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International Journal of Self-Directed Learning

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Preface

As more and more educational institutions and professional associations add the development of lifelong, self-directed learners to their overall goal statements the need for further research, refinement of conceptualizations and definitions, and effective models for practice becomes more prominent.

This issue of the journal presents two articles that focus primarily on contributing to the understanding of the phenomenon of self-directed learning, two that examine approaches to the promotion of self-directed learning and its correlates in university settings, and one that reflects on past research findings in light of technological changes, providing recommendations for research and practice.

Oliviera and Simões collaborate on a comprehensive examination of the impact of a broad range of socio-demographic and psychological variables on the self-directedness of higher education students at the University of Coimbra, Portugal. Based on their complex analysis, they present a new model showing the network of influences on learner self-directedness.

The relationship of self-directed learning readiness and cultural adaptability in expatriate managers employed by multinational corporations is explored by Larissa Chuprina and Richard Durr, adding further to the list of correlates that assist our understanding of the nature of self-direction in learning.

Two articles document the outcomes of instructional innovations and their relationship to readiness for self-directed learning or learner autonomy. Gabrielle and her co-authors present outcomes of the use of supplemental technology-delivered materials and support to enhance academic achievement and self-directed learning readiness in a military college; Park and her co-authors describe changes in clinician-educators involved in an intensive course on teaching geriatrics within their specialties and the relationship of the degree of change to learner autonomy.

Finally, Rager revisits Spear and Mocker's concept of the *organizing circumstance* in light of the proliferation of internet availability and use. She offers recommendations for practice based on the historically unparalleled variety of resources now available to most adult learners on their own home computers.

Huey B. Long and Lucy M. Guglielmino, Co-Editors

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IMPACT OF SOCIO-DEMOGRAPHIC AND PSYCHOLOGICAL VARIABLES ON THE SELF-DIRECTEDNESS OF HIGHER EDUCATION STUDENTS

Albertina Lima Oliveira and António Simões

This research study represents a contribution to the understanding of the psychological dimension of self-directed learning among university students. By conducting a careful and thorough literature review it was possible to identify a set of variables that were pointed out by several authors as crucial to the understanding of learner self-directedness. Specifically, the following variables were identified: self-confidence for self-directed learning, self-esteem, life satisfaction, conscientiousness, internal orientation, and epistemological beliefs. Thus, the authors formulated a multivariate hypothesis, stating that learner self-directedness is influenced, directly, by the above-mentioned psychological variables and, indirectly, by socio-demographic variables such as age and educational level. This hypothesis was empirically tested by SEM techniques, on a cluster probabilistic sample of 381 undergraduates, master's and doctoral students from the University of Coimbra (Portugal). Data representing the dependent variable (learner self-directedness) were collected by using the *Self-Directed Learning Readiness Scale (SDLRS)* and the *Oddi Continuing Learning Inventory (OCLI)*. The results revealed direct and statistically significant effects of the psychological variables on the learner's self-directedness construct, while the socio-demographic variables only showed indirect effects, as hypothesized.

PROBLEM STATEMENT

In the light of the emerging paradigm of learning and changing social circumstances, experts in adult education from a number of different countries have, for several decades, been developing the concept of self-directed learning, systematically analysing it and producing a solid foundation of theoretical-empirical knowledge (Brockett & Hiemstra, 1991; Candy, 1991; Carré, 1997; Guglielmino, 1977; Knowles, 1975; Long, 1989, 1999; Oddi, 1984, 1986; Straka, 1997; Tough, 1971). However, this complex phenomenon is open to being approached from different perspectives and being applied in a range of contexts; there is still a long way to go before conceptual soundness is achieved (Long, 2000; Reio & Davis, 2005; Straka, 1997). There are, nevertheless, key dimensions on which the experts largely agree, such as the psychological, pedagogical and social dimensions (Brockett & Hiemstra, 1991; Carré, 1995; Long, 1989, 1991a).

Concerning the psychological dimension, developing a deeper knowledge of the main underlying factors of self-directed learning readiness was deemed necessary. Self-directed learning readiness was defined as the “complex of personal characteristics which individuals possess to varying degrees” (Guglielmino & Klatt, 1994, p. 164), which predispose them to be self-directed in their approach to learning. After conducting a careful and thorough literature review it was

possible to identify a set of variables that were pointed out by several authors as crucial to the understanding of learner self-directedness. We grouped these variables in three broad categories: motivational-conative factors (personality characteristics), affective-emotional factors and cognitive/metacognitive factors.

Regarding the motivational-conative factors, self-directed learners had been described as having personal initiative, perseverance, self-discipline, determination, being systematic and organized by nature, as well as being goal-, task- and action-oriented (Candy, 1991; Carré, 2000, 2002; Courtney & Rahe, 1992; Foucher & Gousselin, 1995; Grow, 1991; Guglielmino, 1997; Guglielmino & Nowocien, 1998; Long, 1989; Oddi, 1987; Straka, 2002). As to the affective-emotional factors, several experts had pointed out the relevance of the link between self-confidence (Candy, 1991; Cheong, Lee & Long, 1995; Hoban & Sersland, 1999, 2000; Jones, 1994, 1995; Kitson, Lekan & Guglielmino, 1995), self-esteem (Jones, 1992; Long, Agyekum & Stubblefield, 1995; Long & Stubblefield, 1994; Kitson, Lekan & Guglielmino, 1995; Oliveira & Simões, 2002), life satisfaction (Kitson, Lekan & Guglielmino, 1995; McCune, Guglielmino & Garcia, 1990;) and self-directed learning readiness. Regarding the cognitive and metacognitive factors, internal orientation (Carré, 1995, 2000; Cheong, Lee & Long, 1995; Deci & Ryan, 2000; Kreber, 1998) and conceptions about knowledge and learning, or epistemological beliefs (Candy, 1991; Garrison, 1997; Tennant & Pogson, 1995), were selected. For some of those variables just mentioned (self-confidence, self-esteem, life satisfaction and the personality conative factors) previous studies had already revealed consistent relationships with learner's self-directedness, whereas for the others (internal orientation and epistemological beliefs), the results were inconclusive, even though many authors believe that these constructs are advantageous for the full understanding of the psychological dimension of self-directed learning.

The effect of some socio-demographic variables such as age, gender and educational level on learner self-directedness was also considered in this research work. The majority of research studies support a positive association between age and learner self-directedness (Guglielmino, L., Mazmanian, Guglielmino, P., Hoban, & Pololi, 2002; Hoban & Sersland, 2000; Jones, 1992; Long 1991b; Long & Morris, 1996; Long & Stubblefield, 1994; McCune, Guglielmino & Garcia, 1990; Morris, 1997; Oddi, 1984; Reio & Davis, 2005), which nevertheless tends to have a low or medium effect size. Although age does not appear to be one of the most influential variables in self-directedness development, it seems important to the understanding of the developmental trajectory.

The majority of the studies do not support a relationship between gender and learner self-directedness (Adenuga, 1991; Bryan & Schultz, 1995; Cheong, Lee & Long, 1995; Guglielmino *et al.*, 2002; Hoban & Sersland, 1999, 2000; Jones, 1992; Long & Stubblefield, 1994; Reio & Davis, 2005), so that gender could not be considered as a differentiation factor of learner self-directedness. As to the educational level, previous research results are inconsistent. While some studies have pointed to a significant and positive relationship (*e.g.*, Bryan & Schultz, 1995; Confessore & Confessore, 1994; Long & Stubblefield, 1994; McCune, Guglielmino & Garcia, 1990), in other studies such relationships have not being found (*e.g.*, Jones, 1992; Long, 1991b; Long & Smith, 1996; Preczewski, 1999). However, considering the results of the empirical research concerning the epistemological development, educational level consistently appears as a crucial variable explaining such development (Hofer & Pintrich, 1997; King & Kitchener, 1994,

2004; Schommer, 1998). That is the reason we hypothesized that educational level has an indirect effect on learner’s self-directedness, via epistemological development.

MULTIVARIATE HYPOTHESIS

The research previously mentioned, concerning the relationship between the independent (socio-demographics and psychological) and dependent (self-directedness in learning) variables of our study, allowed us to formulate a structure of interrelationships among them (a model) that could be empirically tested by structural equation modeling. Thus, the following multivariate hypothesis was formulated:

Learner self-directedness is a complex capacity that is influenced, directly, by a constellation of psychological variables (from the motivational-conative, affective-emotional and cognitive/metacognitive domains) and, indirectly, by socio-demographic variables, such as age and educational level.

METHOD

Participants

This research involved a probabilistic cluster sample of 384 students from the University of Coimbra in Portugal. One hundred and seventy-five (45.57%) were students of the Faculty of Sciences and Technology, 107 (27.86%) were from the Faculty of Sport Sciences and 102 (26.56%) were students from the Faculty of Economics. Table 1 presents the demographic characteristics of the sample.

Table 1. Demographic Characteristics of the Sample

<i>Variables</i>	<i>Categories</i>	<i>N</i>	<i>%</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Age				26.01	6.70	18	60
Gender	Males	19	57.03				
	Females	165	42.97				
Educational level	Freshmen	98	25.52				
	Seniors	127	33.07				
	Master’s students	84	21.88				
	Doctoral students	75	19.53				

Instruments

Data on the psychological variables were collected by means of the following, internationally recognized, self-response questionnaires (all of them were adapted to the Portuguese population by the authors or by other Portuguese researchers): *Self-Directed Learning Readiness Scale (SDLRS)*: Guglielmino, 1977; Oliveira & Simões, 2002; assesses up to what point individuals are perceived to have attitudes and skills that predispose them towards self-directedness in learning; $\alpha = .91$; 58 items); *Oddi Continuing Learning Inventory (OCLI)*: Oddi, 1984; Oliveira & Simões, 2002; assesses the continuing involvement of subjects in learning activities characterized by initiative and persistence; $\alpha = .77$; in this research only 22 items were used); *Self-Efficacy for Self-Directed Learning Questionnaire (SE-SDLQ)*: Hoban & Sersland, 1999; Oliveira & Simões, 2001; measures the learner's confidence level in being or becoming a self-directed learner; 10 items; $\alpha = .92$); *Conscientiousness* factor of the *Revised NEO Personality Inventory (C/NEO-PI-R)*: Costa & McCrae, 1992; Lima, 1997; its six facets evaluate more specific traits, such as competence, order, dutifulness, achievement striving, self-discipline, and deliberation; 48 items each); *Rosenberg's Self-Esteem Scale (ROS)*: Rosenberg, 1965; Simões & Lima, 1992; measures the positive or negative attitude that the individual presents in relation to himself/herself; 10 items; $\alpha = .86$); *Satisfaction With Life Scale (SWLS)*: Diener, 1984; Simões, 1992; assesses people's subjective appreciation about the quality of their life; 5 items; $\alpha = .84$); *Brewin Scale (RPO)*: Neto, Barros & Barros, 1990; measures the locus of causality, as to the responsibility for positive outcomes; 6 items; $\alpha = .60$); *Schommer Epistemological Questionnaire (SEQ)*: Schommer, 1990; Oliveira, 2005; assesses people's beliefs about the nature of knowledge and learning; in this research only 46 items were used; $\alpha = .80$).

Procedures

The sample was chosen, using the probabilistic cluster sampling technique, in two stages. First, random selection was used to choose three faculties in the University of Coimbra, from a universe of eight. Second, where a Faculty ran several undergraduate courses, one was selected at random (Faculty of Economics and Faculty of Sciences and Technology). The data were collected by the first author, who met the students personally in the classroom, where most of the research protocols were completed. Some students, who could not answer the questionnaires at that time, took them home, together with a stamped, addressed envelope, so that they could send them back by post. From the 560 protocols that were distributed, a return rate of 70% was obtained.

RESULTS

Descriptive Statistics

Prior to submitting the data to the appropriate statistical analysis, we carried out a number of preliminary analyses, screening the data for input errors, missing data (the cases found were so limited in number that they did not seem to be significant and were thus replaced by the average of the respective items) and outliers (only two extreme outliers were found, in the OCLI and ROS, which were removed from the database; the moderate outliers were kept, since they did not appear to be problematic). In this process 14 protocols were excluded. We also checked the chief

postulates underlying the bivariate and multivariate statistical methods (Stevens, 1992; Kaplan, 2000; Klem, 2000).

Table 2 presents the descriptive statistics for the psychological variables of the study. Concerning the *SDLRS* mean (215.78), it is lower than for the American studies with higher education students (Guglielmino *et al*, 2002; Jones, 1992; Long, 1991b); these differences are statistically significant (respectively, $t_{(d.f.=382)} = -14.51, p < .001$; $t_{(d.f.=382)} = -15.98, p < .001$; $t_{(d.f.=382)} = -12.81, p < .001$);. It is also significantly lower than the mean of the meta-analysis of McCune, Guglielmino and Garcia (1990; $t_{(d.f.=382)} = -10.81, p < .001$). The standard deviation is similar to that of the studies mentioned above. Regarding the *OCLI* mean (122.19), and comparing to the original Oddi (1984) study, the same differences were found ($t_{(d.f.=382)} = -2.02, p < .05$).

Table 2. Descriptive Statistics for the Psychological Variables of the Study (N=383)

	Psychological variables	Mean	Median	Mode	Standard deviation
Dependent variables	Learner self-directedness (<i>SDLRS</i>)	215.78	216.00	231	21.58
	Learner self-directedness (<i>OCLI</i>)	122.19	124.00	125.00	14.03
Independent variables	<i>Self-Efficacy for Self-Directed Learning Questionnaire (SE-SDLQ)</i>	67.17	69.00	63.00	14.85
	<i>Conscientiousness (NEO-PI-R/C)</i>	169.50	171.00	175.00	19.32
	<i>Schommer Epistemological Questionnaire (SEQ)</i>	123.75	124.00	131.00	13.90
	<i>Brewin Scale (RPO)</i>	22.05	22.00	24.00	3.26
	<i>Rosenberg Self-Esteem Scale (ROS)</i>	33.06	34.00	36.00	5.29
	<i>Satisfaction with Life Scale (SWLS)</i>	18.25	19.00	19.00	4.37

Bivariate Analyses

Table 3 presents the correlation values among the variables of the study. We can see that all the independent variables are significantly correlated with the learner’s self-directedness, the higher correlations being found between the psychological and the dependent variable. Conscientiousness personality factor obtained the highest correlation ($r_{(SDLRS, C/NEO-PI-R)} = .611$; $r_{(OCLI, C/NEO-PI-R)} = .563$), followed by self-efficacy for self-directed learning ($r_{(SDLRS, SE-SDLQ)} = .544$; $r_{(OCLI, SE-SDLQ)} = .512$), self-esteem ($r_{(SDLRS, ROS)} = .448$; $r_{(OCLI, ROS)} = .429$), epistemological beliefs ($r_{(SDLRS, SEQ)} = -.384$; $r_{(OCLI, SEQ)} = .260$), beliefs of internal control ($r_{(SDLRS, RPO)} = .393$; $r_{(OCLI, RPO)} = .202$) and life satisfaction ($r_{(SDLRS, SWLS)} = .297$; $r_{(OCLI, SWLS)} = .292$). All correlation coefficients mentioned so far, according to Cohen’s criteria (quoted by Newton & Rudestam, 1999, p. 76) represent medium (around .30) and large effect sizes (around .50).

