



*Iota Lambda Sigma Journal for Workforce Education*  
Journal for Workforce Education (JWEEd)

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- Predictors of Participation in an Employer Sponsored Walking Program
- *CottonEcology*: An Educational Program for High School and University Students in Textiles, Fashion Merchandising, and Related Fields
- Adult Learning in the Workplace
- Secondary Education Collaborates With “The Business of Art and Design” Postsecondary Program

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# Journal for Workforce Education (JWE<sub>d</sub>)

Volume I, Issue II

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## Introductory Issue

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## Predictors of Participation in an Employer Sponsored Walking Program

By Joan B. Sechrist, PhD, RD; John M. Ritz, EdD; Robert J. Spina, PhD; Walter F. Deal, III, PhD

### Abstract

The purpose was to identify predictors for participation in an employer sponsored walking program, and to determine if participation impacted clinical measurements and exercise amount. The research design for this study was a pre-test, post-test design, and included a control group of non-participants. The setting was an employer sponsored pedometer program at one facility in southeast Virginia in fall, 2006. Baseline data were collected on 284 employees who registered for the program, and a control group of 14 non-participants. Pre-test and post-test data were collected from the control group and a group of 23 participants who submitted six months of walking logs. Data collection included exercise amount, clinical measurements, and daily steps logs. Participants were given a Yamax Digi-Walk SW 701 pedometer and instructions to count their daily steps, and a log book to track their steps for 6 months. Resulting baseline data showed a significant difference in weekly exercise amount, age and mean daily first week of steps. Mean daily steps for the first week was 7546 for program completers and 5622 for the one-month participants. Program completers had statistically significant improvements in systolic blood pressure, BMI and exercise amount. Predictors for program participation included age, baseline weekly exercise amount, and first week of steps.

### Predictors of Participation in an Employer Sponsored Walking Program

#### Introduction

Unhealthy employees cost organizations in time, money, and morale (Partnership for Prevention, 2005). Sick employees tend to have higher rates of absenteeism and injuries on the job as the workload is forced onto other employees (Chapman, 2005; Pronk, 2004; Blair, 1986; Goetzel, 1998; Hirschman, 2006). Sedentary employees, especially obese sedentary employees, have higher health care costs than moderately active and highly active employees (Wang, McDonald, Champagne, & Edington, 2004). Employer sponsored wellness programs address these issues to improve the health of their employees and reduce expenditures for health-related issues.

The U.S. Department of Health and Human Services publication, *Healthy People 2010*, specifically addresses the need for "regular physical activity throughout life" for health and well-being. Additionally, "regular physical activity decreases the risk of death from heart disease," reduces "blood pressure in persons with elevated levels," and "aids in weight control" (U.S. Department of Health and Human Services, 2000, p. 27). Although the prevalence of regular exercise has increased from 2001 to 2005, fewer than half of all Americans met the objective for at least 30 minutes of physical activity most days of the week (MMWR, 2007). Worksites are specifically mentioned in *Healthy People 2010* (2000) as instrumental in promoting healthy eating and exercise for Americans; objectives relating to health education and a supportive work environment are described in *Healthy Workforce 2010* (Partnership for Prevention, 2001).

Chenoweth (2002) recommends studying health risk factors in the evaluation of worksite health promotion programs. Citing data from the Health Management Associates database, Chenoweth (2002) stated that people with multiple health risks had proportionally higher health care costs compared to those with fewer or no health risks. Additionally, he cites some of the highest "median annual risk factor costs per employee per year" to include tobacco use, physical inactivity, obesity, hypertension, and elevated cholesterol based on data from Crawford and Company, Health Management Associates, Health Evaluation and Research Organization, Milliman and Robertson, Inc., National Council on Compensation Insurance, and the University of Michigan (Chenoweth, 2002). With research pointing to the importance of a healthy work environment, are work programs effective for employees?

Pedometers can be useful tools in measuring physical activity, and by wearing a pedometer, some may be motivated to increase their physical activity (Tudor-Locke, 2002). By increasing physical activity, participants can improve their health and lower their cardiovascular risks (Thompson, 2005). Tudor-Locke (2002) contended that 10,000 steps per day was a reasonable goal for healthy adults, however, she stated that this goal may be too high for sedentary adults who typically take between 3,500-5,500 steps daily. Additionally, approximately 3,100 to 4,000 pedometer-measured steps represent 30 minutes of moderate intensity walking (Tudor-Locke, 2002; Welk, Differding, Thompson,

Blair, Dziura, & Hart, et al., 2000; Wilde, Sidman, & Corbin, 2001).

Iwane, Arita, Tomimoto, Santani, Matsumoto, Miyashita, et al. (2000) evaluated the effects of walking 10,000 steps daily on 730 manufacturing employees. They concluded that walking 10,000 or more steps daily during the 12-week program was effective in lowering elevated blood pressure, sympathetic nerve activity, and maximal oxygen intake. However, over the course of the 12-week program participation dropped from 730 at the onset to 83 completing the program (Iwane et al., 2000). The authors concluded that continuous exercise is difficult to maintain, especially at the workplace.

Others have reported attrition with walking programs (Chan, Ryan, & Tudor-Locke, 2004; Schneider, Bassett, Thompson, Pronk & Bielak, 2006), including a 12-week program and a 36-week program respectively. Schneider, et al., (2006) reported losing 32% of the initial 56 participants and of the 38 participants that completed the intervention, only 50% adhered to the goal. Chan et al. (2004) reported that just 59.8% of participants completed the program and 25.4% dropped out before submitting eight weeks of pedometer data and the final assessment. In their meta-analysis of 26 studies of pedometer use assessment, Bravata, Smith-Spangler, Sundaram, Gienger, Lin, Lewis, et al. (2007) reported an average drop-out rate of 20%.

Although attrition rates have been published, little information is available on possible identifiers for program participation. The primary purpose of this investigation was to examine baseline data on program participants to identify characteristics that would predict participation in the walking program. The data was compiled from doctoral research conducted on the impact of participation in an employer sponsored walking program on employees' body mass index (BMI), blood pressure, and amount of exercise.

## Methods

### Design

Data were evaluated from the original research, and it was a quasi-experimental, pre-test, post-test design. Participation in the walking program was voluntary, and all registrants who completed baseline evaluations were accepted into the program. There was a purposeful sample of walking program participants. A control group that did not participate in the walking program was formed by evaluating existing data on clinical measurements and exercise amount from health

screenings conducted at the onset and at the conclusion of the study.

Participants were given a Yamax Digi-Walk SW 701 pedometer and instructions to count their daily steps, and a log book to track their steps. The pages of the log book were perforated, pre-stamped and addressed; participants were instructed to mail these in monthly. Program participants received monthly post cards with health benefits of exercise information and ways to increase exercise. Incentives, including a portable radio and tee-shirt, were sent at three months and at six months for completing program requirements.

### Sample

The study population was an employer group of 1300, and 284 employees registered for the program. Due to attrition, 79 submitted the first month of step logs and participation decreased over the months respectively to 58, 40, 38, 32, and 29. Twenty-three participants submitted six months of walking logs and pre-test and post-test data.

### Measures

At baseline, employees completed a *WalkAbout with Healthy Edge* registration form that included questions on exercise amount and had clinical measurements taken onsite for blood pressure and weight. A health screening, which was a standard service of the wellness program, was held onsite by qualified health professionals prior to the initiation of the walking program and again in six months, coinciding with the completion of the program. Health screenings were routinely sponsored by the employer every six months for this group, and employees signed a standard health screening consent prior to having their clinical measurements taken. All data were entered into the secure *Walkabout Access 2000* database, and BMI was calculated based on weight and height measurements using the calculation of weight in kilograms divided by height in meters squared. Data on clinical measurements for employees not participating in the study, but attending the health screening immediately prior to program initiation and coinciding with the end of the program, were evaluated as a control group.

