees are being encouraged to become entrepreneurial and engage in lifelong learning in anticipation that they will change jobs and possibly career paths many times during their working years.

There is a growing need for research that differentiates employees who are ready and able to participate in lifelong learning from those who are not (e.g., Crossan, Field, Gallacher, & Merril, 2003; Crowther, 2000). Such research needs to determine what variables might be related to their willingness, ability and desire to participate in learning activities (e.g., Edwards & Nicoll, 2001). Research of this nature is intended to help organizations and individuals facilitate an improved fit between the organizational environment and the individual and recommend ways to assist employees to reach their full potential as contributors to the organization.

In concert with the changes in the nature of work, the profile of available employees has also been evolving. The workforce is aging (e.g., Crampton, Hodge, & Mishra, 1996), the commitment employees feel towards organizations may be different than that traditionally assumed to exist due to the extensive downsizing that began in earnest in the 1990s (Goldenberg & Kline, 1997; London, 1993, 1996), and family concerns are often paramount (Super, Savickas, & Super, 1996). Organizations, particularly those calling themselves "learning" organizations, must be willing and able to motivate and enable all employees to learn, despite the increasing heterogeneity of the workforce.

Study One

Method

Participants. Eight Subject Matter Expert (SME) interviews were conducted as a preliminary step in the scale development process. SMEs were employed in careers that brought them into daily contact with the issues that affect adult learners. SMEs worked across the spectrum of adult learners from those involved with basic adult literacy programs to university professors working with post-graduate students. SMEs worked in both the public and

private sector, ranged in age from 36-55, were predominately white females, and had an average of 21 years of work experience in their field. Their education levels ranged from a college diploma to Ph.D.

Procedure. SME interviews were unstructured and interviewees were not asked to specifically discuss any particular theory or line of research. Instead they were asked to give their particular definition of lifelong learning, what variables enhanced learning and those that might be roadblocks to learning. It was hoped that the unstructured format would allow experts in the area of adult learning to inform the researchers of what they saw as important in lifelong learning based on their extensive experiences.

Results and Discussion

The SMEs elucidated a number of factors as being of prime importance in determining who participates in lifelong learning and who does not. Specifically, the SMEs agreed that a high degree of self-efficacy, having a goal orientation and participating in career changes (similar to Super's mini cycles) all should increase participation in lifelong learning. However, they also pointed out that some variables create roadblocks to learning. Personal life circumstances (similar to Super's Life Redesign issues) such as a change in marital status, the death of a loved one or multiple role demands impact individual resources and may prevent employees from learning, at least for a period of time. In addition, personal resources such as lack of time, money, energy, health or emotional strength were frequently mentioned as barriers to learning.

The barriers to learning raised by SMEs fit well with Super's (Super et al., 1996) Life-Span, Life-Space theory. Super indicated that role interactions and life redesign issues are variables in the life-space component of his theory. Kristoff (1996) also indicated that a person must be willing to supply resources in terms of time, effort and commitment to organizations and must also value learning and approach learning with a positive attitude.

SMEs disagreed with Livneh's (1988) implication that lifelong learning is something unique to the professions. They uniformly believed that lifelong learning is now required of all employees from professionals to those who perform routine work such as maintenance staff. Further, SMEs indicated that lifelong learning is a process that is not affected by age for the most part. It is not until advanced old age that willingness and/or ability to learn becomes a consideration, according to the SMEs.

Items were created for the Employee Lifelong Learning Scale (ELLS) using both top-down and bottom-up approaches. The variables identified in the SME interviews constituted the bottom-up and the theoretical work of Livneh (1988), Hall (1996), Super et al. (1996) and Kristoff (1996) provided top-down information. Each of the eight SMEs from stage one was asked to evaluate the preliminary survey instrument. Because the original eight SMEs were all professionals, eight additional SMEs, who had expertise in technical and routine work, were also recruited to evaluate the instrument. All sixteen SMEs evaluated the instrument from the perspective of content validity, clarity and completeness given the hypotheses under consideration. They were asked to briefly note any suggestions that they had for improvement of the ELLS and these improvements were incorporated as much as possible. The resulting survey instrument was then used in Study Two.