Among the socio-demographic variables, age ($r_{(Age, SDLRS)} = .293$; $r_{(Age, OCLI)} = .253$) and educational level ($r_{(Educational\ level, SDLRS)} = .344$; $r_{(Educational\ level, OCLI)} = .263$) are moderately associated with learner’s self-directedness. No significant association was found for gender

($r_{(\text{Gender, SDLRS})} = .067$; $r_{(\text{Gender, OCLI})} = .074$). From Table 3, we can also see, as expected, that the highest correlation is between the two measures of the dependent variable ($r_{(\text{SDLRS, OCLI})} = .702$).

Table 3. Intercorrelation Matrix of the Variables

	Age	Education level	SDLRS	OCLI	SE-SDLQ	C/NEO-PI-R	SEQ	RPO	ROS	SWLS
Age	1									
Educational level	.706	1								
SDLRS	.293	.344	1							
OCLI	.253	.263	.702	1						
SE-SDLQ	.171	.241	.544	.512	1					
C/NEO-PI-R	.221	.213	.611	.563	.455	1				
SEQ	-.253	-.346	-.384	-.260	-.054	-.143	1			
RPO	.195	.228	.393	.202	.155	.299	-.308	1		
ROS	.225	.162	.448	.429	.441	.442	-.163	.207	1	
SWLS	.014	.034	.297	.292	.287	.311	.082	.019	.473	1

Note 1: Correlation coefficients above .162 are significant at $p < .001$, between .126 and .162 are significant at $p < .01$, and between .110 and .125 are significant at $p < .05$.

Multivariate Analyses

To test the multivariate hypothesis, we formulated a structural model (inspired by personality and epistemological development theories), which combines the four clusters of variables mentioned before: socio-demographic, motivational-conative, affective-emotional and cognitive/metacognitive.

The model includes four factors (see figure 1). Factor 1 (conscientiousness) represents the motivational-conative domain. The six facets of the conscientiousness personality trait (Costa & McCrae, 1992) were considered as the observable variables: *competence* (C_1 , $\alpha = .67$), *order* (C_2 , $\alpha = .81$) *dutifulness* (C_3 , $\alpha = .62$), *achievement striving* (C_4 , $\alpha = .71$), *self-discipline* (C_5 , $\alpha = .70$) and *deliberation* (C_6 , $\alpha = .77$). Factor 2 (that we call personal confidence) comprises the affective-emotional domain and is composed by the *SE-SDLQ*, the *ROS* and the *SWLS*. These variables were brought together because they appeared to be indicators of the same latent factor.

A confirmatory factor analysis showed the adequacy of the proposed measurement model. Factor 3 (epistemological beliefs), that represents the metacognitive domain, was operationalized by three dimensions of the *SEQ*: *beliefs about effort and speed of learning* (SEQ_1 , $\alpha = .64$), *beliefs about the structure of knowledge* (SEQ_2 , $\alpha = .60$) and *beliefs about stability of knowledge* (SEQ_3 , $\alpha = .66$). Factor 4 (learner’s self-directedness) was assessed by the *SDLRS* and the *OCLI*. The other elements in the model are considered observable variables (age, educational level and beliefs of internal control).

The described model was tested with the EQS for Windows program (version 5.7b). Using maximum likelihood (ML robust), as the method of estimation, a first solution was obtained, which did not fit very well the hypothesized model. Consequently, a deeper analysis was carried out to detect the source of misfit in the model. Based upon the results of the Wald and Lagrange Multiplier tests, some judicious modifications were made in the model (for example, the path between age and epistemological beliefs was suppressed) that led to a statistically acceptable solution. Table 4 presents the goodness of fit summary of the two solutions tested.

Table 4. Goodness of Fit Summary for the Initial and Respecified Learner’s Self-directedness Models

Models	χ^2	d.f.	p	NFI	NNFI	CFI	CFI robust	Lisrel GFI	RMR (standardized)
Initial model	434.322	112	.001	.845	.853	.879	.876	.884	.085
Respecified model	325.481	107	.001	.884	.896	.918	.919	.912	.079

Legend: d.f. (degree of freedom); NFI (Normed Fit Index); NNFI (Nonnormed Fit Index); CFI (Comparative Fit Index); Lisrel GFI (Goodness-of-Fit Index); RMR (Root-Mean-Squared-Residual).

As we can see in Figure 1, all the structural paths (beta coefficients) are statistically significant, and contribute distinctively to explain the self-directedness of higher education students. Thus, the results support the formulated multivariate hypothesis, stating that learner’s self-directedness is a complex capacity that is influenced, directly, by psychological variables and, indirectly, by socio-demographic ones.

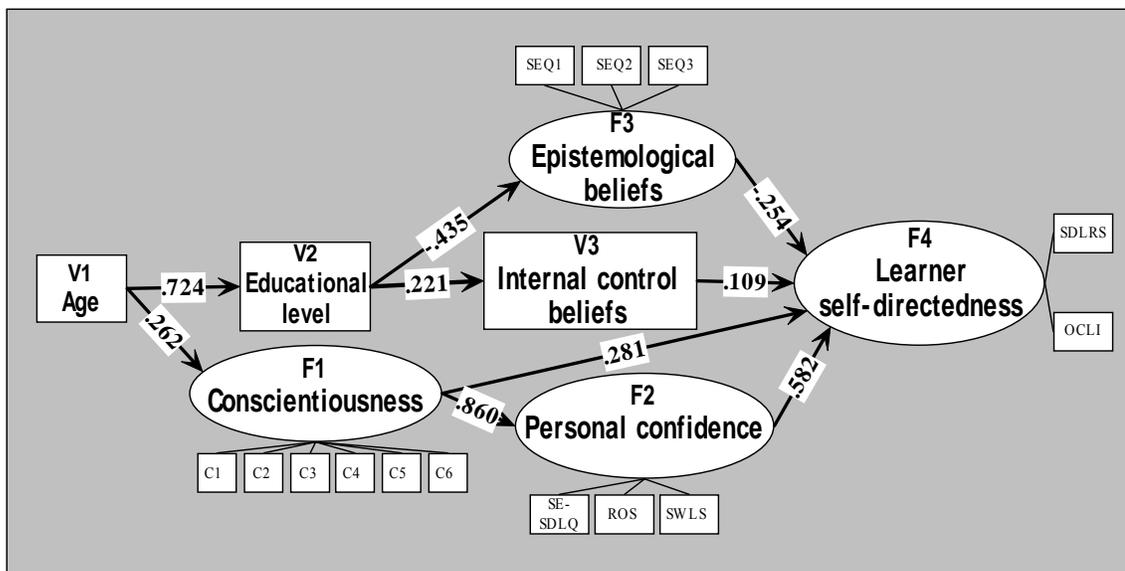


Figure 1: Final structural model showing the network of influences on learner self-directedness.

Concerning the direct effects, the strongest influence on learner self-directedness comes from the personal confidence factor (beta = .582), followed by the personality conscientiousness factor (beta = .281), the epistemological beliefs factor (beta = -.254) and, finally, by the beliefs of internal control (beta = .109), which had the lowest impact on the dependent variable of the study. As hypothesized, the influence of age and educational level was only indirect.

DISCUSSION AND CONCLUSIONS

In this study our main objective was to test a multivariate hypothesis, via structural equation modeling, stating that the self-directedness of higher education students is influenced, directly, by psychological variables (pertaining to the motivational-conative, affective-emotional and cognitive/metacognitive domains) and, indirectly, by socio-demographic factors.

Our results are consistent with suggestions made by several authors that the psychological variables considered in the study are critical to a better understanding of the construct of self-directed learning as a personal attribute. Supporting the theoretical conceptions of various experts (Brockett & Hiemstra, 1991; Cheong, Lee & Long, 1995; Guglielmino, 1997; Guglielmino & Nowocien, 1998; Hiemstra, 2000; Kitson, Lekan & Guglielmino, 1995; Hoban & Sersland, 1999; Long, 1989; Long, Agyekum & Stubblefield, 1995; Long & Stubblefield, 1994; Oddi, 1987), self-directed learning readiness is mainly an effect of a personality characteristic, but also, even though in a small degree, a consequence of cognitive and metacognitive factors, such as internal control (Carré, 1995, 2000; Deci & Ryan, 2000; Jézégou, 2002; Kreber, 1998; Zimmerman, 2000) and epistemological development (Candy, 1991; Garrison, 1997; Tennant & Pogson, 1995).

On the other hand, the socio-demographic variables showed a minor and indirect effect on learner self-directedness. Age reveals its influence, mainly, by the conscientiousness personality trait (motivational-conative elements). Educational level exerts its most important effect by the path of epistemological beliefs, which is consistent with the previous research findings about epistemological development (Hofer & Pintrich, 1997; King & Kitchener, 1994, 2004; Schommer, 1998). To a lesser degree, educational level influences the dependent variable by the path of the beliefs of internal control.

LIMITATIONS

As in any study, there are limitations and topics that need further clarification. The first fragility of our research is the insufficient number of observable indicators per construct, since the specialized literature suggests that we should strive to use three or four of them in the operationalization of a latent factor (Bollen, 1989; Quintana & Maxwell, 1999), which was not the case in all factors of the model. Secondly, it is always desirable to use, whenever it is feasible, multiple methods to measure the constructs; and this study was only based on self-report instruments.

Thirdly, even though we have tried to find the best measures of the constructs, some instruments did not achieve the desirable level of reliability, such as the Brewin Scale and the *SEQ* factors. Thus, future research work should deal with this fragility, using instruments with better psychometric properties. Finally, considering the above mentioned limitations, our results should not be accepted as a definitive validation of the hypothetical structural model about the self-directedness of higher education students. Thus, it is necessary to replicate the results with other samples, so that we can reach more consistent conclusions. Even though we have tried to be as judicious as we could in selecting the variables included in the study, our contribution should not be taken as an all-encompassing framework of the self-directed learning readiness phenomenon.

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SELF-DIRECTED LEARNING READINESS AND CULTURAL ADAPTABILITY IN EXPATRIATE MANAGERS

Larissa Chuprina and Richard Durr

The study examines the relationship between self-directed learning readiness and cross-cultural adaptability and provides an argument that the found correlation has implications for training and selection of expatriate managers. Due to the globalization of the world's markets and the necessity for people to adapt to new economic environments, there is an increased interest in research on the cross-cultural adjustment of U. S. business managers. In a diverse and unknown cultural environment, it is imperative for managers to know how to learn on their own and how to adapt to a new culture. The strong positive correlation between measures of self-directed learning readiness and cross-cultural adaptability ($r=.69$; $p<.001$) suggests that self-directed learning skills and attitudes can be factors that foster cross-cultural adaptability. This information can aid in the development of more effective programs and training techniques for expatriate managers. The data found in the study and literature review suggest that we should treat learning and adaptability as a continuum.

The globalization of the world's markets has led to an increased interest in research on the cross-cultural adjustment of U. S. business managers. According to a survey conducted by GMAC GRS/Windham International (2000, p. 48), the most frequently mentioned factors leading to failure of expatriates in overseas assignments are lack of ability to adapt (91%) and inadequate candidate selection processes (88%). The most cited global business strategy challenges are finding candidates for expatriate assignments (93%), intercultural understanding (91%), and career management (89%) (p. 6). According to another study, from 20% to 50% of U.S. expatriates' assignments end prematurely, and the direct costs of each such failure are estimated to be as high as \$200,000 per employee (Shaffer & Harrison, 1998, pp. 87 - 118). Frazee (1998) provided insights into the difficulty in cultural adaptation as one of the leading causes of failed overseas assignments. That is why issues of how to learn on one's own and how to adapt deserve the attention of researchers. These issues of learning and adapting to new cultural environments are at the center of attention in this study.

The rationale for the study is that if there is a relationship between self-direction learning readiness and cross-cultural adaptability, educators may be able to influence the development of learners' adaptability through enhancing their development of attitudes, characteristics and strategies of self-directed learning in any learning situation, including overseas experience. It is also expected that readiness for self-direction can be used as a predictor for a high level of cross-cultural adaptability in the process of selection of candidates for expatriate managers.

PURPOSE

The main purpose of this study was to investigate the relationship between self-directed learning readiness and cross-cultural adaptability among U.S. expatriate managers. The study was also designed to investigate the relationships between self-directed learning readiness as measured by the *SDLRS* (Guglielmino, 1977) and four factors that constitute cross-cultural adaptability, as measured by the *CCAI* (Kelley & Meyers, 1992a): emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy. The study also investigated a profile of an effective self-directed learner with the help of a demographic questionnaire.

METHODOLOGY

Population, Sample, and Data Collection

The respondents for this study are employees of a large global electronics development and manufacturing corporation, Motorola, with headquarters located in the U.S.A. and over 1,100 locations in 45 countries. Since 1990, 832 U.S. employees from Motorola have served in international expatriate assignments. Therefore, the population for this study was 832 expatriates from Motorola. One hundred and fifty surveys were sent to randomly selected employees from this population.

The requirements for selection were as follows: the participants should be native English speakers to avoid difficulties in understanding the questionnaires; they should work in a management position; and they must have held their international assignment longer than six months. Those who chose to participate by responding to the questionnaires comprised the sample for the study. A total of 56 individuals completed the questionnaires for a response rate of 37.3%.

Information was gathered through the demographic questionnaire about the participants' gender, level of education, major or specialization, level of management position, age, prior international experience, length of stay overseas, family presence in the international assignment, the desire to undertake an international assignment again, level of personal satisfaction, level of job satisfaction, and level of problem solving. Among the participants of the study, 89% were males, while 11% were females.

Most held bachelor's or master's degrees, with majors in engineering or business, and were working in the second or third level of management. Most respondents went to their assignments with their families, stayed there for about three years, and reported that they would like to participate in the same or a different assignment again. It is interesting to note that the findings support the data collected nationally by Windham International in 2000 (GMAC GRS/Windham International, 2000). It means that recognition tendencies in the field can help both practitioners and researchers develop the right strategies to react to new demands in teaching/learning practice.