Data on employees' exercise habits were evaluated according to their response to the *Walk About with Healthy Edge* pre-test and post-test survey question: "I currently exercise \_\_\_\_\_ times per week." Additionally, daily steps obtained from the exercise logs, submitted monthly by employees in hand-written logs, were evaluated to measure changes in exercise

amount.

### Intervention

At registration, participants were given a *WalkAbout with Healthy Edge* packet that included a pedometer, explanation of the program and use of the pedometer, a log book, and exercise information. Packet instructions encouraged participants to work towards the goal of achieving 10,000 steps daily. Monthly post cards were sent to participants with motivational messages to continue walking and recording steps. Incentives were mailed to participants for completing three months of steps and for completing the program.

Six months after the initiation of the program another health screening was held for all employees onsite. *WalkAbout with Healthy Edge* participants completed a final survey that included questions on tobacco use and exercise amount and had clinical measurements taken.

### Statistical Analysis

All statistical analyses were performed with SPSS version 15.0. Means and standard deviations were calculated for each dependent variable, including BMI, blood pressure, and weekly exercise amount to describe the sample and illustrate group differences and relationships. A one-way ANOVA was completed on baseline data for the group that submitted one month of pedometer steps, the group submitting no step logs, the group who completed the program, and the control group. Within groups paired *t* tests were conducted on the means for all dependent variables to test for significant improvement over the six month program between those completing the six month program and a control group. Paired *t* tests were performed on daily steps taken to assess changes in the number of steps taken from baseline to the conclusion of the study. An alpha level of 0.05 was used to judge statistical significance.

### Results

Baseline data on program drop-outs and participants submitting only one month of step logs were evaluated to identify characteristics that would predict participation in the walking program. There was a significant difference in baseline weekly exercise amount between drop-outs and those completing 6 months of step logs,  $F(1, 231) = 10.19, p = .002$  (two-tailed), drop-outs exercised less than twice weekly.

There was a significant difference in week 1 of steps recorded,  $F(1, 47) = 4.30, p = .044$ , between these groups. The mean of week 1 steps for the group sub-

mitting just one month of step logs ( $M = 39354, SD = 19548$ ) was 13,468 lower than the mean of week 1 steps for program completers. There was no statistical difference in baseline weekly exercise amount between 1 month and 6 month participants,  $F(1, 47) = .50, p = .48$ , respectively means were 2.43 and 2.82 times weekly. Neither group achieved the 10,000 daily step goal in the first week, however, those that went on to complete the program had a daily average of 7546 steps during the first week, well above the 5622 average daily steps taken by the group who dropped out after one month. This impacted the overall first month of steps recorded,  $F(1, 47) = 5.20, p = .027$ , the group only submitting one month of steps had a much lower monthly tally at 170,622 steps versus 220,117 steps taken by those that completed the program. Additionally, there was a significant difference in ages for completers and those not participating fully in the program. Of the group registering but submitting no steps, the mean age was 37 years, while the mean of the group submitting one month of steps was 42 years, and program completers average age was 45 years.

In the group completing the program, significant improvement was found between clinical measurements for pre-BMI ( $M = 30.80, SD = 6.14$ ) and post-BMI ( $M = 29.996, SD = 5.95$ ),  $t(22) = 2.65, p = .015$  (two-tailed) and pre-systolic blood pressure ( $M = 128.17, SD = 18.1$ ) compared to post-systolic blood pressure ( $M = 122.87, SD = 16.4$ ),  $t(22) = 1.79, p < .05$  (one-tailed). This group had a significant improvement in their exercise habits; pre-test and post-test weekly exercise amounts respectively were 2.82 (1.99) and 4.23 (2.18),  $t(21) = -3.14, p = .005$  (two-tailed). Mean daily steps for the first week were 7451.40 ( $SD = 3419.48$ ) and for week 24 were 9069.73 ( $SD = 2678.10$ ),  $t(22) = 3.14, p = .005$  (two-tailed). The mean daily steps taken remained below the 10,000 step goal throughout the six-month program. However, daily steps and overall exercise amount increased in a moderately obese, sedentary sample. Clinical measurements on a control group from health screenings pre and post study were evaluated and there were no significant changes in BMI, blood pressure, or exercise amount over the six month study period.

### Discussion

Baseline clinical measurements for registrants submitting no step logs, the group submitting one month of steps and program completers are presented in Table 1. There were no significant differences in baseline blood pressure measurements and BMI between those completing the program and those that did not complete the program. Blood pressure was in the pre-hypertensive range and BMI was in the obese range defined by the National Institutes of Health (2002).



Predictors for participation in a pedometer program are presented in Table 2. Significant differences were found between program completers and those submitting no step logs and the group submitting one month of steps for the variables weekly exercise amount, first month of steps and age. The group that submitted no step logs reported exercising 1.76 times weekly and mean age was 37 years; both were significantly lower than program completers that reported exercising 2.82 times weekly at baseline and mean age was 45 years. Participants that submitted one month of step logs had significantly less physical activity measured by 34% fewer steps for the first week and 29% fewer steps during the first month. Predictors for program partici-

pation included age and weekly exercise amount. In the study population, younger, sedentary employees tended not to participate in the program after registering. Additionally, those submitting one month of steps took an average of 5622 steps during the first week which is close to the range of 3,500-5,500 steps daily Tudor-Locke (2002) defined for sedentary adults. Their first week of steps was 34% lower than those that went on to complete the program.

Those completing the six month walking program had statistically significant reductions in clinical measurements for BMI by .80 ( $p = .015$ ) and systolic blood pressure by 5.3 mm Hg

Table 1

<b>Baseline Clinical Measurements of Completers, One-month, No Step Logs and Control Group</b>				
<b>Measurement</b>	<b>Mean</b>	<b>SD</b>	<b>n</b>	<b>F</b>
<b>6 Month</b>				
Systolic Blood Pressure	130.57	17.62	28	
Diastolic Blood Pressure	81.64	10.07	28	
BMI	30.77	5.83	28	
Age	45.36	10.80	28	
<b>One-month steps Submitted</b>				
Systolic Blood Pressure	124.57	14.92	21	
Diastolic Blood Pressure	79.71	9.13	21	
BMI	30.77	8.90	21	
Age	41.81	11.08	21	
<b>No Steps Submitted</b>				
Systolic Blood Pressure	126.10	17.07	205	
Diastolic Blood Pressure	81.02	11.01	205	
BMI	31.33	8.02	205	
Age	36.55	9.98	205	
<b>Control</b>				
Systolic Blood Pressure	123.29	11.65	14	
Diastolic Blood Pressure	80.00	8.81	14	
BMI	32.25	6.94	12	
Age	42.43	12.61	14	
<b>Systolic Blood Pressure</b>				.843
<b>Diastolic Blood Pressure</b>				.173
<b>BMI</b>				.210
<b>Age</b>				7.920**

Note: ANOVA performed between 6 month group with 1 month group, no steps group and control group

\*\* $p < .01$ , two-tailed



Table 2

<i>Baseline means Exercise Measurements for Completers, 1 Month and No Steps Groups</i>					
Measurement	Mean	SD	<i>n</i>	<i>df</i>	<i>F</i>
<b>Exercise, weekly</b>				253	10.91**
No steps	1.76	.16	205		
1 Month Group	2.43	1.91	21		
6 Months Group	2.82	1.95	28		
<b>First month steps</b>				48	5.20*
1 Month Group	170,622	76,400	21		
6 Months Group	220,117	74,306	28		
<b>Week 1, daily steps</b>				48	4.30*
1 Month Group	39,354	19,548	21		
6 Months Group	52,822	24,456	28		

Note: Exercise weekly and age compared groups of no steps and 1 month with month 6 group

\* $p < .05$ , two-tailed. \*\* $p < .01$ , two-tailed

( $p < .05$ ), and increased weekly exercise to 4.23 times ( $p = .005$ ). Average daily steps during week 24 were 9069.73 (SD = 2678.10),  $t(22) = 3.14$ ,  $p = .005$  (two-tailed), a significant increase over week 1 steps taken and a 21.7% increase in physical activity, see Table 3. These results were consistent with Bravata, et al. (2007) meta-analysis reported outcomes of decreased BMI by .38 and decreased blood pressure by 3.8 mm Hg, and increase in the physical activity by 26.9%.