Study Two

Method
Participants. We recruited three different groups of employees to participate in this study. This was purposely done to ensure that different types of workers were represented in the sample. One group of employees typically performed "routine" work (bank tellers and clerks). There were 500 individuals available for surveying in this group and all 500 received a questionnaire. A second group was a "technical" group (professional engineers). Five hundred were randomly sampled from the 12,500 members of their professional association. The third group was a "professional" group (licensed psychologists). Five hundred were randomly sampled from the 8,000 members of their professional association. All participants were employed by organizations rather than being self-employed.

Measure and Procedure. The 30-item ELLS was designed to tap into employees' different goals and work role salience. All participants were sent the survey via their employer/association group, along with an accompanying letter from senior management encouraging employees to participate and ensuring their anonymity. Surveys were distributed in March and early April, 1998 and all responses were received by mid-May, 1998.

Fifteen hundred (1500) questionnaires were distributed and 267 completed responses were received for an overall response rate of 18%. The completed surveys were distributed into three groups as follows: 61 bank tellers/clerks (12%), 129 technical engineers (26%) and 77 psychologists (15%).

Results

As this research stream was preliminary it was anticipated that some of the questions included in the ELLS would need to be modified or discarded prior to further use. Indeed, 13 of the original 30 questions were deleted in the process of evaluating the variables and possible factor solutions. Three items were deleted due to lack of variability in the observed scores. An additional three items were deleted because they did not correlate with any other item and significantly lowered the internal consistency of the scale as indicated by Cronbach's alpha. Additionally, seven items did not load at all in an exploratory Maximum Likelihood factor analysis with Varimax rotation when a loading cutoff of .32 (i.e., at least 10% of the variance between items and the factor was not present) was used.

The 17 remaining items were subjected to a Maximum Likelihood factor analysis with Varimax rotation. Three factors were extracted as illustrated in Table 1. Variables within each factor were ordered and grouped by size of loading to facilitate interpretation. Loadings under .32 were left blank. All of the 17 items loaded onto only one of the three factors. Overall the factors accounted for 35% of the variance in the items. The three factors that emerged were: Factor 1 (Passionate Visionary) with an internal consistency of .68, Factor 2 (Fearful Instrumentalist) with an internal consistency of .71 and Factor 3 (Ambitious Instrumentalist) with an internal consistency of .77. These values were acceptable for research purposes (Nunnally & Bernstein, 1994). Subscale scores based on the items for each factor were created using unit-weighting. The correlations between the subscales are presented in Table 2.

Occupational Comparisons. Univariate ANOVAs were carried out using the subscales as the criterion variable and the three job categories as the grouping variable to assess whether the factor based sub-scales scores differed between occupational types. Results indicated significant differences between groups on each of the three factors (Factor 1, F (2, 264) = 15.44, $p < .001$, $?^2 = .10$; Factor 2, F (2, 264) = 28.29, $p < .001$, $?^2 = .18$; Factor 3, F (2, 264) = 10.85, $p < .001$, $?^2 = .08$).

Tukey *post-hoc* tests were run for each factor in order to determine where the significant differences were between groups. Table 3 summarizes the results. For Factor 1 (Passionate Visionary) there were significant differences between the routine and professional groups and between the technical and professional groups but not between the routine and technical groups. There were significant differences between all occupational types on Factor 2 (Fearful Instrumentalists) with the routine

Table 1
Rotated Factor Matrix Loadings (Maximum Likelihood Extraction, Varimax
Rotation)