Instrumentation

Three questionnaires were used in this study. They are: 1) the *Self-Directed Learning Readiness Scale (SDLRS)* by Guglielmino, (1977); 2) the *Cross-Cultural Adaptability Inventory (CCAI)* by Kelley and Meyers, (1992a); and 3) a demographic questionnaire developed by the authors.

The *Cross-Cultural Adaptability Inventory* explores interaction with people from other cultures and is based on dimensions that are most important for being successful in another culture. According to the authors of the *CCAI*, statistically, the total score is the most reliable as indicator of cross-cultural adaptability (Kelly & Meyers, 1995). The *Self-Directed Learning Readiness Scale (SDLRS)* is a 58-item Likert scale that assesses “the personal characteristics of the learner, including his or her attitudes, values, and abilities, that ultimately determine whether self-directed learning will take place in a given learning situation” (Guglielmino & Guglielmino, 1991, p. 9).

The *SDLRS* and the *CCAI* have been used in numerous research studies. In 1992, Durr documented 64 studies with the *SDLRS*. Since the creation of the *SDLRS*, it has been employed in at least 90 studies. The *CCAI* has been used in more than 25 studies. A reliability analysis was conducted for the two instruments using the data from this study. The results are presented in Table 1. These data are comparable to data acquired by the authors of the *CCAI*. Data presented in the *CCAI* Manual (Kelley & Meyers, 1995) show that overall reliability of the *CCAI* is .90, with subscales being .82 (ER), .80 (FO), .78 (PAC), and .68 (PA). According to its authors, the total score is the most reliable, but due to its global nature, is not used for training purposes. The four scale scores are used to identify areas in which individuals need to develop skills.

Table 1 shows $\alpha = .826$ for the *SDLRS* in this study. Guglielmino (1977) estimated reliability of the *SDLRS* at $\alpha = .87$. Her recommendation is to use only the total score of the scale that is the most reliable. The mean total *SDLRS* score for the sample is 233.73 (above average) with the range from 176 – 272; the standard deviation (SD) is 19.37.

Table 1. Reliability Analysis of the *SDLRS* and the *CCAI* and Its Four Factors Based on Data Collected from 56 Expatriate Managers

<i>Tests/Factors</i>	<i>N of Items</i>	<i>Cronbach’s Alpha</i>
<i>SDLRS</i>	58	.826*
<i>CCAI</i>	50	.913*
Emotional Resilience	18	.833*
Flexibility/Openness	15	.766*
Perceptual Acuity	10	.829*
Personal Autonomy	7	.573*

* $p < .05$ (2-tailed)

RESEARCH QUESTIONS AND FINDINGS

Self-Directed Learning Readiness and Cross-Cultural Adaptability

Question 1: Is there a significant relationship between self-directed learning readiness and cross-cultural adaptability among the U.S. managers with international experience?

A Pearson correlation coefficient was calculated between total scores on the *SDLRS* and the *CCAI*. The correlation ($r = .692, p < .000$) shows a strong positive relationship between *SDLRS*

and CCAI scores. The magnitude of this relationship can be expressed with an r^2 of .478, or 48%. In other words, 48% of the variability in the CCAI total score can be explained by the SDLRS total score, and vice versa. There is a statistically significant relationship between self-directed learning readiness and cross-cultural adaptability in U.S. expatriate managers. This relationship is presented in Table 2 and illustrated by Figure 1.

Table 2. Correlation Between Total Scores of the *Self-Directed Learning Readiness Scale (SDLRS)* and *Cross-Cultural Adaptability Inventory (CCAI)* (N = 56)

		CCAI
SDLRS	Pearson Correlation	.692*
	Sig. (2-tailed)	.000

* $p < .01$ (2-tailed)

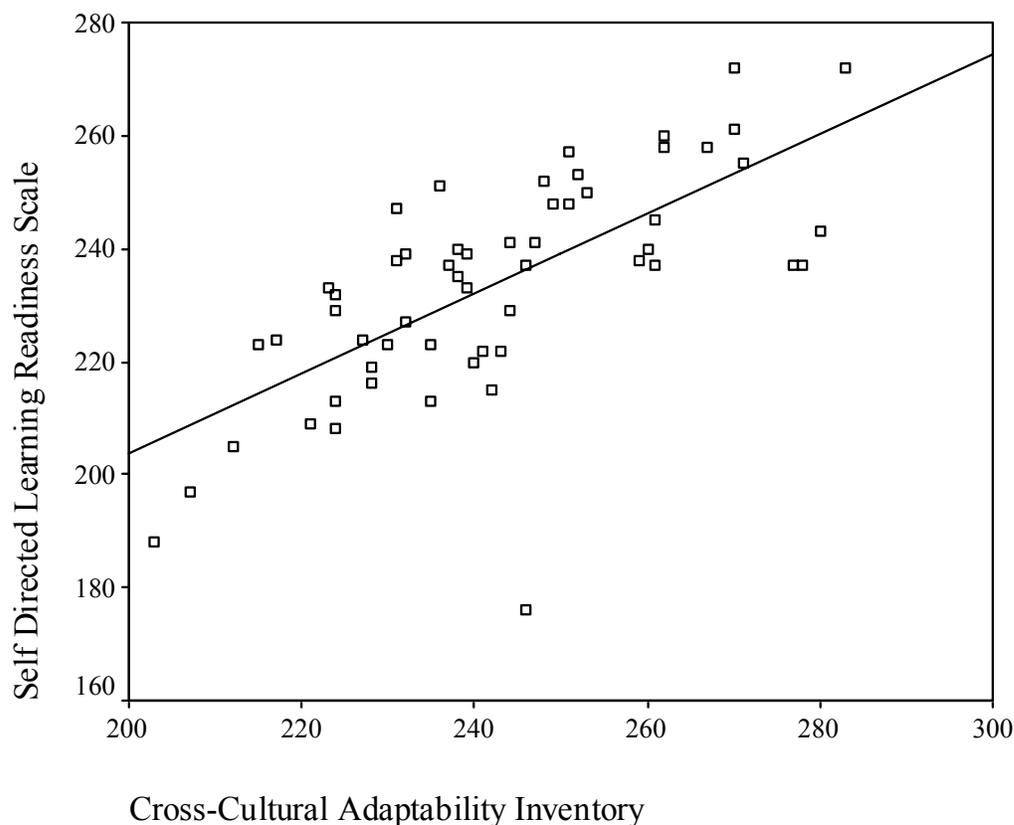


Figure 1. The relationship between self-directed learning readiness and cross-cultural adaptability.

Self-Directed Learning Readiness and Cross-Cultural Adaptability Index Factors

Question 2: Is there a significant relationship between self-directed learning readiness and the four factors of cross-cultural adaptability: Emotional Resilience, Flexibility/Openness, Perceptual Acuity, and Personal Autonomy among U.S. expatriates?

To answer this question, the total score of the *SDLRS* and subscores of the four factors of the *CCAI* were used to calculate the Pearson product moment correlation coefficient for each relationship. As indicated in Table 3, total *SDLRS* score correlates significantly with Emotional Resilience ($r = .691, p = .000$), Flexibility/Openness ($r = .525, p = .000$); Perceptual Acuity ($r = .585, p = .000$), and Personal Autonomy ($r = .393, p = .003$), with each correlation being significant below the .05 level.

The magnitude of these relationships can be expressed with *r*-squares that are estimated as follows: between the total *SDLRS* score and Emotional Resilience, $r = .486$ (48.6%); between the total *SDLRS* score and Flexibility/Openness, $r = .275$ (27.5%); between the total *SDLRS* score and Perceptual Acuity, $r = .340$ (34%), and between the total *SDLRS* score and Personal Autonomy, $r = .154$ (15.4 %). In other words, 48.6 %, 27.5%, 34%, and 15.4% of the variability in each factor respectively can be explained by the *SDLRS*.

Thus, in response to Question 2, there is a significant relationship between self-directed learning readiness and each factor of the *CCAI*. As the *SDLRS* score increases, the subscores of the *CCAI* tend to increase. Similarly, as subscores of the *CCAI* increase, the total *SDLRS* score increases.

Table 3. Correlations Between the SDLRS Score and the CCAI Subscores (Emotional Resilience (ER), Flexibility/Openness (F/O), Perceptual Acuity (PAC), and Personal Autonomy (PA))

	<i>CCAI Subscores</i>			
	ER	F/O	PAC	PA
<u><i>SDLRS</i></u>				
Pearson Correlation	.691*	.525*	.585*	.393*
Significance (2-tailed)	.000	.000	.000	.003

* $p < .01$ (2-tailed)

Self-Directed Learning Readiness, Cross-Cultural Adaptability, and Demographic Variables

Question 3: Are self-directed learning readiness and cross-cultural adaptability significantly related to selected demographic variables (i.e., age, level of education, level of management position, the length of stay overseas)?

To answer this question, the Spearman rank order correlation was used to calculate a coefficient with each relationship, as the demographic data are ordinal rather than interval. The Spearman’s rank order correlation coefficient was calculated on the basis of correlations between the total scores in the *SDLRS* and selected demographic variables, as well as between the *CCAI* and selected demographic variables.

As represented by the data in

Table 4, no statistically significant correlations were found between *SDLRS* scores and age ($r = .092, p = .500$), educational level ($r = .144, p = .290$), level of management position ($r = .226, p = .094$), and length of stay overseas ($r = .214, p = .114$). This means that the total score on the *SDLRS* and the selected demographic variables are not significantly related. It should be noted that the level of education among the participants was very similar, with most holding bachelor’s or master’s degrees.

The second step was to examine relationships between the total *CCAI* score and age, educational level, level of management position, length of stay overseas. As the data from Table 4 show, the total score of the *Cross-Cultural Adaptability Inventory* is not significantly related to age ($r = .070, p = .606$), level of management position ($r = .240, p = .075$), and the length of stay ($r = .227, p = .093$). It is, however, significantly correlated with level of education ($r = .295, p = .027$). As education increases, the total *CCAI* score also increases.

Table 4. Correlations of the Total Scores of the Self-Directed Learning Readiness Scale (SDLRS) and the CCAI with Selected Demographic Variables

	<i>Variable</i>	<i>Spearman’s rho</i>	<i>p</i>
<u><i>SDLRS</i></u>			
	Age	.092	.500
	Education Level	.144	.290
	Management Level	.226	.094
	Length of Stay	.214	.114
<u><i>CCAI</i></u>			
	Age	.070	.606
	Education Level	.295*	.027
	Management Level	.240	.075
	Length of Stay	.227	.093
N=56			

* $p < .05$ (2-tailed)

As is seen from the table above, in this population cross-cultural adaptability is significantly related to one's level of education. At the same time, there is no significant relationship between cross-cultural adaptability and such demographic variables as age, management level, and length of stay abroad.

CCAI Factors and Demographic Variables

Question 4: Are there significant relationships among the four factors of the CCAI (Perceptual Acuity, Flexibility/Openness, Emotional Resilience and Personal Autonomy) and selected demographic variables (i.e., age, level of education, level of management position, and the length of stay overseas)?

The study revealed that there are significant relationships between Flexibility/Openness and educational level ($r = .331, p = .013$) and between Perceptual Acuity and length of stay overseas ($r = .278, p = .038$). This means that as educational level increases, the subscore on Flexibility/Openness also increases; as the length of stay increases, the subscore on Perceptual Acuity increases.

There is no significant relationship between Emotional Resilience and Personal Autonomy and the other selected demographic variables such as age, level of education, level of management, and length of stay overseas. The data are presented in Table 5.

Table 5. Spearman's Rho Correlations Between Demographic Variables and Four Factors of the CCAI ($N = 46$)

<i>Variables</i>	<i>CCAI Subscores</i>							
	ER		F/O		PAC		PA	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Age	.081	.552	.017	.901	.104	.447	-.005	.971
Education Level	.189	.164	.331*	.013	.210	.120	.261	.052
Management Level	.240	.074	.154	.258	.195	.151	.181	.181
Length of Stay	.195	.149	.173	.203	.278*	.038	.039	.775

* $p < .05$ (2-tailed)

CONCLUSION AND IMPLICATIONS

The combination of the two instruments provides unique insights into two very important areas of human activity, learning and adaptability as separate entities and their relationship to each other. The understanding of this relationship by the expatriates appears to be very important to their international experience.

The strong correlation between self-directed learning readiness and cross-cultural adaptability that was found in this research indicates that readiness for SDL may be a good measure to guide expatriate selection; that is, a high total score on the *SDLRS* may be a predictor of the presence of a high level of cross-cultural adaptability among U.S. managers. This means that in order to be effective with an international assignment, expatriates need to be able to learn and to be self-directed in learning. The ability to learn can be enhanced by education or training. Therefore, it is important to show the relationship between learning/teaching methods and adaptability in addition to personal characteristics of the participants involved in cross-cultural adaptation processes. Theoretically, personal qualities and situational variables (facilitation of the learning process and self-direction) in combination can contribute to cross-cultural success.

Understanding one's own worldview is a way to understanding others' views. As Ricard (1996) puts it, "an understanding of culture as related to ourselves is the beginning of an understanding of culture as related to others" (p. 31). Both the *SDLRS* and *CCAI* include factors measuring the understanding of personal learning styles, preferences, values and beliefs. Therefore, knowledge provided by the study of the relationships between self-directed learning readiness and the four factors of the *Cross-Cultural Adaptability Inventory* suggests some possible solutions that have a potential to improve expatriate performance by helping candidates for overseas assignments understand themselves and their learning styles.

It should be noted that self-directed learning does not necessarily eliminate the need for an educational agent. Self-direction in learning can be trained and learning how to learn should be taught explicitly. As the data of the current research show, the higher level of self-directed learning, the higher level of cross-cultural adaptability that leads to personal and professional satisfaction and success of expatriates during their international assignments. Therefore, self-directed learning readiness deserves consideration as another factor that may predict success of managers during their overseas assignments. It appears justifiable to consider SDL as a critical quality that might be associated with cross-cultural assignment success.

In addition, when expatriates return from their international assignments they have to readjust themselves to the changed surroundings and very often deal with a new job search. As pointed out by Ingram (1998), research on employees who experienced layoffs showed that a willingness to try new tasks and learn new skills together with flexibility were the best predictors of how long people stayed unemployed (In Niven, 2002). The "willingness to learn new skills," one of the characteristics of self-directed learners as defined in the *SDLRS* (Guglielmino, 1977), and "flexibility," a necessary characteristic defined in the *Cross-Cultural Adaptability Inventory* (Kelley, & Meyers, 1992a) could assist in these types of transitions as well.