The control group was statistically similar to participants at baseline; clinical measurements for blood pressure were in the prehypertensive range and BMI was in the obese range. There were no significant changes in exercise or clinical measurements at the end of six months, see Table 4.

Table 3

<i>Means of Completers' Group for Clinical Measurements and Exercise</i>				
Measurement	Mean Pre-test	Mean Post-test	<i>df</i>	<i>t</i>
Blood Pressure				
Systolic	128.17 (18.10)	122.87 (16.40)	22	1.79†
Diastolic	80.26 (10.40)	79.48 (12.60)	22	.41
Body Weight				
BMI	30.80 (6.14)	29.996 (5.95)	22	2.65*
Exercise, weekly	2.82 (1.99)	4.23 (2.18)	21	- 3.14**
Daily Steps, week 1	7451.40	3419.48	22	
Daily Steps, week 24	9069.73	2678.10	22	- 3.14**

Note: SD are in ( )  
 \*\* $p < .01$ , two-tailed.  
 \* $p < .05$ , two-tailed.  
 † $p < .05$ , one-tailed

Table 4

<i>Means of Control Group for Clinical Measurements</i>				
<b>Measurement</b>	<b>Mean Pre-test</b>	<b>Mean Post-test</b>	<b>df</b>	<b>t</b>
Blood Pressure	123.29 (11.65)	124.29 (11.20)	13	-
	80.0 (8.80)	79.29 (10.40)	13	.31
				-
				1.20
BMI	32.25 (6.94)	32.42 (8.16)	11	-.23
Age	42.43 (12.61)		14	
Note: SD are in ( )				
Non-significant results, $p > .05$				

### Conclusion

Potential predictors of program participation include reported weekly exercise amount and age based on comparisons of baseline data for participants. In this study, program drop-outs included a mean exercise amount that was less than twice weekly, confirming that this was a sedentary group. Additionally, the first week of steps submitted was significantly lower for those that only submitted one month of steps compared to those going on to complete the program. Age was a significant factor in those that went on to complete the program; the mean age for this group was 45 years compared to the drop-outs mean age which was 37 years. Baseline clinical data were not significantly different for any of the groups; they were all in the pre-hypertensive and obese ranges. Those that completed the six-month program had a significant reduction in systolic blood pressure and BMI. Based on the findings presented, *WalkAbout with Healthy Edge* program increases physical activity in a workplace setting and improves systolic blood pressure and BMI measurements for participants completing the six month program, and potential predictors of participation include baseline weekly exercise, age, and first week of steps recorded.

The authors declare that there are no conflicts of interest.

### References

- Bravata, Smith-Spangler, Sundaram, Gienger, Lin, Lewis, et al. (2007). Using pedometers to increase physical activity and improve health. *Journal of the American Medical Association*, 298(19), 2296-2304.
- Blair, S., Smith, M., et al. (1986). Health promotion for educators: Impact on absenteeism. *Preventive Medicine*, 15, 166-175.
- Chan, C., Ryan, D., & Tudor-Locke, C. (2004). Health benefits of a pedometer-based physical activity intervention in sedentary workers. *Preventive Medicine*, 39, 1215-1222.
- Chapman, L. (2005). Meta-evaluation on worksite health promotion economic return studies: 2005 update. *Art of Health Promotion*, 19 (6), 1-11.
- Chenoweth, D. (2002). *Evaluating worksite health promotion*. Champaign, Illinois: Human Kinetics.
- Goetzel, R., Anderson, D., & Whitmer, W. (1998). The relationship between modifiable health risks and health care expenditures: An analysis of the multi-employer HERO health risk and cost database. *Journal Occupational Environmental Medicine*, 40, 843-854.
- Healthy workforce 2010: An essential health promotion sourcebook for employers, large and small*. (2001). Partnership for Prevention, Washington, DC.
- Hirschman, C. (2006). Promoting health. *Employee Benefit News*, May, 2006. Retrieved June 3, 2006 from the Employee Benefit News and SourceMe-

dia, Inc. website: <http://www.benefitnews.com/detail.cfm?id=8960>

Iwane, M., Arita, M., Tomimoto, S., Santani, O., Matsumoto, M., Miyashita, K., et al. (2000). Walking 10,000 steps/day or more reduces blood pressure and sympathetic nerve activity in mild essential hypertension. *Hypertension Research*, 23 (6), 573-580.

*Leading by example: Improving the bottom line through a high performance, less costly workforce.* (2005). Washington, DC: Partnership for Prevention.

MMWR. (2007). Prevalence of regular physical activity, among adults --- United States, 2001 and 2005. *MMWR Weekly*, 56(46), 1209-1212.

National Institutes of Health. (2002). *The practical guide: identification, evaluation, and treatment of overweight and obesity in adults.* Washington, DC: U.S. Department of Health and Human Services, NIH publication no. 02-4084.

Pronk, N., Martinson, B., Kessler, R., Beck, A., Simon, G., & Wang, P. (2004). The association between work performance and physical activity, cardiorespiratory fitness, and obesity. *Journal Occupational Environmental Medicine*, 46(1), 19-25.

Schneider, P., Bassett, D., Thompson, D., Pronk, N., & Bielak, K. (2006). Effects of a 10,000 steps per day goal in overweight adults. *American Journal of Health Promotion*, 21(2), 85-89.

Thompson, D. (2005). Copy and share: Step it up with pedometers. *ACSM Health and Fitness Journal*, 9 (6), 5.

Tudor-Locke, C. (2002). Taking steps toward increased physical activity: Using pedometers to measure and motivate. *President's Council on Physical Fitness and Sports Research Digest*, 3 (17), 1-8.

U.S. Department of Health and Human Services. (2000). *Healthy People 2010: National promotion and disease prevention objectives.* Washington, DC: U.S. Department of Health and Human Services, Conference Edition-Volume 1.

Wang, F., McDonald, T., Champagne, L., & Edington, D. (2004). Relationship of body mass index and physical activity to health care costs among employees. *Journal Occupational Environmental Medicine*, 46, 428-436.

Welk, G., Differding, J., Thompson, R., Blair, S., Dziura, J., & Hart, P. (2000). The utility of the Digi-Walker step counter to assess daily physical activity patterns. *Medicine and Science in Sports and Exercise*, 32(9), S481-S488.

Wilde, B., Sidman, C., & Corbin, C. (2001). A 10,000-step count as a physical activity target for sedentary women. *Research Quarterly for Exercise and Sport*, 72(4), 411-414.

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## ***CottonEcology: An Educational Program for High School and University Students in Textiles, Fashion Merchandising, and Related Fields***

Michael F. Kosloski, Jr.; Sharon R. Davis; Tiffany Machado; and David L. Netherton

### **Abstract**

*CottonEcology* is an academic program that was developed in response to a grant offering sponsored by the Cotton Board and managed by Cotton Incorporated. It was designed with the purpose of educating and heightening awareness of cotton's renewable, recyclable, and sustainable qualities to high school and college students, as well as educators, in the fields of textiles, fashion merchandising, and related fields. In a world where cognizance of eco-friendly characteristics becomes more and more ubiquitous, *CottonEcology* provides a systematic and engaging approach to introducing and reinforcing the eco-advantages of cotton relative to its competitive textiles. More than 5,000 students and teachers, predominantly throughout the State of Virginia, were both exposed to and provided with a wide variety of information, as well as corresponding instructional tools and activities for use in high school and collegiate classrooms. For the more than 5000 students and teachers that were exposed to the program, the instructional system was met with success. Participants overwhelmingly have stated that they intend to continue to use the system in future instruction.