Items	Passionate Visionary	Fearful Instrumental	Ambitious Instrumental
I learn because I am committed to my career	.688		
I would like to be active in my work for many years	.564		
I have a passion for learning	.502		
I learn things that I can apply to work just because I like to learn them	.475		
I would like to work for as long as possible	.475		
I feel very personally motivated in my work	.443		
I would like to learn to be the best I can be in my chosen field	.423		
I would like to be remembered for what I did in my work	.398		
I have a vision of where I want to be in my work in ten years, even if I am not sure of how to accomplish my vision	.371		
I learn to remain employable in my current organization		.792	
I learn new skills in order to keep my job		.652	
I learn because I need to in order to achieve my career goals		.527	
I learn because I am afraid of losing my job		.469	
I like to work where employment is regular and secure		.402	
I learn when I have specific goals and objectives		.371	
I would like to be promoted			.984
I would like to get ahead in my work			.615
Eigen Values	3.6	2.5	1.4

Table 2
Factor Based Correlations Matrix (N = 267)

	Passionate Visionary	Fearful Instrumental	Ambitious Instrumental
Passionate Visionary	–		
Fearful Instrumental	.137*		
Ambitious Instrumental	.211**	.301**	

* $p<.05$; **$p<.01$

Table 3
Summary Table: Mean and Standard Deviation by Job Category for Each Factor

Occupation		Passionate Visionary	Fearful Instrumental	Ambitious Instrumental
Routine	Mean	26.03	17.31*	6.05
	SD	5.32	3.22	2.09
	Sample Size	61	61	61
Technical	Mean	27.31	15.15*	6.32*
	SD	4.34	3.55	1.55
	Sample Size	129	129	129
Professional	Mean	30.13*	12.72*	5.14*
	SD	4.21	3.92	1.84
	Sample Size	77	77	77

* Mean differences are significant ($p<.01$ between groups in each column).

group being most fearful and the professional group being least fearful. Tukey procedures for Factor 3 (Ambitious Instrumentalists) indicated that there were significant differences between routine and professional groups and between technologists and professionals but not between routine and technical groups.

Discussion

This study has provided an important step in the modeling process by developing an instrument that assesses individual differences regarding the motivation to engage in lifelong learning. The three occupational categories, which were deliberately selected as exemplars of routine, technical and professional workers, mapped onto the three learner types with the routine group mapping onto the Fearful Instrumentalists factor, the technical group mapping onto the Ambitious Instrumentalists factor and the professional group mapping onto the Passionate Visionaries factor. The routine group was significantly more fearful in their approach to lifelong learning than those in the technical group and the technical group was significantly more fearful in their approach to lifelong learning than the professional group. The technical group was significantly more ambitious in their approach to learning than the professional group.

There are several practical implications to this research. The first is that when attempting to encourage learning in employee groups, organizations should be aware that "lifelong learners" are not a homogenous group. In order to successfully facilitate any educational undertaking, businesses should take steps to understand their employee population and the constraints their employees are working under (motivation, financial, family, personal resources, etc.). From this knowledge base it is possible for organizations to develop appropriate educational plans that are more likely to be well received by employees than educational plans developed in the absence of such information.

Second, if businesses are serious about being "learning organizations" and developing a love of lifelong learning in their employees, they need to consider the limitations on what they will and will not pay for in adult continuous education. For example, Passionate Visionaries take many and varied routes to learning and the learning they participate in would not conspicuously contribute to the bottom line success of an organization. If organizations limit their education reimbursement programs to formal classroom or seminar participation that is directly related to the job the employee currently holds, the organization may not capture the learning needs of the Passionate Visionaries.

Finally, access to educational resources is an issue that needs to be considered. For example, there may be financial barriers to some learners in obtaining educational requirements, there may not be the right courses offered at a convenient location, or the institutions offering courses may

be rigid in their scheduling of courses. If an organization is truly a "learning organization" there needs to be an assessment of such mundane matters before implementing a wide-ranging program.

There is still much research needed to further our understanding of this important topic. For example, accessibility, personality, personal resources, work resources, and self-efficacy are all potential variables that may have an impact on lifelong learning activities. Additionally, determining appropriate outcome measures to capture the results of learning efforts is problematic: learning may be taking place but may not easily be measured via pencil and paper tests or brief interviews. Consequently it is advisable to use several outcome measures in future research.

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