Hannigan (1990) called “learning” the process of adaptation. Anderson (1994) expressed the idea of adjustment to a new culture by learning it. Approaching learning as the ability to adjust to new requirements of reality dialectically or as a continuum, practitioners can help managers and trainees or any other categories of learners consider self-directed learning as an important step to self/life/situation or career improvement through successful cultural adjustment and effectiveness.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future research is needed in the area of learning and cross-cultural adaptability. It is recommended that:

1. Qualitative research be conducted in order to get a different perspective of a similar population through interviews, peer evaluation, or critical incidents from the participants’ international experience. This approach could provide a fuller picture on the real skills of expatriates, their knowledge and attitudes in order to measure behavior and not only perception.
2. The Observer Form developed by Kelley and Meyers (1992) be used as a supplement to the main questionnaire. The authors recommended researchers use this form to collect feedback from other people about an individual’s cross-cultural adaptability (Kelley & Meyers, 1995, p. 40). The information from the Observer Form could add an outside perspective to the results and therefore should be recommended if used with the post-test with the employment of the *CCAI*.
3. A similar form completed by an observer to complement the participant’s score on the *SDLRS* be developed.
4. The current study be conducted with other ethnic groups in the U.S. or with other nationalities in other countries, or with other groups of participants, such as scholars, international graduate students, and with a larger sample than used in this study.
5. The Personal Autonomy scale in the *CCAI* should be refined by adding greater item loading.
6. The *SDLRS* be revisited in order to have measurement of factors.
7. When factors of the *SDLRS* are measured and reintroduced, have another study conducted that would measure correlation between all factors of the *SDLRS* and the *CCAI* to see if there is greater commonality between the two concepts.

RECOMMENDATIONS FOR PRACTICE

For decades, the field of expatriate selection and training has suffered from an inadequate understanding of the relevant variables that enhance expatriate adaptability and the use of inappropriate selection and training methods (Mendenhall & Oddou, 1985). This is true also today. Based on the results of the study, the following recommendations are made:

1. Self-directed learning readiness should be considered in the selection process of candidates for international assignments. The *SDLRS* can be recommended as a tool to assist in the selection process.
2. Training to develop self-directed learning skills should be a necessary component of orientation programs for international assignments to improve the likelihood of expatriates' cross-cultural adaptability.
3. Training for self-understanding as a departure point in self-directed learning and cross-cultural adaptability should be offered to both expatriate candidates and their families.
4. It could be beneficial to provide training and orientation to expatriate candidates in factors that enhance cross-cultural adaptability. The *CCAI* by Kelley and Meyers is recommended as a learning tool to achieve this goal.
5. Expatriates and employers need to understand that self-directed learning and cross-cultural adaptability take place in a social context and not in isolation. Support for expatriates from educators, HRD, mentors, family members, and friends is crucial for overseas effectiveness.

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DEVELOPING SELF-DIRECTED LEARNING READINESS OF FUTURE LEADERS IN A MILITARY COLLEGE THROUGH INSTRUCTIONAL INNOVATION

D. M. Gabrielle, Lucy M. Guglielmino, and Paul J. Guglielmino

This study was designed to determine if completion of supplemental technology-mediated instructional strategies (TMIS) affected academic performance and self-directed learning readiness of undergraduate students enrolled in required classes in a public military academy. Significant differences in academic performance were found between those students who accessed the technology-mediated instructional strategies and those who did not. Pretest scores on the *Self-Directed Learning Readiness Scale (SDLRS)* showed no significant difference between the treatment and control groups; however, posttest *SDLRS* scores showed treatment group cadets had a significantly higher mean *SDLRS* score (218.54) than control group cadets (210.77) ($p = .02$). Further, there was a significant difference ($p = .004$) between the two groups' change in *SDLRS* scores, with control group scores dropping by 3.3 points and treatment group scores increasing by 2.82 points. For this study sample, the use of supplemental technology-mediated instructional strategies (TMIS) positively affected the academic performance and self-directed learning readiness of the subjects.

Today's military leaders are being asked to take on new roles that are outside their traditional areas of responsibility and training preparation. McCausland (2001) notes that higher levels of thinking and decision-making are increasingly required at lower levels of command, emphasizing the need for continuous learning and development. He quotes General Eric K. Shinseki, US Army Chief of Staff, on the importance of developing "soldiers and leaders who have the skills necessary to succeed today and in the future" (p. 1) as roles and expectations change.

Reflecting this thinking, the major academic program goal of the United States Military Academy (USMA) is to produce graduates who can anticipate and respond effectively to the uncertainties of a changing technological, social, political, and economic world, demonstrating, among other qualities, creativity and a commitment to continued intellectual development (Dean's Corner, 2005). In *Educating Army Leaders for the 21st Century* (1998), this goal is emphasized: "The reality of rapid change will require officers to be self-directed learners who update and expand their knowledge though self-study, continued formal education, and experience" (p. 50).

This assertion is supported by studies documenting the positive relationship between job performance in business and industry and self-directed learning readiness (SDLR) (Durr, 1992, Guglielmino, Guglielmino, & Long, 1987; Roberts, 1986). Studies of large samples at such

companies as AT&T (Guglielmino & Guglielmino, 1982), Hong Kong Telephone (Roberts, 1986), and Motorola (Durr, 1992) indicate that the relationship between job performance and SDLR is stronger when the job is perceived as requiring a high degree of problem solving ability or where the job is changing rapidly. Additional support comes from studies that document a positive relationship between level of self-directed learning readiness and management level (Durr, 1992; Roberts, 1986). Exceptionally high levels of readiness for self-directed learning have also been reported for top US entrepreneurs (Guglielmino, P., & Klatt, 1994) and top female executives (Guglielmino, L., 1996).

Growing out of the need for continuous lifelong learning and the need to provide learning options that are more accessible to learners is the rapid proliferation of distance learning. In the past century, the concept of distance learning has evolved from correspondence courses to instructional television to computer-based instruction to web-based learning. Today, the effort to put courses online is proceeding at a record pace in education and training. Technology-mediated learning environments provide new opportunities for people to learn at their own convenience and pace.

Distance learning is especially well-suited to the military; it can provide a high level of knowledge attainment in a multiplicity of specializations available 24 hours a day, even at remote military settings and outlying facilities (Rivero, Mittestaeddt, & Bice-Stephens, 2001). In fact, the US Army has become the one of the largest providers of distance education in the world, adding one more reason to develop the skills and attitudes of self-direction in learning in potential military leaders. The shift from an instructor-centered focus in traditional classroom education to the learner-centered focus of distance education requires learners to be motivated and self-directed (Bryan & Schulz, 1995a, 1995b; Lee, 2000; Guglielmino & Guglielmino, 2002).

The concern with developing self-direction in learning is not isolated to the USMA; it is ubiquitous throughout higher education and workplace human resource development efforts, reflecting the increasing understanding that the unprecedented growth in information and technology, accompanied by rapid social, political and economic change, demands continuous learning and problem-solving by each individual in order to maintain individual and organizational competency. In response to this whitewater of change, it seems logical that our educational institutions and our workplace human resource development efforts must transition from deliverers of content to developers of self-directed lifelong learners who have a strong information base from which to grow.

While there is now widespread acceptance of the need to develop self-direction in learning in formal educational programs, there is little agreement on how to accomplish this. Visser and Keller (1990) note that empirical data on ways of positively effecting self-directed learning and satisfying the motivational needs of learners are lacking. Traditional classroom instruction can, in fact, reduce rather than increase readiness for SDL. The present study was undertaken because, despite USMA's goal for cadets of continued educational development through lifelong self-directed learning, Preczewski (1997) conducted a study at USMA which indicated that the undergraduate experience failed to increase self-direction in learning as measured during and at the end of the undergraduate experience.

PURPOSE

The purpose of this study was to determine if the addition of supplemental technology-mediated instructional strategies (TMIS) affected the academic performance and self-directed learning readiness of undergraduate students enrolled in required classes in a public military school.

Two research questions were explored:

1. In the given instructional context, will a relationship exist between access to TMIS and academic performance as measured by course aggregate points (projects, homework, and examination grades throughout the semester)?
2. In the given instructional context, will a relationship exist between access to TMIS and proclivity to be self-directed in learning as measured by the *Self-Directed Learning Readiness Scale*?

RESEARCH DESIGN

Sample

The subjects in this study were undergraduate students enrolled in a tuition-free, public military college in the Northeast United States. Students from twelve courses were invited to participate in the study; 784 students, representing approximately 20% of the population at the academy, agreed. The selected courses consisted primarily of freshmen and juniors in the graduating classes of 2003 and 2005. The courses were diverse in content (both hard and soft sciences).

Instruments

Self-Directed Learning Readiness Scale (SDLRS)

The *SDLRS* (Guglielmino, 1978) was used as a pre- and posttest of readiness for self-directed learning. It is a 58-item, Likert-type instrument designed to assess individual attitudes, values, skills and personality characteristics supportive of self-direction in learning. The self-scoring form is called the *Learning Preference Assessment* (Guglielmino & Guglielmino, 1991a). Based on a population of 3,151 individuals from the United States and Canada, a split-half Pearson product moment correlation with a Spearman-Brown correction produced a reliability figure of .94 (Guglielmino & Guglielmino, 1991b).

Although there have been some criticisms of the *SDLRS*, (Brockett, 1987; Field, 1989; Straka & Hinz, 1996), the vast majority of studies have supported the reliability and validity of the instrument (See, for example, Delahaye & Smith, 1995; Durr, 1992; Finestone, 1984; Graeve, 1987; Hassan, 1981; Long & Agyekum, 1984; McCune & Guglielmino, 1991; Posner, 1991; Russell, 1988). The *SDLRS* is by far the most widely used quantitative instrument in the study of self-directed learning (Merriam & Caffarella, 1999). Overviews of research using the instrument can be found in Brockett and Hiemstra (1991), Guglielmino (1997), Merriam and Caffarella (1999), and Delahaye and Choy (2000). The *SDLRS* was converted to a web-based format and made available on the campus intranet.

The Self-Directed Learning (SDL) Survey

The *SDL Survey* was developed for this study to track experimental group students' participation in the supplemental technological activities (TMIS), perceptions of the value of the activities, and time spent on them. Administered electronically, it asks up to five questions, depending on responses to initial questions. Response options are yes-no or Likert-style for questions 1-4; question 5 provides opportunity for an open-ended response. This survey was also administered through the campus intranet.

Procedures

A quantitative research design was employed in this study. The treatment and control groups were randomly selected from the twelve courses in a balanced design. To eliminate the variable of instructor differences, each instructor had randomly assigned treatment sections and control sections. Within these courses, students in the treatment and control groups had identical syllabi and took identical examinations. Instructors were not informed which sections were treatment and which were control.

Sample Selection

The researcher met with academy department heads and course directors for input about the most appropriate courses to include. Course directors and department administrators selected instructors who reflected the diversity of all faculty including civilians and military officers. The researcher emailed all selected instructors to share information on their role in the study and request all course instructional materials so TMIS could be developed. A project website was developed to keep instructors informed. See Table 1 for a summary of the subsequent procedures and timeline.

Table 1. Summary of Procedures and Timeline

<i>Procedure</i>	<i>Control</i>	<i>Treatment</i>
1. Visit classrooms in beginning of semester.	All	All
2. Administer <i>SDLRS</i> pretest 2 weeks into study to randomly selected students.	106 selected	106 selected
3. Distribute TMIS a maximum of 6 times during semester.	N/A	All
4. Administer <i>SDLRS</i> posttest 2 weeks from end of semester to same students who took the pretest.	<i>n</i> = 91	<i>n</i> = 104
5. Collect performance data throughout semester.	All	All

Design of Technology-Mediated Instructional Strategies

The TMIS developed for this study were designed to enhance motivation for investigation of the subject matter and encourage self-directed learning within and beyond the parameters of the course. Motivation is essential to learning and performance (Csikszentmihalyi, 1990; Efklides, Kuhl, & Sorrentino, 2001; Keller, 1979), particularly in technology-mediated environments where students must take an active role in their learning by being self-directed (Keller, 1999; Lee, 2000).

Maslow (1970) defines motivation as a psychological process where a behavior is directed toward a goal based on an individual's needs. Keller (1999) argues that although motivation is idiosyncratic, learner motivation can also be affected by external aspects. These factors include systematic instructional design of tactics and strategies intended to improve motivation and performance, as well as encouragement and support by instructors, tutors, or peers. After conducting a motivational analysis of learners, strategies were developed to improve motivation, performance, and SDL using Keller's ARCS model, which is designed to increase learner performance through focusing on learner Attention, Relevance, Confidence and Satisfaction.

There is both experimental and correlational support for the instructional methods presented in this study. J. Visser (1990) studied the impact of strategies designed using Keller's ARCS model that were delivered to adult learners. His embedded single-case exploratory study concluded that motivational messages could enhance learning by motivating students to undertake SDL tasks outside the classroom. J. Visser and Keller (1990) studied the efficacy of motivational messages with adult learners in Mozambique, also with positive results. L. Visser (1998) took the concept of motivational messages a step further to encourage learners to persist in correspondence courses. She found that learners who received the motivational messages had reduced dropout rates and increased satisfaction. L. Visser, Plomp, and Kuiper (1999) used similar strategies based on the ARCS model with distance learners. In all studies, motivational messages were generally found to improve learner motivation, retention, satisfaction, and performance.

Each TMIS designed for this study consisted of three basic components (see Figure 2): (a) motivational messages at the beginning and end of each strategy, (b) supplementary instructional content, and (c) the SDL survey to track participation and perceptions.

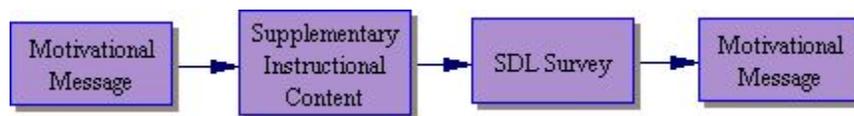


Figure 2: Systematic Design of Technology-Mediated Instructional Strategies

Most of the strategies were interactive instructional content provided for PDAs, on the Internet or academy intranet, or on CD-ROM. All technology-based content was provided in at least two formats (PDA and web) to ensure accessibility. See Table 2 for examples of ARCS components incorporated in the TMIS.

Table 2. Examples of ARCS Components Incorporated in TMIS

<i>Instructional Content</i>	<i>Technology</i>	<i>ARCS Components</i>
Instructional Resources	Web, streamed video, PDA	A, R, C, S
Self-Assessment	Intranet	C
Skill Briefs	PDA	A, R
Social Interaction	Threaded Discussion, IRC, Email	R, C, S
Mentor Support	Email	C

Note: A=Attention, R=Relevance, C=Confidence, S=Satisfaction

Data Collection

To prevent subject bias, the word “self-directed learning” was not used in the consent forms. A mock script was provided to instructors to ensure that students received the same information. Instructors encouraged participation by assuring students that the strategies would be brief, pre-approved by instructors, and designed to help them master course objectives. Students were assured that their participation was voluntary and confidential.