### ***CottonEcology: An Educational Program for High School and University Students in Textiles, Fashion Merchandising, and Related Fields***

#### ***Introduction***

In response to the 2008 Cotton Education Program Request for Proposals via the Cotton Board and Cotton Incorporated, Old Dominion University submitted a plan to develop *CottonEcology*, an educational program designed specifically for high school and college students of textiles, fashion merchandising, consumer sciences, and related fields. The focus of the program was to educate these students about cotton fiber and its properties as a renewable, recyclable and sustainable fiber.

The focus on the eco-friendly features of cotton is an aspect of textiles, fashion merchandising, and consumer sciences that has not typically been included

in those courses, despite our country's growing awareness of the need to conserve and carefully manage natural resources. *CottonEcology* was designed to be both relevant and engaging for teens and young adults in the 14-24 year old age group. It was essential to reach these students with the message of cotton's eco-friendly qualities, as they are not only consumers, but are also preparing for careers in the fields of textiles, fashion, marketing, and education.

The foundation for the content in this curriculum was the renewability, recyclability, and sustainability of cotton relative to other textiles. The information below is a topical introduction to the content from which the curriculum was developed.

*Renewable* – Cotton is the most important apparel fiber, meeting 52% of the worldwide demand for apparel fiber (Kadolph, 2007). As a result, it is critical to understand that the cotton plant is a renewable resource. Cotton produces fiber used in textile manufacturing and enough cotton seeds to replenish its own crop for the next season. In addition, it provides feed for cattle and livestock, and is used in the production of cottonseed oil for food manufacturing. Cotton production also contributes to the soil conservation and renewal. The increasing use of reduced tillage systems over the past 15 years has improved the impact of wind and water on the soil, and has resulted in appreciably reduced topsoil erosion that was historically commonplace in cotton farming. In addition, tillage reduction contributes to the natural, ongoing enrichment of the soil in which cotton is grown (Cotton, Inc., 2008d).

The cotton industry has continuously sought new markets for cotton and cotton products. An example of the renewability of cotton is its current use as hydromulch. Through research, cotton ginning byproducts have been utilized to create a hydromulch used in a variety of agricultural endeavors. Cotton hydromulch has also been used directly by cotton producers, which controls erosion, protects the soil, and conserves water, thereby enhancing its own sustainability, as well (Cotton, Inc., 2008e).

*Recyclable* - Because of its natural characteristics, cotton products have the ability to be recycled into a wide variety of products (Wingate & Mohler, 1984). Strategies for recycling of cotton products can be as simple as utilizing worn or tattered t-shirts or terry cloth towels

for use as cotton rags. Some of the strategies can be more pervasive and widespread, such as the Cotton Inc. COTTON. FROM BLUE TO GREEN<sup>®</sup> denim drive, whereby college students donated more than 14,000 pieces of denim clothing for recycling. The denim was reprocessed by an affiliate partner, and subsequently converted into natural fiber cotton insulation (Cotton Inc., 2008c).

*Sustainable* - The cotton industry has gone to great lengths to improve and ensure the sustainability of cotton, with an ongoing commitment to environmental improvement. In comparison to petroleum-based synthetic fibers, cotton is self-sustaining and does not contribute to net greenhouse emissions (Cotton, Inc. 2008b). According to Cotton Incorporated (2008a), cotton growers in the United States have made improvements in how they manage soil, water, air quality, energy, and habitat resources. In addition, over the past 25 years, cotton growers in the United States have decreased their need for pesticides by 50%; cut back on their use of irrigated water by 45%; and produced substantially higher yields on virtually the same acreage (Worsham, n. d.). Highlighting sustainability advances in cotton are the following:

- U.S. agriculture is governed by a stringent regulatory system which ensures food and fiber safety. U.S. cotton is regulated as a food crop.
- U.S. cotton has a track record of continuous improvement, with respect to water, pesticides, habitat, soil preservation, etc. The transparency of the U.S. system allows for continuous monitoring and improvement.
- U.S. cotton yields (productivity) are increasing and are significantly higher than the average of other countries. Therefore less land is required to supply a growing world demand for fiber.
- The U.S. is among the first adopters of the new technologies which are driving environmental improvement, such as biotech varieties, integrated pest management strategies, conservation tillage, water optimization strategies, etc. Ultimately, this is disseminated to the rest of the world.
- The U.S. agriculture extension service provides continuous education and best management practices to U.S. producers (Cotton, Inc., 2008a).

### **Purpose**

The purpose of the project was to develop an educational program designed specifically for high school and college students of textiles, fashion merchandising, consumer sciences, and related fields. The focus of the program was to educate students about cotton fiber and its properties as a renewable, recyclable and sustainable fiber. Dictated by the terms of the grant sponsored by Cotton, Incorporated, there were three specific goals in mind. They are:

- *To raise the awareness and understanding among students in textiles and related fields about cotton fiber and its properties as a renewable, recyclable and sustainable fiber.* Proposed projects and activities considered all cotton options for the environment and marketplace as they relate to renewability, recyclability, and sustainability.
- *To foster awareness of cotton and its environmental properties among students entering apparel and textile-related careers.* Students in the targeted *CottonEcology* demographic (Fashion Marketing and Family Consumer Science high school students, ages 14-18; and university level Fashion Merchandising Students, ages 18-24) were training for careers in the apparel and textile merchandising fields. The *CottonEcology* curriculum was designed specifically to reach this population.
- Cotton Inc. also indicated that it *desired activities that included course materials, events, and lectures that address awareness and understanding among students about cotton and its properties as a renewable, recyclable and sustainable fiber.*

This project satisfies all of the goals described above, which are highlighted in the sections to come.

### **Curriculum**

A *CottonEcology* curriculum was developed by a team of Old Dominion University faculty in the College of Education's Department of Occupational and Technical Studies with expertise in Marketing Education, Textiles, Fashion Merchandising, Training, and Technology.

The project had three components: curriculum development, dissemination and evaluation, which are detailed in the sections which follow.

### **Curriculum Development**



The *CottonEcology* curriculum was designed to reach the target population of high school and college students in courses such as textiles, fashion merchandising, consumer sciences, and related fields. Because the largest potential populations of recipients of the information are in public high school, the process began by identifying appropriate high school courses and their respective learning objectives within the state of Virginia. All fashion and textile-oriented family and consumer science courses were examined at the high school level and five courses were targeted, based on the mandated learning objectives contained within the course curricula. The specific courses were:

- Introduction to Fashion Design and Marketing (Family and Consumer Sciences)
- Fashion Marketing (Marketing Education)
- Advanced Fashion Marketing (Marketing Education)
- Fashion Design I (Family and Consumer Sciences)
- Fashion Design II (Family and Consumer Sciences) (Virginia's CTE Resource Center, 2008).

Commonalities in learning objectives were sought between the four courses, and a series of specific learning objectives within those courses were identified predicated on their alignment with the content.

Next in the process was to identify the specific university level fashion merchandising courses at Old Dominion University that were most aligned with the content. The following courses included instruction on cotton's eco-friendly properties, and were modified to include the specific content germane to this project:

OTS 102, Advertising Procedures  
 OTS 220, Fashion Industry  
 OTS 424, Textiles, Construction and Apparel Analysis  
 OTS 422, Product Development

Again, the learning objectives for each of the courses were examined, and commonalities sought as they related to the goals of this project. Course objectives remained constant, but lessons and activities were created to include cotton's eco-friendly characteristics.