An email message was sent to all participants thanking them for their participation. In the beginning of the semester, a random sample of 106 treatment group and 106 control group subjects received an email message directing them to complete the *SDLRS* via the campus intranet. The *SDLRS* was referred to as the *Learning Preference Assessment* to prevent subject bias. In the last two weeks of the semester, the same selected participants were asked to complete the *SDLRS*, providing a posttest measure. It was assumed that four months between the tests was a sufficient interval to prevent test-retest issues. Some cadets were resigned from the academy before the end of the semester or did not complete the posttest, yielding 91 control and 104 treatment group students.

Treatment group students received TMIS via email. Each TMIS included motivational messages, a link to supplementary instructional content, and a link to the SDL survey. The SDL survey tracked participation and time on task, as well as open-ended questions for feedback about the TMIS. Control group participants did not complete the SDL survey since they did not receive the strategies.

DATA ANALYSIS AND FINDINGS

Two hypotheses were tested, examining outcomes of traditional instruction (control group) and traditional instruction supplemented by use of technology-mediated instructional strategies (treatment group) in terms of academic performance and readiness for self-directed learning. Significant findings are reported for both hypotheses.

Academic Performance

H₁: Treatment group students who use TMIS will have significantly higher levels of academic performance (measured by course aggregate points including homework, projects, papers, and examinations) than control group students taught by traditional methods.

An ANOVA was conducted segmenting the strategies treatment group into two groups: those who accessed the strategies ($n = 165$) and those who did not access the strategies ($n = 138$). The ANOVA conducted on these three groups showed a significant effect for group ($F = 5.18, p < .005$). A t-test of the paired means shows that the subjects who accessed the strategies significantly outperformed both the control group subjects and the treatment group subjects who did not access the strategies ($p < .05$).

Self-Directed Learning Readiness

H₂: The change in the mean pretest and posttest SDLRS score of treatment students with access to TMIS will be significantly higher than the change in the mean pretest and posttest score of control group students taught by traditional methods.

Ninety-one randomly selected control group students and 104 randomly selected treatment group students completed the *SDLRS* as a pretest and posttest measure. The control group ($n = 91$) had a mean pretest *SDLRS* score of 214.07 and the treatment group ($n = 104$) had a mean pretest *SDLRS* score of 215.72. The pretest *SDLRS* scores were analyzed for a differential effect with respect to treatment/control group membership. This effect was found to be non-significant ($p = .59$), verifying that the pretest scores were not a potential confounding variable of the posttest scores.

Differences in the mean pretest and posttest *SDLRS* scores were examined for those who received traditional instruction (control) versus those who received traditional instruction and accessed the supplementary TMIS (treatment). A Two Independent Samples t-test was employed. The analysis of posttest *SDLRS* scores showed treatment group cadets had significantly higher ($p = .02$) *SDLRS* scores than control group cadets. The control group ($n = 91$) had a mean posttest *SDLRS* score of 210.77 and the treatment group students ($n = 104$) had a mean *SDLRS* score of 218.54. Further, there was a significant difference ($p = .004$) in the change in mean *SDLRS* scores, with control group cadets dropping by 3.3 points and treatment group cadets who accessed the strategies increasing scores by 6.62 points.

SDLRS pretest scores were also examined for possible correlations with demographic variables, specifically, for race and gender-fairness. Pearson correlations revealed no significant correlation with race. There was a significant correlation with gender; females had higher *SDLRS* scores than males in the sample tested ($r = .192, r^2 = .036, p < .01$).

CONCLUSIONS AND IMPLICATIONS

Use of Technology-Mediated Supplemental Learning and Academic Performance

For the study sample, improved academic performance occurred when carefully designed, technology-mediated supplemental learning was voluntarily accessed in instruction. Keller's ARCS model functioned effectively as a structure for developing supplemental strategies that addressed the motivational needs of learners. This study also demonstrated that new technologies such as PDAs can be efficient and effective means of delivering instructional content.

Use of Technology-Mediated Supplemental Learning and Self-Directed Learning Readiness

As hypothesized, the change in *SDLRS* scores was significantly greater for treatment group students who accessed the strategies than for control group students; therefore, the TMIS appeared to be an effective means of increasing readiness for self-directed learning in the group studied. The fact that the treatment group *SDLRS* scores increased while the control group scores decreased adds strength to the findings. The decline in control-group cadets' proclivity to be self-directed learners aligns with the findings of Preczewski's (1997) prior research, which determined that the traditional undergraduate experience fails to positively affect SDL. Similar results have been found in medical schools (Bulik, 2003) and schools of engineering (Litzinger, 2003).

As in previous studies, the *SDLRS* appears to be race-and gender-fair. There was a significant correlation between *SDLRS* scores and gender, with female scores being higher, but the effect size was very small, and the results are not unexpected for the sample tested. Females are in the minority at military academies, and one would expect that females who do attend would be highly self-directed. A similar difference was found among AT&T managers in a study done in the 1980s, when management status was rare for women (Guglielmino, Guglielmino, and Long, 1987).

The findings of the study suggest that there may be a double payoff for the use of technology-mediated instruction as a supplement to traditional instruction: improved performance in terms of the mastery of the material being studied as well as the additional benefit of improving the self-directed learning readiness of the learners. Corporate universities and managers of HRD functions may want to utilize such interventions.

Need for Continuous Self-Directed Learning by Leaders in Military and Business Contexts

Historically, military curricula prepared soldiers to take on tasks that were usually encountered at their current level of responsibility. In the new battlefield environment, soldiers are being asked

to take on tasks that are outside their traditional areas of responsibility and training preparation. The modern battlefield has become increasingly more demanding; complex leadership decisions are required at lower levels of command, and modern soldiers need new skills and knowledge in order to perform effectively. They must become continuous, self-directed learners.

The need for continuous, self-directed learning to meet the challenges of change is not confined to the military. Managers in every arena face a duality of increasing needs for learning: their own learning needs and the learning needs of the employees they supervise. The design of formal training and development opportunities often lags far behind the window of opportunity to apply new knowledge and skills rapidly enough to gain a competitive advantage; and the widely dispersed work locations of multinational companies create training delivery challenges that parallel those of military organizations.

Bernardin and Russell (1998) discuss numerous advantages of SDL in business and industry, citing several studies in the field of human resource development which indicate that individuals working in jobs that require creativity, problem-solving ability or in jobs that are rapidly changing outperform others when their self-directed learning readiness is high (Durr, 1992; Guglielmino, Guglielmino, & Long, 1987; Roberts, 1986). Kotter (1996) notes that leaders who have harnessed the power and potential of lifelong self-directed learning will increasingly be in demand as the future unfolds. The importance of having every individual in an organization engaged in continuous learning in the workplace and sharing that learning with others for the benefit of the organization is espoused in a large body of literature devoted to the development of learning organizations (For example, Senge, Kleiner, Roberts, Ross, & Smith, 1993). In the present as well as in future work environments, individuals who have developed an ability to manage their own learning and who are highly self-directed learners will offer a competitive edge to their organizations.

Research studies now underway are examining the relationship of self-directed learning readiness, productivity as measured by gross domestic product per capita and per capita income in 15 countries. Preliminary findings suggest a rich stream of research questions and offer some intriguing implications for societies in general.

While the outcomes of this study were clear and convincing, additional research is needed to test the instructional methods presented in this study with different populations. In addition, other strategies for increasing the self-directed learning of individuals in instructional settings rather than reducing it should be carefully explored. Bulik and Frye (2004), for example, investigated the use of workshops for instructors on the importance of self-directed learning and ways to enhance SDL readiness; he also investigated the use of problem-based learning strategies to increase readiness for SDL while mastering content.

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THE PERCEIVED CHANGE OF DIVERSE CLINICIAN-EDUCATORS THROUGH AN INTENSIVE COURSE ON TEACHING GERIATRICS

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The short-term intensive course has been adopted as an efficient model in continuing education for busy professionals. Literature reports learner perception is an important aspect to determine the success of education through the model. The purposes of this study were to describe how diverse clinician-educators experience the perceived change through such model, the Geriatrics Mini-Fellowship (GMF), and to explore emerging patterns linking learner autonomy to selected learning outcomes through longitudinal observations. The purposeful sample for this qualitative study consisted of ten clinician-educators from different disciplines, who reported their perceived changes during GMF. A hermeneutic phenomenological study approach was used for analyses. In essence, five core themes characterized the experience of change through GMF. For the group, learner autonomy appeared to associate with some immediate program outcomes but not with the longer outcomes of the target teaching behaviors.

The principles of adult education program design stress the importance of efficiency and effectiveness for busy adult learners (Houle, 1980; Knowles, 1980). A short-term, intensive course design has been adopted as an efficient teaching model for non-traditional students in higher education (Daniel, 2000; Serdyukova & Serdyukova, 2004) and adult learners in other continuing professional education settings (Houle, 1980). Diverse learners from different professional disciplines often participate in the same intensive course regardless of their prior experience related to the course objectives. The dual approach of concurrent efficiency and effectiveness represents an important challenge for many adult educators to facilitate the learning of individuals having different disciplinary backgrounds (Hativa & Marincovich, 1995). In such challenging environments for teaching and learning, adult educators still aim to produce effective program outcomes, such as desirable behavioral changes, through their educational programs.

PROBLEM STATEMENT

While some educators are concerned that the relatively shorter periods for instruction, practice, and reflection associated with intensive course models may produce lower learning quality and educational outcomes, some research indicates these models have yielded equivalent and sometimes superior learning outcomes when compared with traditional-length courses in higher education (Scott & Conrad, 1992). Literature indicates that intensive models demonstrate effectiveness over efficiency under certain conditions. First, several scholars found that they are suitable for selective populations, such as those who are older (Brown, 1992; Caskey, 1994; Smith, 1988), better prepared (Brown, 1992; Smith, 1988), and more motivated (Windish, 1993). In addition, researchers report that successful intensive course designs include necessary

components such as instructors' careful organization and use of varied teaching approaches, including creative learning projects, experiential learning and off-campus service-learning (Allen, Miller, Fisher, & Moriarty, 1982; Brown, 1992; Scott 1994). The importance of learner perception of the course is emphasized; Scott (1994) found that if students perceived a high quality of instruction, intensive courses were powerful learning experiences. As adult educators implement carefully planned instruction, they recognize the importance of learner perceptions of intensive course experiences as a necessary aspect of examining a new program's success.

As the population of older adults and elderly patients increases, clinician-educators in various medical specialties recognize the need to learn new information in geriatric medicine, and to teach these principles within their specialty fields. In response to the needs identified through a local assessment (Schmaltz, Christmas, Gozu, & Durso, 2005), The Johns Hopkins School of Medicine Division of Geriatric Medicine and Gerontology aimed to produce an intensive geriatric teaching program for non-geriatric clinician-educators. With support from the Donald W. Reynolds Foundation, the Geriatrics Mini-Fellowship (GMF) intensive course was developed by an interdisciplinary educational leadership team including an adult education specialist and clinician-educators. In May 2005, a pilot program was launched in a three-day on-campus course and followed by a year of off-campus autonomous experiential learning activities. The program evaluation reported here analyzes whether the time-shortened intensive course mode is sufficient to produce desirable program outcomes in a medical education setting. In particular, since the literature indicates the importance of perceived value for program success (Allen et al, 1982; Brown, 1992; Scott 1994), the present study asks how GMF participants gain positive perceptions toward geriatric medicine in the GMF learning experience.

PURPOSE

The purposes of this study were: (1) to describe how diverse disciplinary-background adult learners experience perceived change through an intensive course on incorporating geriatrics instruction in their own medical specialty disciplines; (2) to explore emerging patterns of how adult learner autonomy might associate with (a) their motivation to participate in terms of learner orientations (Houle, 1961; Park, 2000); (b) their immediate outcomes such as program satisfaction, developing a positive perception toward the intensive course they experienced; and (c) the desirable outcome behaviors in terms of higher task specificity for developing a teaching plan in geriatrics and an actual implementation action.

METHODOLOGY

Study Design and Sample

The purposeful sample consisted of ten clinician-educators in different medical disciplines, who experienced the perceived changes through their voluntary participation in a time-shortened intensive course, the Geriatrics Mini-Fellowship (GMF), provided by the Johns Hopkins School of Medicine. The present study delimits the data gathered to a one-year follow-up after the 2005 GMF. A hermeneutic phenomenological study approach (van Manen, 1990) was used in an attempt to identify and describe the elements of the essentials of the perceptual change.

Instruments and Interview Protocols

Prior to GMF, the *Learner Autonomy Profile (LAP)* Version 3.0 was administered. The *LAP* assesses adult learner autonomy as a syndrome including the four constructs of desire (Meyer, 2001), resourcefulness (Carr, 1999), initiative (Ponton, 1999), and persistence (Derrick, 2001). The instrument's validity and reliability have been established for various populations (Carr, 1999; Confessore and Park, 2004; Derrick, 2001; Meyer, 2001; Park and Confessore, 2002; Ponton, 1999). In the present study, Cronbach's Alpha coefficients of the *LAP* 3.0 ranged between .951 to .976 in the four scales and 22 components.

During GMF, pre-post surveys were administered using a newly developed survey form called The Geriatrics Clinician-Educator Questionnaire (GCELQ). It includes 40 items using a 0-10 point scale in a matrix format across four areas: (a) knowledge acquisition in geriatrics, (b) value of geriatrics learning for their practices, (c) self-efficacy of teaching geriatric principles, and (d) interest in learning teaching skills. Geriatrics content experts and a psychometrics expert reviewed each item based upon the three standards of content, comprehension, and usability (Groves, et. al, 2004); achieved higher than 90% agreement on appropriate and representative content; and examined item-total relations for the total 40 items under the construct of the four factors ($r > .321$ each items to one factor). Test-retest reliability coefficients of the four factors were $r > .821$. The Cronbach's Alpha reliability coefficients ranged between .721 and .943 in the four factors for the present study data. The survey also included an open-ended narrative comment on overall course experiences and suggestions.

During GMF, semi-structured group interviews were conducted and recorded on audio-visual formats. The interview protocol included the following questions: What did you think and feel when you first received the invitation? What made you decide to participate? What do you hope to get out of the course? What barriers are there in your practice to good geriatric care and teaching about geriatrics? What do you suppose are the barriers to your colleagues to come to such a course? What makes you different from your colleagues that you came to this course? Are your learners interested in geriatrics?

Within the six months of GMF, semi-structured interviews were conducted as individual follow-up. The reflective interview protocol included the following questions: What has been happening in the past months after the GMF? Did you feel you could apply any of what you learned during the GMF? If you tried to apply what you learned during the GMF, what happened? How did you feel about what happened? Did you find that you had changed in any way when you returned to your clinical setting or teaching sessions? Is there something you feel you need more support on for you to teach geriatrics? Do you have any new ideas about teaching geriatrics in your area? Finally, one year after participating in GMF, a few selected questions were asked as the standardized guideline provided a Reynolds Foundation evaluation group. Those questions focused on the target action of whether GMF graduates implemented the geriatric curriculum for their learners.

Procedures of Data Collection and Analysis

Along with the approval of the institutional review board, the GMF model consisted of programmed assessment activities during the four major periods, presented in Table 1.

Table 1. Geriatric Mini-Fellowship Assessment Activities

<i>Period</i>	<i>Assessment Activities</i>
1. Prior to program	<ul style="list-style-type: none"> • Learner readiness assessment on learner autonomy profile using LAP 3.0 • One-on-one mentoring to inform LAP result and to facilitate self-determined areas of their future behavioral intention.
2. On-campus	<ul style="list-style-type: none"> • Pre-post surveys using GCELQ on value, attitude, and knowledge of selected geriatrics principles and teaching skills • Pre-post audio visual recorded group interview using semi-structured protocol • Analysis of field notes by four direct observers
3. Off-campus	<ul style="list-style-type: none"> • Available on-going mentoring and observation log • Semi-structured individual interviews for post-program follow-up • Participants development of Learning Portfolio on their teaching preparation including (a) self-reflection log, (b) geriatrics case development action, (c) geriatrics teaching plan development action, (d) list of supporters from whom participants receive any assistance in order to develop teaching geriatrics, and (e) application form for Learning Portfolio award competition
4. End of year	<ul style="list-style-type: none"> • Best Learning Portfolio Award • Final program assessment: An externally standardized review survey on teaching action; A post-year-one interview

The rich sources of data in the present study were sufficient to conduct triangulations across qualitative and quantitative data. First, transcribed data from original sources were: Audio visually recorded group interviews of pre-post campus; audio taped individual depth interviews for post-campus follow-up experiences; direct observation field notes of the three researchers; and mentoring notes. Each in-depth interview exceeded 40 minutes; field notes were peer-reviewed across multiple incidents and participants. Second, quantitative data included: LAP collected through an internet questionnaire taking about 30 minutes at the participant's convenience; and GCELQ pre-post campus data administered in pencil version for ten minutes each for descriptive statistics.

Third, program documents related to individual participant contact and mentoring activities were also used to increase validity. Three peer-researchers produced independent analyses and have communicated periodically to conduct systematic processes of Epoche, phenomenological reduction, imaginative variation, and synthesis (Moustakas, 1994). In particular, the analysis was extended in a hermeneutic perspective, which included researchers' discussed interpretation of

the meaning of the identified essential daily expressions of multidisciplinary clinician educators over the year of individual follow-up of pre-, during-, and post-3 course held on-campus.

MAJOR FINDINGS

Participants' Context

The ten clinician-educators who participated in GMF had various backgrounds. There were more males (six of ten), and more junior academic ranks (four assistant professors; three instructors). The average age was 44 years old, with an average of 16 post-doctorate years of experience. They reported that approximately 49% of the patients in their practices are over 65 years old. (See details in Table 2.)

Table 2. Selected Study Participant Descriptions

<i>No</i>	<i>Gender</i>	<i>Age</i>	<i>Years of Post-Doctorate Experience</i>	<i>Academic Title</i>	<i>Specialty</i>	<i>Percent 65+ Patients</i>
1	Male	34	7	Assistant Professor	General Surgery	40%
2	Male	49	14	Assistant Professor	Emergency Medicine	22%
3	Male	33	9	Chief Resident	General Internal Medicine	70%
4	Female	36	10	Assistant Professor	Emergency Medicine	30%
5	Male	56	30	Instructor	Emergency Medicine	20%
6	Male	36	9	Assistant Professor	Orthopedic Surgery	60%
7	Male	38	10	Chief Resident	Internal Medicine	50%
8	Female	52	28	Primary Practice	Internal Medicine	70%
9	Female	50	21	Instructor	General Internal Medicine	60%
10	Female	56	26	Instructor	General Internal Medicine	65%

Prior to GMF, they did not teach any geriatric principles in their discipline. They taught various learner groups including: medical students, residents, post-doctorate fellows, physician assistants and nurse practitioners. Their teaching settings included one or more of: acute hospital, ambulatory care, emergency room, lecture, and case discussion in morning report; with the exception of lectures, these are more informal teaching settings and more likely short intensive teaching modes. Only two of them (participants #1, and #5) had prior educational experience in a formal teaching skills course.

Meaning of the Perceived Change

In essence, five core themes characterized how GMF participants experienced their perceived change through the intensive course in teaching geriatrics. Each of these is briefly explicated.

General Perception of Geriatrics: Realization of Need to Learn for Optimal Patient Care

The non-geriatrician-educators from diverse backgrounds seemed to recognize the fact that, in their daily clinical practices, their peers do not consider it important to understand the discipline

of geriatrics. Nevertheless, they deal with many unique care issues relevant to older adult patients. Some of the descriptions of teaching and learning in geriatrics were as follows:

I'm trained as an Emergency Physician and I know how to take care of people in the Emergency room. But as emergency rooms become more crowded and we become more like floors or intensive care units waiting for beds to open up in the hospital, I've got to spend more time with those folks and deliver more care that I am not trained to do, nor skilled, nor competent to do in some cases. ...

But they're going to have to be dealing with these [*elderly*] patients like it or not.

I think incoming interns are the ones closest to the medical graduates. Maybe we did not do enough education or something so they have some negative attitude towards the elderly in a general sense.

On behalf of our residents ... I think no one [*senior medical educator*] has really stated the [*geriatric education*] case to them [*resident learners*]

From the expressions of daily life in their different specialties, in a hermeneutic perspective, we interpreted that many clinician-educators are treating older patients and are aware of the issues related to the unpopularity of geriatrics, such as lack of understanding of special competence, lack of awareness of educational needs, and lack of support to teach.

Personal Interest and Experience with Value of Geriatrics

During the daily casual conversations about the challenges of geriatric medicine, the participants showed a clear awareness of at least one issue related to geriatric education. The following exemplar descriptions demonstrate how the participants identified issues in their own disciplines and how they determined their own educational interests, which might contribute to their ability to overcome an unpopular perception of geriatric education then finally decided to participate in GMF:

... I know on those rare occasions when a geriatrician has the time or the ability to come to the emergency room and actually do a consult or look at a patient, or talk with us on site, they get swamped, people hover around them, ask them questions, eager to learn from them.

And we are aware that we need to know more about this, want to be able to do it, but...time...as I look at the financial constraints of practice, of insurances, it becomes obvious that the senior citizen or the older population not only demands more time but they demand so much resources... where I can give the patient good care within the constricts of reasonable use of resources ...

These [*elderly patients*] present a lot of challenges to the orthopedic surgeon. I think in orthopedics there are two areas. One is the technical challenges of fixing bone in the elderly, which we don't particularly teach differently and that's kind of separate from what this course is about, it's still a big issue that I think needs exploration and teaching which I think certainly orthopedic residents would get interested in because that's what they're gonna be facing in the years to come ...

I have a public health background and an interest in public health [*research*], and it seems like now being a specialist, ... [*as a surgeon*] I'm personally interested because I think it's an exciting time right now in medicine and [*geriatric medicine*] is sort of evolving, as its own entity, just like pediatrics did.

Based upon their comments about their daily practices, in a hermeneutic perspective, we agreed that they seemed aware of older patient population growth and educational issues. The participants even identified areas of need for interdisciplinary educational approaches between geriatrics and their discipline. Their recognition of the needs for geriatric education in their field might help them to overcome challenges and/or stimulate their pioneer interests in geriatrics so that they can be beacons within their specialty. We found some enlightened perspectives on geriatric education among the participants.

First Feeling About this Course: Exciting Opportunity

When the ten adult learners received the information in the GMF program announcement, they felt some degree of excitement that seems to have brought them to GMF:

I was excited to see the crystallization of ideas that had been discussed and was excited about the program.

I started practicing a number of years ago, and so many of my patients are now geriatric patients. So I thought "oh" what a way to treat them in a more elaborate and appropriate manner and so I am hoping this course helps me to deal more efficiently with my aging population patients.

I am in a sabbatical stage of the career of my life... I want to see what I can do to expand my skills [*on caring for older patients*] in teaching

When I first saw the flyer I thought this was the greatest thing to ever happened in Western Civilization. I've had an interest in Geriatrics through developing a relationship with a couple of the geriatricians here and sharing some common patients, and got involved in the program [*X*] through some contacts here so its been a neat area to sort of explore and do some research in simultaneously.

When I saw it I thought it was a wonderful opportunity to get to learn and to interact and to prepare myself for the future.

The GMF participants expressed different interests and reasons for participating in the intensive course in geriatrics. In a hermeneutic phenomenological perspective, our researchers attempted to understand the underlying meaning of participants' daily lives from the expressed language. Our agreed interpretations focused on the meaning of "opportunities" of "excitement." These included: (a) addressing immediate needs of learning new geriatric principles (80%) to update skills for older patient care and to teach those within their practices; (b) building a professional connection with geriatric experts who are working in a prestigious program for research or project execution (60%), (c) being in an innovative educational program for unknown future use (50%): valuing an educational program provided by a prestigious institution, related to career building as clinician-educator (50%); being recommended by superiors to participate (20%).

Program Expectation: Career Advancement

The participants' excitement extended into more focused expectations of the GMF, in terms of learning to be practicing clinicians for older patient populations, and to be more skillful educators:

I'm hoping for principles, physiology, things that I can carry into different situations, rather than learning the specific dose for a specific drug for a specific creatinine...I need to know.... why and when to look something up.

I would like to pursue my career as a clinician educator. So this [GMF] will help me develop some skills that I would need along the way.

As for myself, my career goal is kind of to create a geriatric fellowship back [to my country]. I'm going back next year. So, it's very important that I can find some educational skill and then, the clinical part, because I am going into fellowship this year, so I think I will have more time to learn the clinical part, but I think the teaching part is the thing I would like to learn most.

Both knowledge about geriatrics that I can apply to my daily practice, but more importantly a connection with people who are experts in the field of geriatrics ...

... it's good to know how colleagues think. I know that thinking in geriatrics is totally different from modern medicine in that you individualize diseases to patients. Also I think we're trying to maybe think about developing some sort of curriculum for the surgical residents so this could be a good example. And finally, as I've been trying to put together some research projects, it's great for ideas.

Drawn from their answers, in a hermeneutic perspective, we interpreted that the immediate use of practical knowledge and methodology seems the key common need of the participants. Their desired learning outcomes included obtaining useful information for clinical practice and helpful approaches to be better teachers. Participants valued relationship building with field experts of a nationally respected program in geriatrics.

Changing Perception: Surprisingly Useful

The participants reported their perceptual changes while they experienced on-campus activities. Table 3 reports the degree of perceptual change reported using pre- and post-campus survey in 0-100 scale. The larger areas of perceptual change were shown on 'self-efficacy' for teaching geriatric principles (29% increased), and geriatric 'knowledge' (20% increased). On 'value' of geriatric learning for practice, eight participants perceived positive change and one remained slightly lower but still reported a high score (from score 100 to 95). These also have the statistical significances (Wilcoxon rank test was conducted since unsure assumption sampled from a Gaussian distribution), on the three areas: 'self-efficacy' of teaching ($p = .011$), 'knowledge' acquisition ($p = .008$), and 'value' for learning geriatrics to practice ($p = .021$) in 95% confidence level. The 'Interests' in learning teaching skills for geriatrics did not differ statistically between pre- and post- surveys ($p = .441$). On 'interest' in learning teaching skills for geriatrics, six of nine reported increased interests and three of nine reported reduced interests. Regarding the aspect, the participant group expressed that they felt they learned sufficiently after

the course experiences for their teaching purposes. Overall, participants described the on-campus experience as “surprisingly useful,” and “time-well spent.” These positive changes were confirmed through individual follow-up contacts, including e-mail, phone, and direct meeting.

Table 3. Perceptual Change Through Geriatrics Mini-Fellowship On-Campus Instruction

No.	<i>Efficacy for teaching</i>	<i>Knowledge In geriatrics</i>	<i>Value of geriatric learning</i>	<i>Interests In teaching skills</i>
1	Uncompleted (60 to -)	Uncompleted (64 to -)	Uncompleted (95 to -)	Uncompleted (46 to -)
2	38% (52 to 90)	27% (73 to 100)	7% (93 to 100)	7% (93 to 100)
3	15% (63 to 78)	15% (74 to 89)	8% (92 to 100)	6% (94 to 100)
4	1% (47 to 46)	4% (61 to 65)	3% (72 to 75)	-5% (76 to 71)
5	24% (62 to 86)	16%(67 to 83)	20% (59 to 79)	21% (60 to 81)
6	31% (46 to 77)	17%(65 to 82)	-5% (100 to 95)	-15% (100 to 85)
7	42% (23 to 65)	22% (66 to 88)	8% (84 to 92)	2% (90 to 92)
8	53% (40 to 93)	38% (57 to 95)	2% (90 to 92)	9% (90 to 99)
9	41% (28 to 69)	27% (38 to 65)	23% (77 to 100)	-21% (74 to 53)
10	17% (46 to 63)	13% (47 to 60)	41% (59 to 100)	24% (76 to 100)
All	29% (45 to 74)	20% (61 to 81)	12% (81 to 93)	3% (84 to 87)

Note. () includes pre- and post-response to 0-100 scale. The reported numbers are rounded-up ones. All reflect the change of pre-post of the nine completed participants.

The participants began with high value of learning geriatric principles for their practices (average 81 scored) and high interest in teaching skills (average 84 scored). Based upon their initial individual mentoring sessions and the first-day survey results, our researchers perceived this group seemed interested in educational issues such as teaching skills and clinician-educator career building compared to other clinicians in general. Some participants seemed to be surprised about the gap between their initial understanding of a teaching skills course in general medicine and their actual experience in an educational program, in terms of learning educational science on teaching skills. Some examples of written comments include:

The fellowship was very different from what I expected, exceeded my expectations and gave me new ideas on teaching principles and the art of passing knowledge on to others and other components of learning (e.g. feedback). I am excited to go back and use these newly discovered tools.

Surprised that came up with idea out of box. Learned that role modeling starts early and close to use.

Expected passive, got active, provoked to think about teaching. Feels like a lot to think about.

Expected content course. Pleasantly surprised by getting teaching experience. Encouraged the professional development.