Each lesson developed included clearly identified learning objectives, lesson plans, and hands-on lab-oriented and web-based learning activities that focused on cotton's renewable, recyclable and sustainable properties. The project team examined existing course learning objectives as they related to the material, and developed new learning objectives that were satisfied both the instructional needs of the existing

course objectives, as well as met the needs of the grant. These guided the design of lessons that are adaptable to class length and schedule. This built-in flexibility should help to maximize the usefulness of the *CottonEcology* curriculum for teachers, increasing the likelihood of implementation in the classroom. Additionally, a *CottonEcology* Web site, <http://www.cottonecology.com> (eventually to relocate to <http://www.lions2.odu.edu/org/deca/cottonecology>), was established that includes web-based activities; lesson plans which can be downloaded for use at both the high school and college levels; and links to resources available at other sites including the Cotton Inc. Web site.

In addition to the Web-based activities, links, and downloads, several complete Web lessons targeting high school-aged students were developed for the Web site, increasing the accessibility of the curriculum for teachers outside of the team's immediate reach. Once the lessons were developed, they were field tested at Old Dominion University's summer Fashion Academy for high school students. The Fashion Academy participants were prototypical members of our target audience, and a suitable group to pilot test the *CottonEcology* curriculum. At the conclusion of pilot testing, feedback was gathered from surveys of participants and samples of completed work were reviewed to gauge the program's effectiveness in increasing student awareness of cotton's eco-friendly features. Based on this data the curriculum was adjusted as needed.

### **Curriculum Dissemination**

The Career and Technical Education department of the Virginia State Department of Education was contacted, and state directors for both Marketing Education and Family and Consumer Sciences were made cognizant of the program. The director for each discipline was eager to examine the content of the *CottonEcology* program, and both agreed to work with the team collaboratively. State directors made contact with their teachers announcing the program, encouraging teachers to closely examine the offering. Presentations were also scheduled for both the Virginia Association of Marketing Educators annual summer conference, as well as the Virginia Association of Family and Consumer Sciences Educators annual summer conference.

Curriculum kits were developed for teachers in attendance. The kits included a printed copy of complete turnkey lesson plans, samples of work, a custom compact disc that included the lesson plans, Web-links, and other resources, and a sample of a raw stalk of cotton, to be utilized for demonstrative purposes.

### **Summer Conferences and Workshops**

The *CottonEcology* curriculum was unearthed at both annual summer conferences, with 115 high school teachers in combined attendance, representing approximately 80% of the state's representative population (Acuff, 2008). Each teacher in attendance was provided with a curriculum kit at no cost. Following the distribution of the kits, teachers were then led through an interactive presentation of the *CottonEcology* curriculum contents. The presentation included a complete explanation of the goals, purposes, and objectives for each lesson, and how they related to the existing high school curricula and performance objectives. Presentations also highlighted curriculum flexibility and demonstrated ways that teachers could use *CottonEcology* to teach students about the environmental properties of cotton. During the presentation, attendees were provided the opportunity to explore the features of the *CottonEcology* Web site, and how it might be utilized as an instructional tool in their classrooms. Throughout the presentation there were a series of "mini-activities" to provide the teachers with a sampling of how the various lessons and activities could be applicable in their classrooms.

In follow up to the summer conferences, two regional workshops were scheduled in Virginia Beach, Virginia, and Richmond, Virginia. The purpose of the workshops was two-fold. The first goal of the workshops was to provide exposure to the *CottonEcology* curriculum to those teachers who might have had scheduling conflicts during their respective summer conference. The second goal of the workshops—and the primary goal—was to provide teachers the opportunity to experience the lessons prior to classroom implementation. They offered them the chance to witness and participate in the lessons first as a student, allowing them to critically examine the lessons and activities. This interaction gave them the experience needed to modify and adapt each lesson so that it best fit into their own classroom style, experience, and local curriculum. ODU faculty also showed the teachers how to modify lessons to meet local program curriculum requirements and overcome constraints.

### **Curriculum Content**

Several lessons were developed as a result of the *CottonEcology* program to be utilized in the high school and college classrooms. Following is a brief description of each lesson. All lessons and supporting materials can be found at <http://www.cottonecology.com> (eventually to relocate to <http://www.lions2.odu.edu/org/deca/cottonecology.com>).

### **Topic 1 – Renewable, Sustainable, Recyclable**

The title of the first lesson is "Cotton: Renewable, Recyclable and Sustainable," and the learning objective is, "Explain the ecological characteristics of the natural fiber cotton as renewable, recyclable, and sustainable." To provide background information, the instructor uses the lesson plan and accompanying resources to provide the learner with some of the general traits, characteristics, and benefits of cotton, such as absorbency, its inability to stay wrinkle-free, and its comfort. This portion of the lecture is accompanied by a seven slide PowerPoint presentation to assist and guide the instructor. This intuitively leads the instructor into the next segue of the lesson which describes the three most significant ecological benefits of cotton, as determined by Cotton, Inc.; its sustainability, renewability, and recyclability. Each of these three major concepts are thoroughly defined and explained, and examples are provided. Using an alternate mode of delivery, students at each level then watch the video, "Textiles, the Sustainability Revolution," which can be found online. The video has an accompanying note taking sheet for students.

A series of additional activities also accompany the lesson, and provides flexibility for the teacher to utilize whichever activities that best suit their student population, as well as their local program performance objectives.

**Supplemental Activity 1- Cottonboard Activity.** Using real cotton fiber, seed and hulls to represent the different parts of a cotton plant, students are asked to construct a poster board that represents the environmentally friendly uses of cotton. The board's main emphasis should be the various ways the cottonseed, fiber and hull are renewable, recyclable and sustainable. Students are encouraged to be as creative as possible when crafting their arrangement, and images should be clean and in a collage-like arrangement. It is important that the multiple images identify each part of cotton as renewable, recyclable and sustainable resource. The Cottonboard activity forces students to think about a variety of applications for renewability, recyclability, and sustainability.

### **Supplemental Activity 2 – Green Street Case Study.**

The purpose of this activity is to have student's match their understanding of cotton as an eco-friendly fiber to their understanding of meeting a business's target market expectations. Students are provided with a case study whereby they take the role of store buyer for an environmentally conscious retail store. Because the simulated retailer not only carries apparel and accessories, but also giftware and novelty items, the case study directs students to explore the limitless number of existing recycled cotton products currently



in use. They then must select which products would most likely appeal to their environmentally aware target market. The intended outcome is for students to learn more about what types of products are currently being recycled, and what kind of products exist.

Supplemental Activity 3 – Cottonseed Cupcakes. The purpose of this activity is to explore and apply the renewable and healthy properties of cottonseed oil in cooking. Using the handout from the *CottonEcology* packet, students apply their knowledge of cotton's renewable and healthy option as a cooking source with a cupcake taste test. In small groups students prepare and bake two batches of cupcakes; one with cottonseed oil and the other with vegetable oil. While the cupcakes are baking students observe the process and complete the Cottonseed Cupcake worksheet. This worksheet provides students with information about cottonseed oil as it has the students explore the production of cottonseed oil, its use in cooking and flavor, and nutritional value. Once the cupcakes are done, the students then fill in the CottonEcology: Cottonseed oil Cupcake Matrix comparing the flavor, texture and baking results of both batches of cupcakes. Have students share their results and thoughts of cooking with cottonseed oil versus traditional cooking oils with the class. The learning outcome is that students explore cotton's renewability as a healthy cooking option.

Supplemental Activity 4 – Textiles, The Sustainability Revolution. The purpose of this learning activity is for students to learn about efforts to reduce the environmental impact of cotton manufacturing and processing through the development and use of new ecologically sound practices in manufacturing. This is shown on a CottonInc.com video stream entitled Textiles, The Sustainability Revolution, and can be located from the lesson in the *CottonEcology* teacher packet. Students watch the video individually on a PC (or project the video stream feed to a projector and show it to the class members simultaneously). As students watch the video, they follow along and fill in the blanks on the students' handout for Textiles, The Sustainability Revolution. The learning outcome is to expose students to a wide variety of methods being utilized in the cotton industry to reduce the environmental impact of cotton manufacturing on our ecology.

Supplemental Activity 5 – A Persuasive *CottonEcology* Slogan. The purpose of this activity is to encourage students to apply their knowledge of cotton's eco-friendly characteristics, and to apply them in other areas of industry and life. Students also learn that by noting these characteristics as beneficial, educating the public can also create a win-win marketing situation for both an organization and its consumers. The

students are placed into small groups. Each group then develops a creative slogan that promotes the eco-friendly properties of cotton as a renewable, recyclable and sustainable resource. They must then present their ideas to the remaining students, and must analyze the ideas of others. Brainstorming and collaborative thinking should result in significant inventory of ideas.

Supplemental Activity 6 and 7 – Review and Assessment. In addition to the assessments provided with each lesson, Teachers are provided with a PowerPoint Jeopardy game complete with hyperlinks, sound, etc. This unit review is modifiable, and may be adapted to the course content by the teacher if some of the activities contained within this unit are not utilized. The unit also included a exam.

### **Topic 2 – Cotton Fashion Trends**

The title of the second lesson is, "Cotton Fashion Trends," and the learning objective is, "Identify examples of trends cotton brings to fashion." To provide background information, the instructor uses the PowerPoint presentation included with this lesson. The presentation defines and discusses trends and how they impact the fashion industry. Students are then introduced to four specific trends, with the fourth being "going green." The lecture explain what "going green" means, how it has impacted the fashion industry thus far, why "going green" is a trend and not a fad, and finally, the role that the cotton industry plays in this movement. The eighteen slide presentation contains a significant amount of information about cotton, and the benefits to both retailers and consumers for taking advantage of the eco-friendly characteristics that cotton has to offer.

Following the lecture, students are provided with a handout "Tuning into Fashion." The handout discusses and explains the genesis of trends in the fashion industry, including information such as the impact of the media, current events, trade magazines, and other sources. Students are then asked to critically analyze these sources of trends, and to genuinely reflect on situations where they have observed the onset of a new trend, relating it back to one or more of the specified sources. In addition, students are provided information explaining fashion forecasting; what it is, how it works, and why it is important in the fashion industry.

Once all of background knowledge is provided, students are asked to apply what they've learned with the "Cotton Couture" activity. The purpose of this activity is to introduce students to high end designers who use cotton in their collections and lines. Students are

asked to research and describe three high-end designers who used cotton in their most recent runway collections. Students are asked to identify the designers, the cotton pieces in their collections, a description of how cotton is used in the design, and to make at least one cotton friendly suggestion for the designer to enhance their collection with cotton. The learning outcome is to explore how many high-end designers currently utilize cotton in their line-ups, and how cotton is being used.

Finally students are provided with a case study entitled, "Green is the New Black: A Celebrity Green Makeover." The case study asks the students to assume the role of fashion stylist, and then provides a brief list of tasks a stylist might be responsible for. In the case study, the student is asked to simulate being responsible for a specific celebrity who is interested in becoming more environmentally friendly with regard to their attire. The student is charged with developing an eco-friendly wardrobe for the celebrity by creating three "cotton friendly" looks worthy of a public celebrity. Students compose a portfolio of the wardrobe predicated on its ecologically friendliness, as well as the compatibility with the persona of the selected celebrity. The learning outcome is again to expose to students to the plethora of products that currently employ cotton as an eco-friendly textile, as well as to connect that concept with a specific target.

### **Topic 3 – Personal Selling**

The title of lesson three is "What is selling?" and the performance objective is to demonstrate the selling process given a customer with a need for a product and knowledge about the features and benefits of the product. Students are provided with background knowledge of selling, beginning with the nature of selling. The lecture then covers a variety of topics, including understanding customers, features and benefits, the sales process, determining needs, product presentation, handling objections, closing the sale, and follow up.

Students then engage in two activities, the first focusing on converting features into benefits. The teacher selects one or more cotton products that the students are familiar with, and asks them to identify all of the features and benefits of the product. This process necessarily leads the student back to consider the renewability, recyclability, and sustainability of cotton, as well as other benefits specific to cotton and how they apply to that particular product. The learning outcome is not only to continue to expose students to the eco-friendly features of cotton, but also to remind students that one key to a successful business is to educate the consumer as to the features of the product

and the benefits of owning or using the product. It also provides students with the requisite knowledge for the selling process as defined by the state curriculum.

Building on the initial lecture, as well as the features and benefits activity, students are then asked to develop and deliver a sales presentation for a cotton product. The learning outcome not only reinforces the features and benefits activity, but also correlates with the sales process as defined by the Virginia state curriculum in both fashion marketing courses.

### **Additional Lessons and Activities**

Additional lessons and activities were provided to offer maximum flexibility and adaptability to each teacher's curriculum. Below is a brief description of the lessons.

Redesign Project 1 – The purpose of this activity is to explore the recyclability and sustainability of cotton. Students are provided with a template of a "classic" Vogue or Chatelaine magazine cover, and are provided decorative materials that include cotton and cotton products such as cottonseed, thread, and swatches. Students are asked to creatively design the cover using the materials provided. The learning outcome is to assist students in understanding that the recyclability and sustainability of cotton knows no bounds, and is only limited by one's creativity.

Redesign Project 2 – Recyclability. Students are provided with a bag filled with cotton fabrics, such as old denim jeans, pillow cases, curtains, shirts, tablecloths, etc. Utilizing the fabrics they have been provided, they are then asked to design an entirely new article of clothing. Students are encouraged to be resourceful, maximizing the features of the articles provided, and to be creative in their designs. The learning outcome is to have students understand limits in fashion design, and well as to explore the possible that creativity can exist regardless of the environment.

### Wood Pulp vs. Cotton Pulp

Two activities are provided to help the students differentiate between wood pulp and cotton pulp paper. Using 100% wood pulp and 100% cotton pulp paper, students are provided with two templates with three dress outlines each. The templates are identical in every way excepting the origin of the materials. They are then asked to paint the dresses using watercolors, pencils, pens, and markers. Students will observe some of the rudimentary differences between the paper content such as the absorbency of the cotton pulp paper.

Learners are also provided with two paper airplane

templates, one on 100% wood pulp paper, and the other on 100% cotton pulp paper. They are then asked to create and test the planes. While the cotton pulp paper will stay in flight longer (if created properly), students will learn that the cotton pulp is significantly more durable than the wood pulp. It will last and retain its shape longer than its wood pulp counterpart.

Because of the flexibility and combination of activities provided with each lesson, and keeping in mind that the lessons were developed around specific courses (four high school courses, four ODU fashion merchandising courses), the lessons described can be modified to most or all of these courses with minimal modifications. However, two lessons were also designed with specific collegiate courses for students of the Old Dominion University fashion merchandising program.

OTS 102, Advertising – Cotton Advertising Campaign.

Students are to assume that their team is part of a company's advertising department assigned to this project. They are charged with planning an ad campaign for a new environmentally-friendly store that features cotton apparel and other products that contain cotton (i.e. hair products, makeup, food items, etc.). The retailer's name is "Cotton Cents," and the tagline is, "Cotton...It Makes Cents."

Students are then asked to research and develop their company to intelligently and creatively create the advertising campaign. Included in their project should be company information, competitor information, product information, customer research, and marketing integration. Students should utilize two advertising mediums, along with a rationale and justification for each. The learning outcomes for students are to create and present an advertising campaign, thinking through the entire process, step by step. Simultaneously students must integrate cotton's ecologically friendly qualities, and understand how consumers perceive those qualities.