Felt raised confidence ... Role playing surprisingly valuable.

Learned teaching and growth doesn't have to be painful. I came from a learning environment where one got physically punished for doing something wrong ... I like the positive feeling about teaching.

Feedback techniques I got but I'm not sure I got the one-minute preceptor ...*[which I lost the concept of high-level of cognition]*, ... had a hard time seeing how to adapt and apply to my service. *[italics added]*

We attempted to interpret this phenomenon of perceived change. Perhaps adult learners in medicine have traditionally experienced massive content-oriented education that allowed less-direct participations yet expecting efficient recall or remodeling ability to perform well particularly in time pressured-judgmental work environments over relatively longer-term of training periods repeatedly. Therefore, they experienced “unexpected,” “different” value between their crystallized perspectives of their traditional meaning of teaching and learning in medicine, and the educational science introduced through selected adult educational theories and teaching techniques to encourage active engagements and self-determined experiential learning projects. In particular, some participants from procedure-oriented practices might experience a larger gap as exemplified by statements such as “hard to get” *[value of educational principles]*, “we don't have time to consider the principle *[to facilitate high-level cognition of learners]*.. when we teach how to operate.”

Teaching Task Specificity and Post Year Follow-up

The participants were provided experiential learning opportunities along with self-determined autonomous learning projects in order to teach geriatrics within their discipline, as well as one-on-one mentoring availability. The present study determined task specificity using five aspects: ‘need and goal,’ ‘who,’ ‘when,’ ‘what,’ and ‘how’ to teach. Three researchers collected, analyzed, and saturated the multiple contact information. The patterns that emerged between the degree of specificity development and their autonomously-determined teaching project development were investigated within a post-year-one.

We attempted to determine the level of teaching task specificity in a summary of patterns reported as Table 4. The participants who could define all of five areas in a relatively shorter term appeared to exhibit their targeted teaching actions earlier than others. Work environment changes affected two participants on their deferring action (participant #7) or planning (participant #3). Around the six-month follow-up period, 90% of participants expressed positive intentions for their on-going efforts and one (participant #5) determined no need to develop a formal curriculum because he incorporated the teaching skills and geriatric principles he learned at GMF into his ongoing teaching sessions. As with his case, at the end of year, a total of four participants (40%) reported that their informal teaching activities are a sufficient level of incorporation of geriatrics into their ambulatory teaching settings. The other four participants (40%) exhibited further levels of formal teaching activities. Two participants (20%), who remained in a low specificity level in the shorter term, decided to pursue further educational efforts through longer-term courses in education rather focusing on teaching action development (participants #9 and 10).

Table 4. Teaching Task Specificity and Post Year Follow-up

No.	During Three Days On-Campus to Two Months					Within Three Months	Within Six Months	At Six Months	Within a Year
	Need and Goal	Who	When	What	How	Task Specificity Agreement †	Teaching Action §	Intention on Future Teaching	Aimed Teaching Action ¶
4	X	X	X	X	X	Defined	Yes	Yes	Yes
5	X	X	X	X	X	Defined	Yes	No	Yes (I)
7	X	X	X	X	X	Defined	No	Yes	Yes
2	X	X	-	X	X	Less	Unspecific	Yes	Yes (I)
3	X	X	X	-	X	Less	No	Yes	Yes
1*	X	X	-	X	-	Low	Unspecific	Yes	Yes (I)
9	X	X	X	-	-	Low	No	Yes	No (new)
6*	X	X	-	-	-	Low	No	Yes	Yes
8	X	X	-	-	-	Low	No	Yes	Yes (I)
10	X	X	-	-	-	Low	No	Yes	No (new)

Note. * Two participants in procedure-oriented practices began to refine their teaching tasks two months later than other participants.

† *Low* indicates two or more of five columns are unspecified. *Less* indicates one of five columns is unspecified, *Defined* indicates all of five columns are specified.

§ The summary of follow-up action was reported by individual interviews conducted after one-month to within six months follow-up.

¶ Yes means developed a formal curriculum; Yes (I) means taught geriatrics but informal ambulatory settings not formal curriculum development. No (new) means no-teaching efforts for the aimed action but developed new interests in enrolling long-term courses in teaching skill or curriculum development.

Learner Autonomy and Follow-up

The second purpose of this study was to explore emerging patterns associated with adult learner autonomy and desirable outcomes such as positive perceptions toward the course, and instructional planning and action. The participants were asked to participate voluntarily in a self-reported web-questionnaire, the *Learner Autonomy Profile (LAP)* (Table 5). According to Human Resource Development Enterprises (HRDE) (2005), scores ranking higher than the 70th percentile indicate relatively higher learner autonomy while scores ranking less than the 30th percentile indicate relatively lower learner autonomy. The participants' learner autonomy percentile rankings were not outstandingly high when compared to the normative distribution HRDE reports (HRDE, 2005).

Table 5. Learner Autonomy and Follow-Up

No.	Learner Autonomy					LO	§					3M	6M	1Y
	†						S	K	E	V	I	¶	§§	¶¶
	D	R	I	P								TS	TA	IN
8	H	H	H	H	A	100	95 (38)	93 (53)	92 (2)	99 (9)	Low	N	Y	Y(I)
2	H	H	M	H	G	100	100 (27)	90 (38)	100 (7)	100 (7)	Less	US	Y	Y(I)
10	H	M	M	M	A	100	60 (13)	63 (17)	100 (41)	100 (24)	Low	N	Y	N (new)
3	M	M	M	M	G	95	89 (15)	78 (15)	100 (8)	100 (6)	Less	N	Y	Y
7	M	M	M	M	A	95	88 (22)	65 (42)	92 (8)	92 (2)	Def.	N	Y	Y
6	H	M	L	L	G	90	82 (17)	77 (31)	95 (-5)	85 (-15)	Low	N	Y	Y
5	L	L	L	L	Ar	83	83 (16)	86 (24)	79 (20)	81 (21)	Def.	Y	N	Y(1)
4	L	L	L	L	G	95	65 (4)	46 (1)	75 (3)	71 (-5)	Def.	Y	Y	Y
9	NC	NC	NC	NC	Ar	99	65 (27)	69 (41)	100 (23)	53 (-21)	Low	N	Y	N (new)
1	NC	NC	NC	NC	G	NC	64 (nC)	60 (NC)	95 (NC)	46 (NC)	Low	US	Y	Y(I)

Note. † Learner Autonomy was reported as the profile of four component scales in percentile ranks compared to norm distribution provided by HRDE (2005); D: Desire to learn, R: Resourcefulness, I: Initiative, P: Persistence, and NC: Uncompleted.
 ‡ LO: Learner Orientation explaining the strongest reason to participate, G: Goal-orientation, A: Activity-orientation, Ar: Activity-orientation stimulated by a requirement
 § S: Satisfaction. K: Knowledge, E: Efficacy, V: Value, I: Interest.
 ¶ 3M: Within three months, TS: Task specificity for teaching action, *Low* indicates two or more of five columns are unspecified. *Less* indicates one of five columns is unspecified, *Defined (Def.)* indicates all of five columns are specified.
 §§ 6M: Within six months, TA: teaching action, N: No, Y: Yes, US: Unspecified, IN: Intention to develop teaching geriatrics
 ¶¶ 1Y: Within a year; Y means developed a formal curriculum; Y(I) means taught informally in ambulatory settings. N (new) means no-teaching efforts on the aimed action but developed new interests in enrolling long-term courses in teaching skill or curriculum development.

Park (2000) modified Houle (1961) to account for the phenomenon that some people who are goal- or activity-oriented learners are responding to an external requirement as opposed to the

others who pursue goals or activities for their own reasons. These former cases have been categorized as ‘goal-oriented stimulated by a requirement’ or ‘activity-oriented stimulated by a requirement,’ which appears in other-directed initiation. Based upon Park (2000), three researchers analyzed the categories independently and saturated that the group showed 80% of self-directedness on participation decision making and 20% of other-directed activity-orientations, who stated they could not deny their superiors’ strong recommendations to participate. One’s LAP percentile ranks were very low (participant #5) and the other did not complete the survey (participant #9). Those participants appeared in the ‘required’ orientation and had either very low LAP profiles or did not complete it.

While there were no consistent patterns across all participants between autonomy and program outcomes assessed from the group, some association patterns were observed. Low autonomy profile participants tended to report lower scores on immediate outcomes after three days of the course, particularly in the area of ‘interest’ in teaching skills. Statistically, the total of LAP scores was associated with post-campus ‘value’ on geriatrics ($r = .797, p = .018$) or post-campus ‘interest’ on teaching skills ($r = .867, p = .005$). In addition, participants who exhibited earlier determinations on their teaching task specificity tended not to have high autonomy profiles and were quicker implementers within their determined range for the new task; and participants who appeared in a required-orientation terminated their determined teaching task earlier or did not implement the targeted task.

CONCLUSIONS

Based upon the data analyses, we conclude that the intensive course model was effective for this sample in the following ways: (a) GMF learners from different disciplines can produce positive change through the time-shortened intensive course on-campus, and (b) greater learner autonomy seems to be associated with better short-term outcomes but does not guarantee longer-term outcomes. The present study findings support the notion that an intensive course is an effective format for continuing professional adult learners (Houle, 1980). Regardless of the previous findings on learner readiness appropriate for an intensive course model, such as older (Caskey, 1994; Smith, 1988), better prepared or previously experienced with similar course contents (Smith, 1988), this model appeared to be suitable for the population of non-geriatrician clinician-educators. Literature in continuing medical education (CME) reports the relative ineffectiveness of traditional formats focused on lecture-and-slide-show (Thomas, et al, 2006). This study model, which introduces various active-participatory learning methods, adds a resource for medical educators to consider when they plan and implement a new intensive course for physician learners with diverse disciplinary backgrounds.

The themes that emerged indicated that non-geriatrician educators were generally unaware of the need to learn and teach geriatrics principles for improving their practices, even though their practices included a substantial volume of older patients. Also, as the participants identified their interests for participation in the course, such as valuing the experience for its potential to advance their careers, they felt this short-term course was surprisingly useful to their practice. Since this purposeful sample included volunteers with interest in learning and teaching geriatrics,

it is likely that the lack of awareness by other clinician-educators of the value of learning and teaching geriatrics is even greater than what was found in this study. As society needs to increase the number of health care professionals who are competent to care for older adults (AGS, 2005), educational program designers might focus on how to increase awareness among non-geriatricians of the value of continued learning of geriatric medicine principles.

When participants expressed more refined thoughts about their specific teaching projects, they seemed to be more motivated to achieve their targeted behaviors in a timely manner. Within the shorter-term, this intensive course format appears to have been more suitable for the more highly motivated learner, as suggested by Windish (1993). During longitudinal interviews, individuals who utilized the available mentoring commonly expressed the belief that mentoring provides refreshed motivation for them to maintain their behavioral intention to persist. This suggests that, if the program directors identify low autonomy participants, they should consider modifying the current mentoring approach from the availability mode to the scheduled session mode for those individuals. The modified model is supported by Grow's (1991) staged model, which matches educator control with the target learner's self-directedness. Also, mentors may need to focus on facilitating their learners' efforts to define the task specificity early on. Intermediate mentoring processes seemed to promote participants' capacity to maintain their goals persistently to accomplish longer-term outcomes. Further investigation is recommended to study the effect of scheduled mentoring using randomized control groups.

In this study, learner assessments of learner orientation and relative autonomy provided a valuable component to understanding underlying aspects associated with the program outcomes. To a certain degree, the present data support the theoretical assertion that adult learners' autonomy is associated with a desired educational outcome. In the study data, learner autonomy associations were observed to some immediate program outcomes but not with the longer program outcomes. Since the purposeful sample was limited to ten physicians who experienced the intensive course and perceived changes on assessed aspects, to confirm the findings explored through this study and apply them to other settings, further investigations are recommended not only using different cohorts of GMF in larger samples but also comparing different populations. Such studies are recommended to generate advanced theories for future studies in intensive course adult participants and their learner autonomy and self-directed learning outcomes.

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THE ORGANIZING CIRCUMSTANCE REVISITED: OPPORTUNITIES AND CHALLENGES POSED BY THE INFLUENCE OF THE INTERNET

Kathleen B. Rager

Spear and Mocker (1984) postulated that self-directed learning projects were shaped by resources that learners were fortunate enough to find within their local environments. This article updates that concept, which they called the organizing circumstance, in the light of opportunities and challenges posed by the Internet. Rather than be limited by geographic location, technology now makes available to self-directed learners a vast array of worldwide resources. Problems such as the existing technology gap, Internet skills acquisition, the overwhelming amount of information that may be accessed and the challenge of distinguishing reliable electronic resources are discussed and recommendations for practice are highlighted.

Caffarella (1993) has described self-directed learning as “critical to survival and prosperity in a world of continuous personal, community and societal changes” (p. 32). Synonymous with independent learning or self-education, estimates of participation by adults range from 70% (Tough, 1973) to over 95% (Livingstone, 1999). Self-directed learning in the natural setting is commonly defined as “ a process in which individuals take the initiative with or without the help of others in diagnosing their learning needs, formulating goals, identifying human and material resources, selecting appropriate learning strategies and evaluating learning outcomes” (Knowles, 1975, p. 18).

Although Long (1996) has suggested that self-directed learning can be traced back to the ancient Greeks, interest in this form of learning was particularly keen in the 70’s and 80’s. More recently, some decline in the number of studies and articles on the subject has been reported (Brockett et al, 2000) although it is logical to conclude that self-directed learning itself has increased in response to the challenges of the Information Age.

THE ORGANIZING CIRCUMSTANCE

In 1984, Spear and Mocker published a secondary analysis of the qualitative data they had gathered in open-ended interviews with 78 self-directed learners with less than high school completion who were currently engaged in learning projects. They were following up on their surprising failure to find evidence of conscious preplanning on the part of the learners in their original study.

For this secondary analysis, they focused on how and why learners choose particular resources in their learning projects. They concluded that the participants in their study did not select from a variety of alternative resources but rather that they were more likely to rely on a single resource that was accessible to them from within their environments. Their findings were in contrast to prior work on self-directed learning in the natural setting which suggested the presence of careful planning by the learner (Knowles, 1975; Tough, 1973; West, 1992).

Based on this second analysis, Spear and Mocker developed the concept of the organizing circumstance which “postulates that self-directed learners, rather than preplanning their learning projects, tend to select a course from limited alternatives which occur fortuitously within their environment, and which structures their learning projects” (p. 4). They suggested that a change in the individual’s environment was the impetus for learning and that as learning took place, circumstances also changed, often leading to new learning opportunities. “Methods of learning, available resources, and the conditions under which learning occurred were to a great extent determined by the environment, and individual choice was limited (West, 1992, p. 91). Spear and Mocker contended that both research and common sense supported the contention that understanding self-directed learning required consideration of the environment in which it took place. They argued that environmental circumstances were more important than socioeconomic or demographic characteristics in determining participation in self-directed learning.