OTS 422, Fashion Design and Coordination. Given background information on the consumer awareness gap for the general population, students are asked to author a paper on the renewability, recyclability, and sustainability of cotton. Once that has been completed, they are then charged with developing an activity that will create awareness about the topic within the target market of 16-24 year old males and females. The activity must educate the consumer and reach the entire target market. Students can have multiple activities that reach different segments of the target market, but must ultimately reach the entire target market.

***CottonEcology.com***

To organize and coordinate the *CottonEcology* program, as well as to provide accessibility to those who were not able to attend previous workshops or conferences, a Web site was developed using the domain [www.cottonecology.com](http://www.cottonecology.com). The site was designed with teachers and students in mind, and provides information and entertainment for both. *Cottonecology.com* contains a section with complete turnkey online lessons, as well as additional resources for both teachers and students. Prior to the workshops, online registration was offered. Currently the workshop section of the site highlights the teacher activity from the workshops. To attract students, the site contains engaging and educational games and activities, such as online cotton hangman, that will encourage repeat visits from students. The site also provides information about educational opportunities for students at Old Dominion University who wish to explore careers in fashion merchandising, training, and marketing education. The site will eventually be moved to <http://www.lions2.odu.edu/org/deca/cottonecology>.

***Evaluation and Assessment***

Data were collected from the first drafts of the lessons after they were pilot tested during the Fashion Academy. Separate data were accumulated from those who attended each of the two summer conferences and the two regional workshops. A Web survey was developed for teachers to gauge the project's impact on knowledge and awareness of cotton's eco-friendly features, as well as the extent of usage of the *CottonEcology* project

More than 5,000 students and teachers were exposed to the *CottonEcology* project during its inaugural year. 61 of the 115 teachers who attended the conference provided feedback on their usage and satisfaction, as is noted below in Table 1 and Table 2. Based on the reported teacher satisfaction with the product, and given the fact that more than half of the *CottonEcology* users did not receive the curriculum directly from Old Dominion University, it is expected that this number will sustain itself or grow in future years, particularly given the increasing pervasiveness of the green movement in today's society.

Table 1

<b><u>CottonEcology</u> Conference and Workshop Attendees</b>		
<b>Attendees</b>	<b><i>n</i></b>	<b>% of total</b>
Virginia Association of Marketing Educators and Virginia Association of Family and Consumer Sciences Educators Summer Conference Attendees	115	46.6
Richmond Regional Workshop	11 <sup>1</sup>	4.4
Virginia Beach Regional Workshop	10 <sup>1</sup>	4.0
Number of teachers who received lessons via teachers who attended a summer conference workshop	132	53.4
Number of teachers who either used the lessons in the fall semester or plan to do so in the spring semester	247	100.0
The number of students exposed to at least part of the curriculum	4940	100.0
<sup>1</sup> Teachers also attended summer workshop.		

Table 2

<b>Teacher Satisfaction With the <u>CottonEcology</u> Curriculum</b>		
<b>Teachers' Rating of the Curriculum Materials</b>	<b><i>n</i></b>	<b>% of total</b>
Rated curriculum <u>quality</u> "Excellent."	53	86.9
Rated curriculum <u>quality</u> "Very Good."	8	13.1
Rated curriculum <u>quality</u> "Good" or lower.	0	0.0
Rated usefulness of the materials "Very Useful."	55	90.2
Rated usefulness of the materials "Useful."	6	9.8
Rated usefulness of the materials "Average" or lower.	0	0.0

## References

- Acuff, Sharon, November 17, 2008. Personal Interview.
- Cotton, Inc., (2008a). *US Cotton: The Most Sustainable Cotton Fiber*. Retrieved online November 10, 2008 from <http://www.cottoninc.com/sustainability/US-Cotton-Most-Sustainable-Cotton/>
- Cotton, Inc., (2008b). *The Sustainability of Cotton Compared to Other Fibers*. Retrieved online November 10, 2008 from <http://www.cottoninc.com/Cotton-vs-Other-Natural-Fibers/Cotton-Sustainability-vs-Other-Fibers/>
- Cotton, Inc., (2008c). *Cotton. From Blue to Green™*. Retrieved online November 12, 2008 from <http://www.cottoninc.com/Recycling-cotton/COTTON-FROM-BLUE-TO-GREEN-PROGRAM/>
- Cotton, Inc., (2008d). *Statement Regarding United Kingdom Advertising Standards Authority (ASA) Ruling*. Retrieved online November 10, 2008 from <http://www.cottoninc.com/sustainability/United-Kingdom-ASA-Ruling/>
- Cotton, Inc., (2008e). *A Renewable Approach*.

Retrieved online November 10, 2008 from <http://www.cottoninc.com/CottonGrowerArticles/New-Market-Opportunities-for-Cotton/>

Programs at Old Dominion University. He who continues to teach and do research in fashion, training, and workforce development.

Farese, L. S., Kimbrell, G., & Woloszyk, C. A. (1991). *Marketing Essentials*. Mission Hills, CA: Glencoe/McGraw-Hill. (Referenced in lesson plan.)

Frings, G. S. (2008) *Fashion: From Concept to Consumer* (9<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall. (Referenced in lesson plan.)

Kadolph, S. J. (2007). *Textiles* (10<sup>th</sup> ed.) Upper Saddle River, NJ: Pearson Prentice Hall.

Manning, G. L. and Reece, B. L. (2007). *Selling Today: Creating Customer Value* (10<sup>th</sup> ed.). Upper Saddle River, NJ: Pearson Education

Price, A., Cohen, A. C., & Johnson, I. (2002), *Fabric Science* (7<sup>th</sup> ed.). New York, NY: Fairchild Publications.

Virginia's CTE Resource Center, (2008). *Finding Virginia Resource Publications*. Retrieved online June 28, 2008 from <http://cteresource.org/verso2/search>

Wingate, I. B., & Mohler, J. F. (1984). *Textile Fabrics and their Selection* (8<sup>th</sup> ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

Worsham, J. B. (n. d.) *Sustainability*. Retrieved online November 12, 2008 from <http://www.cottoninc.com/Sustainability/>.

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## Adult Learning in the Workplace

Naomi S. Rock

### Abstract

Learning in the workplace is as old a concept as life itself. In the beginning of time, there were no formalized workplaces for individuals. Work was part of life itself, for work meant survival. As time passed and the industrial revolution took place around the world, workplace learning also changed. During the 1980's a complete shift in worker training was created. Countries determined workers needed to be involved in all process of the company, not just be trained for a single task. The idea was that worker involvement would facilitate worker ownership of the job, thereby increasing productivity and effect. Research clearly shows employees will benefit most when they take part in the decision making and can set the course for their training.

### Adult Learning in the Workplace

Learning in the workplace is as old a concept as life itself. In the beginning of time, there were no formalized workplaces for individuals. Work was part of life itself, for work meant survival. Human beings had to work for food, clothes, shelter and survival; this was their workplace. Fathers and mothers taught their children skills necessary to survive and learning was done by doing, modeling and explanation.

As time passed and the industrial revolution took place around the world, workplace learning also changed. World War II, with the need to train soldiers and women and children working in factories, dramatically changed the look of workplace learning. Illeris (2003) noted during the inter-war period there were three very different approaches to adult learning in the workplace. In Russia, the cultural historical approach developed by Lev Vygotsky and Aleksei Leontyev was used, in Germany the critical theory approach developed by the Frankfurt School, combining the Freudian approach and Marxist approached was used and in the United States, the humanist approach was used. Each of approaches led to very different outcomes in production and efficiency.

The Cultural-Historical Activity Theory (CHAT) created from Vygotsky's theory was explained by Dixon-Krauss (2003) as being a theory that focuses on the mutual relationship between the individual and human society. She explained that an individual's identity, values and knowledge is formed and developed by association with family, school and society in general. This approach views culture as a key role in the development of the individual. Fenwick (2008) stated CHAT has just recently been introduced into North American literature; therefore it is a relatively new concept for employers. She stated employers strive to meet their objectives with the CHAT model by meeting its own production needs while trying to balance societal pressures and values of the individual worker. Learning is centered on the needs of the workplace. The employer using this model can appear to have contradiction between what it says and what is actually done in the workplace since production is the major focus of the business.