The organizing circumstance represented an original and important contribution to the knowledge base regarding self-directed learning. It was cited as “a significant departure from previous thinking about the factors that lead to self-directed learning” (West, 1993, p. 89) and as shattering “a certain image of the autodidact directing his whole process at will, to insist rather on the impact of the availability of the resources in the environment” (Tremblay & Theil, 1991, p. 37). The purpose of this article is to examine the organizing circumstance in the light of today’s environment. The more than twenty years since its introduction by Spear and Mocker have brought significant changes in the accessibility of resources, most importantly via the Internet. The issues raised in this discussion concern the impact of the Internet on the self-directed learning process in general and on the concept of the organizing circumstance in particular.

THE GROWTH OF THE INTERNET

Gray (1999) asserts that “...the Internet could probably be classified as one of the most powerful and important self-directed learning tools in existence” (p. 120). He defines it as “a network of hundreds of thousands of computers all over the world, connected in a way that lets other computers access information on them” (p. 119). Further, the World Wide Web, which he believes is the most versatile part of the Internet, “offers learners enormous opportunities for learning, including accessing information on formal educational courses, and collecting an unheard of wealth of data and information on a seemingly endless range of subjects” (p. 120).

Clearly, use of the Internet and the World Wide Web is increasing rapidly. “In 1995, about 28.8 million people in the United States 16 years and over had access to the Internet at work, school or home; 16.4 million people used the Internet and 11.5 million of these people use the Web” (Kling, 1999, p. 58). Those numbers have grown tremendously, for it is estimated that access to

the Internet in the United States doubles every two years. Data reported on the U. S. Census Bureau website (2007) puts the number of persons 18 years or older using the Internet in 2005 at more than 140 million. It is used most frequently for email; other uses listed in descending order of popularity are to search for information, get news, surf the Web for fun, research for job, research a product or service before buying it and research for school or training.

Estimates of Internet and the World Wide Web use in regard to health information are even more dramatic. Blumenthal (2002) cites a February 2002 survey by Harris Interactive (www.Harrisinteractive.com) indicating that 137 million Americans use the Internet and the web, with 110 million reporting using it at least three times a month to look for health care information. Ziebland, Chapple, Dumelow, et al. (2004, p. 565) assert that, "The Internet is changing the way that people learn about health and illness. Health sites and discussion lists are among the most popular resources on the web."

With access and use growing rapidly, the influence of the Internet in regard to adult education and self-directed learning is also increasing. It is a tool which matches well with the long held assumptions about adult learners (Knowles, 1980, p. 44-55). The Internet successfully addresses the desire for increased self-direction; provides a ready resource for responding to new learning challenges related to the developmental tasks of social roles and life experiences; allows for immediacy of application; and is a rich resource for problem solving. Most importantly, the Internet addresses the adult learners' constraints in terms of time and location. All of these factors contribute to its success in this context and give credence to Cahoon's (1998a) contention that Internet growth is "an extraordinary adult learning phenomenon" (p. 71).

THE ORGANIZING CIRCUMSTANCE TODAY

Clearly, the Internet has revolutionized Spear and Mocker's (1984) concept of the organizing circumstance. Now, anyone with a computer, Internet access, and the appropriate skills has the ability to tap into the vast resources that are electronically available about any subject. The Internet has eliminated geographic location as a factor in access to information and in a sense provides everyone that can use it with the same "environment." For the technically astute, the organizing circumstance becomes a vast reservoir of electronically available information. Whereas learning projects were previously structured by the limited alternatives that could be found in the local environment, now vast worldwide resources are accessible. The limitation now appears to shift for those who can use the Internet to the skill of the self-directed learner in searching, locating, selecting, understanding and evaluating the seemingly endless array of resources that are electronically available.

As an example, the impact of the Internet on the self-directed learning process was described in an examination of the experiences of women who have been diagnosed with breast cancer (Rager, 2003, 2004). Clearly evident in the findings was the concept of the organizing circumstance. The participants reported that they did not preplan their learning in regard to their breast cancer but rather that they were reacting to new learning challenges as they occurred. Triggered by a new term, a new decision point, or a new experience in their breast cancer treatment, the learning cycle was repeated as many times as necessary.

These participants also indicated that they made use of the resources that were available to them within their environments. Unlike the participants in Spear and Mocker's study, who principally relied on one resource, these breast cancer patients used multiple sources including print materials, support groups, people, health care facilities, and the Internet. Eileen, one of the participants, expressed it by saying, "It was just kind of what you could find, where if somebody handed you something or somebody in conversation said you might want to try this or look at this website or do this or that kind of thing" (p. 286).

It was not surprising that the Internet emerged as an important resource in this context. It allowed some of the participants to tap into the resources of the National Institute of Health, triangulate data through multiple sources, read the original studies upon which current breast cancer treatment protocols are based and tap into the resources of the top cancer centers in the country for treatment or for second opinions. Particularly in these life-threatening circumstances where time was of the essence, these women struggled to quickly make or confirm treatment decisions that had far-reaching implications. The Internet provided immediate access to an incredible range of resources that previously would have taken weeks or months to locate.

A similar study investigating self-directed learning and prostate cancer (Rager, 2006) adds additional information in regard to the benefits of accessing resources electronically in certain circumstances. The participants in this study indicated that men are reluctant to talk about personal health, including prostate cancer. Gender emerged as an important influence in this regard. As one participant remarked, "...all of us men out there, and we're all afraid to talk about it!" (p. 452). Given this reluctance to talk about prostate cancer, electronic access appears to represent an excellent tool for meeting the need for information while respecting the desire for privacy. The findings supported Ziebland's (2004) observation that, "The Internet can also be used interactively, allowing communication with a geographically diverse interest group, yet allowing anonymity. Some users greatly value this ability to seek information about troublesome symptoms or side effects that may be difficult to discuss in person" (p. 1784).

INTERNET PROBLEMS

However, even as the Internet is hailed as "an important extension of the nation's (and world's) communications infrastructure" (Kling, 1999, p. 57), and as "an extraordinary adult learning phenomenon" (Cahoon, 1998b, p. 5), it is not without its problems in the context of self-directed learning. According to Wilson (2000), "The hype exceeds the reality, and will probably continue to do so for a while" (p. 80). An examination of its role in regard to self-directed learning and the organizing circumstance must acknowledge the presence of issues such as the technology gap, difficulties surrounding Internet skills acquisition, the problem of information overload, and the lack of quality controls in terms of Internet content.

For some, the organizing circumstance has not changed. The Internet has had less of an impact or none at all, on those with low income levels, less education, the elderly and minorities (U. S. Census Bureau, 2007). According to Natriello (2001), "Poor and minority families and their children have less access to a range of resources in society. Thus it is not surprising to discover

that the same pattern applies in the case of the emerging digital infrastructure represented in home, school, and workplace computers connected to the Internet” (p. 260). Gray (1999) refers to the Internet as “liberation for the few” (p. 124) and asserts, “Internet skills represent a highly localized monopoly and seem to be increasing the gap between those who benefit from IT and those who do not, both within and across cultures” (p. 123).

This problem takes on additional significance when placed in the context of using self-directed learning to deal with a health crisis such as breast or prostate cancer. Ziebland (2004, p. 1784) suggests that “an inverse information law operates whereby those who are in the greatest need of information about preventable or treatable conditions are least likely to have access to new technologies.” Among those cited as having the greatest need are the poor; minorities; and the uneducated, who also frequently suffer from poor or inadequate health services.

The technology gap and its impact on adult learning in general have been acknowledged (Cahoon, 1998a; Holt, 1998; Kling, 1999; Merriam and Caffarella, 1999; Natriello, 2001). Certainly, education at all levels has a role to play in promoting the Internet as a universal resource. Youngsters as well as their adult counterparts need to become comfortable and skilled at making appropriate use of it in their learning. Many can be reached through schools and adult education programs. However, the real challenge, as it has always been in the field of adult education, is reaching the non-participant. The impact of the Internet on the organizing circumstance does not currently apply to all but only to those with access and the ability to use it. Accessibility, affordability, usability, and skills acquisition need to be addressed if the Internet is to live up to its potential for everyone in the self-directed learning process.

This challenge is further complicated by the fact that research in regard to how people acquire Internet skills is lacking (Cahoon, 1998b, Kling, 1999). Cahoon (1998a) has suggested that adults learn to use the Internet through some combination of self-teaching, informal learning on the job, and by attending workshops and short courses. He also infers that the popularity of email has functioned as the motivation for many adults to use computers for the first time and that therefore, novice users are learning to use the computer and the Internet simultaneously.

Furthermore, given the pace of technological change, attempts to define essential Internet skills are often obsolete by the time they are published. Even experienced users are challenged to keep up with the need for their own continuous learning. Gray (1999) asserts, “We need to know more about what entry skills and knowledge are essential for those embarking on self-directed learning using interactive technology, what motivates them when using the Information Superhighway, and how the technology can be made user-friendly for the majority, not just those who are IT enthusiasts” (p. 125).

The Internet also presents challenges to the self-directed learner from the standpoint of the vastness of the information that can be accessed. This is especially problematic in light of the fact that many are novice users. Eileen, a breast cancer patient who used self-directed learning extensively after her diagnosis, provides a clear example of someone becoming overwhelmed by the amount of resources that can be accessed. She reported, “I get real frustrated with the Internet, because I pull up something and then there’s like a ca-billion sites and I just want the

relevant ones. I'm not real good at narrowing them down yet and I get frustrated" (Rager, 2003, p. 284). Eileen is an elementary school teacher whose contact with the Internet as a tool in self-directed learning before her diagnosis was minimal.

Additionally, because quality controls do not exist in regard to information that is available on the Internet, the issue of evaluating electronically accessed material is currently left to the individual. As Holt (1998) indicates, "Clearly, scholarship and research are transformed by the ability to search and access tremendous quantities of on-line text and data. However, students may not be skilled in checking the accuracy or authenticity of the information they discover" (p. 64). This problem may be exacerbated for the self-directed learner who does not have an instructor to provide feedback on her efforts. Problems with Internet material include misinformation, pranks, information that is out-of-date, biased information, information that is unauthorized or not properly cited, incomplete information, and commercial messages disguised as information (Holt, 1998).

School children today are being taught how to critically evaluate electronically accessed resources, whereas most of their adult counterparts have never had that opportunity. The many adult self-directed learners who are turning to the Internet for information are likely to be on their own when it comes to determining the quality of the information they are accessing. As self-taught Internet users, most have probably not had the benefit of interactive tutorials such as Internet Detective (2006) and net.TUTOR (2005) which are available on-line at no charge. These programs do an excellent job of teaching how to evaluate the quality of Internet resources. It is also likely that they have not encountered information concerning the five criteria of authority, accuracy, currency, objectivity, and coverage that are recommended as starting points in evaluating Internet material (Alexander & Tate, 1996; Kapoun, 1998).

Interviews with breast cancer patients concerning their self-directed learning indicated that determining the quality and reliability of the Internet information that they accessed was problematic especially given the importance and stressful nature of their situations (Rager, 2003). For example, Karla spent 268 hours engaged in self-directed learning in regard to her breast cancer in the nine months that followed her diagnosis. She indicated that learning helped her to understand what was happening to her and gave her a modicum of control in an uncontrollable situation. It also allowed her to become an active participant in the decisions being made regarding her treatment.

Karla's experience with the Internet was not positive. "I was horrified on the Internet...It seems that the most horrific situations are put on the Internet. Sometimes you don't even know if they're true and this is something I don't think people are aware of or even think about. You don't know who's putting this out there. But, I read some stuff and I thought, 'I don't have a chance in hell!' and I thought, 'I'm not going there anymore. This is not what's going to happen to me.' So I had to stop doing the Internet thing" (Rager, 2003, p. 284).

On the one hand, Karla was right to distance herself from unsubstantiated resources and from those that were too frightening for her. On the other hand, because she stopped using the Internet altogether, she lost the opportunity to access some of the quality resources that are available through the American Cancer Society, the Susan G. Komen Breast Cancer Foundation

and the National Institute of Health, to name a few. Her experience with the Internet highlights a critical problem that those interested in self-directed learning need to address. Although the Internet is an incredible resource for those who have access and the skills to use it, judging the reliability of the information that may be accessed is critical.

This problem takes on even greater magnitude because many Internet users assume the veracity of what they access and are not even aware of the need to critically evaluate the material they have electronically accessed. Gray (1999) offers this advice, “As an educational information base, the Internet...has its drawbacks since much of the information sent through the Internet is not peer referenced or reviewed, thus its veracity cannot be substantiated. Learners need to be conscious of this and treat all they see on the Internet with caution” (p. 124).

CONCLUSION AND RECOMMENDATIONS FOR PRACTICE

Many would agree with Caffarella’s (1993) assessment that being skilled at self-directed learning is essential in today’s continuously changing world. Perhaps it is time to add that being skilled at using the Internet is also critical. Spear and Mocker’s concept of the organizing circumstance has been profoundly impacted by the rapid proliferation of Internet use. For the technologically astute, geographic location had been removed as a limitation in the ability to access a vast array of worldwide resources. However, even as we celebrate the impact of the Internet on the self-directed learning process in general and on the organizing circumstance in particular, it must be acknowledged that it is not without its problems. Currently, the Internet represents both an opportunity and a challenge for self-directed learners. Problems such as the technology gap, Internet skills acquisition, information overload, and the lack of quality controls regarding content need to be resolved before the Internet lives up to its potential in this context.

Moreover, these challenges present adult educators with important opportunities for service. Practitioners can seek to provide adult students with experiences that incorporate Internet use where ever possible and appropriate. Those adult learners who are new to computers and to accessing resources electronically can be made aware of the importance and usefulness of these tools in terms of their own situations. They can be assisted in developing their skills or directed to resources that will meet this need.

Critical Internet abilities include searching and locating information as well as evaluating electronic sites and information in terms of the five quality criteria: authority, accuracy, currency, objectivity and coverage. Adult learners can be made aware of resources such as net.TUTOR (2005) and Internet Detective (2006) that assist in developing these skills. Additionally, opportunities can be provided though adult education programs and experiences for demonstrating the ability to distinguish worthwhile electronically accessed resources from those that are not. Finally, outreach programs particularly through libraries and community centers should target the hard-to-reach and underserved in an effort to shrink the existing technology gap so that everyone who chooses to engage in self-directed learning will benefit from a technologically enhanced organizing circumstance.

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