The critical theory approach developed in Germany focused on the oppression of the individual, groups and society. It did this by external forces and influences. In this theory, human action was scientifically studied and analyzed. The goal of this theory was to change the world (Peca, 2000).

The human behaviorist theory considers humans have a potential for growth. It emphasizes learning is centered in experience and individuals have the freedom and responsibility to control their own learning. Abraham Maslow and Carl Rogers were instrumental in developing the human behaviorist theory. Some of Sigmund Freud's approaches to human behavior are also considered in this principal. Each of these theories discusses how individuals learn by meeting their own needs (Merriam, Caffarella and Baumgartner, 2007).

Many other writers have researched and reported



on the history of learning in the workplace. Inman and Vernon (1997) noted that during the nineteenth century, there was an initiative to incorporate vocational training into secondary education. In the twentieth century, an initiative to develop corporate schools and more rationalized approaches to learning for the job was begun. World-wide competition led to the need to improve worker performance, therefore needing worker training. Technology advances created a need to constantly upgrade and add new training in the workplace.

During the 1980's a complete shift in worker training was created. The United States and other industrialized countries determined workers needed to be involved in all process of the company, not just be trained for a single task. The idea was that worker involvement would facilitate worker ownership of the job, thereby increasing productivity and efficiency. Instruction and worker training changed to using a more active role for employees. Role-playing, games, simulations, formation of teams and collaboration was instituted in training sessions. The purpose of the collaborative and cooperative activities was to increase problem-solving abilities, give workers the ability to critically complete self-assessments and see the bigger picture of the business (Inman and Vernon 1997).

As the look and action of training changed in the workplace, researchers began to study how individuals learn and how that could be transformed into the work setting. Billett (2004) stated that the most essential element in the work place was to understand how individuals learn and then put those practices into the work setting. In studying employee training, Dwyer (2004) noted that employers spend much time, energy and money developing and conducting training, yet, many managers report that the training was a waste of time and little was learned. Dwyer stated trainers who conduct "development" sessions have not made the connection that training is education. The trainers have no knowledge of how adults learn.

Knowles (1989) is a respected author and researcher of the andragogical model of learning. Knowles stated there are great differences in the way adults learn as opposed to children. He noted the andragogical model of education is based on the following assumptions:

adults have a need to know why they need to learn about something before they will put the energy into learning, adults believe that they are responsible for their own lives and they want to be self-directed learners, and adults have a large resource of background knowledge and experiences from which they draw from when learning.

During the twenty-first century, the design of workplace learning will continue to change. The workplace itself is changing. Just a few years ago, the idea of a workplace was the physical location of the job. With technology advancements, the workplace is now considered to include the physical location as well as shared meanings, ideas, behaviors and attitudes of the workplace. Many people work from home but are still considered a valuable part of the workplace. People also work long distances from their employer's physical location. Workplace learning is also complicated by the trends of job sharing, flexible hours, changes in the global market. This causes creativity in offering workplace training and development. (Matthews 1999).

A workplace model was developed by Rylatt that is called mindsets of workplace learning. He noted the following concepts are essential to the process of workplace learning:

1. Workplace learning must be greater than change. Learning processes must be of a higher or more sophisticated level, which help to create an attitude of commitment and opportunity. Change is no longer seen as a threat.
2. Workplace learning must be systematic and interactive. Workplace learning must incorporate a wide range of inputs into its design, delivery, and assessment. Not only must the approach be systematic, but it must also be highly integrated.
3. Workplace learning must be geared to business outcomes. If the goal of workplace learning is "to bring about measurable improvements in performance, productivity, quality and potential" it must be linked to the short and long term needs of the organization.
4. Workplace learning must provide meaning, self-worth and sustainment for all employees. Workplace learning activities should address the whole person, incorporating



much more than a development of technical and functional skills.

5. Workplace learning must be learner driven. Workplace learning should be flexible enough to respond to the needs of the individual.
6. Workplace learning must be competency based. For organizations to acquire the most benefit from workplace learning programs need to be tied closely to achievement of particular competencies.
7. Workplace learning must be "just-in-time." As workplaces are becoming more accountable for the "learning" they provide, there is a need to deliver workplace learning in a timely manner.
8. Workplace learning must expand into new frontiers of knowledge. Organizations must be prepared to seek information from internal and external sources to help them maintain a viable strategic intent.

A criticism of this model is that outside sources and other controlling influences as well as individual characteristics of individual employees is not taken into account (Matthews, 1999, p.24-25).

In simplifying Knowles work, Dwyer (2004) stated adults have no desire to be treated like children. Adults do not respond well to training sessions that are set up in a classroom lecture style with a teacher. The term *teacher* is associated with school in the younger years of life. Adults reflect to days of sitting in rows of desk and a dictator or authoritarian controlling their days in school. In order to avoid this, the terms facilitator and resource person have been accepted as titles for person directing learning in the workplace. Adults respond better to an individual who acts as a trainer or facilitator. Adults want to have input into what they learn. They also have their own goals and experiences and want to set their own objectives for learning a task. Adults have a need to have their opinions and ideas heard and respected.

On the other end of the spectrum, Dwyer (2004) noted in new learning situations, adults become anxious and uncomfortable and may revert to dependent behaviors. In order to calm this anxiety

and help adults move forward with self-directed learning, the leader of the training session needs to be a facilitator. A facilitator guides the learning process instead of dictating it and teaching.

Senge (1990) expanded this idea into what he called a "learning organization." He stated the center of a learning organization is the act of changing the mind from an individual believing he is separate from the world, to believing that he is connected to the world. The emphasis of his model is that in the workplace, employees need to make a connection between job performance and learning as well as seek long-term solutions to all parts of the job as opposed to short-term solutions. Learning should take place in the work setting as part of the job as opposed to in a classroom where the knowledge must then be transferred to the job.

In reporting on the work of Senge, Spencer (2001) explained workplace learning is the learning that takes place at work and learning organization is a collective effort of learning by the individuals in the workplace. The concept is that an individual grows as the organization grows. He noted this idea is beneficial for all. With this model, an organization may allow more decision making at lower levels in the workplace, workers have the chance to choose how to complete their tasks, work team are encouraged which in turn empowers the workers.

Researchers have studied techniques and methods for teaching adults in addition to studying the thoughts and ideas adults have about learning. Workplace learning should be broader than just a process for training and development of specific tasks. Matthews (1999) developed key issues that need to be addressed in workplace learning. They are:

- the learning context
- the learning reason
- the learning process
- the learning outcomes; and
- sustained development

Matthews (1999) developed a working definition of workplace learning from these key issues. Her definition is: "workplace learning involves the

process of reasoned learning towards desirable outcomes for the individual and the organization. These outcomes should foster the sustained development of both the individual and the organization, within the present and future context of organizational goals and individual career development (p. 19-20). She elaborated by stating that learning in the workplace is affected the characteristics of the workplace and conditions of the environment. In order to improve productivity, efficiency and profit, the quality of the workplace must be closely examined and enhanced.

Although it may seem superficial to the employer, what employees learn can be determined by the atmosphere of the learning environment. Employees will engage more in the learning process if they are in a comfortable room with comfortable informal seating with a relaxed atmosphere. The facilitator should not take the stance of a teacher at the head of the classroom, but should move around engaging in the learning process. A good facilitator will be a good listener, a supporter, able to use humor and avoid punitive actions (Dwyer 2004).

Dwyer (2004) reported that there is no one best method for facilitating learning in adults. Because adults prefer to be self-directed learners, they should be allowed to participate in setting goals and objectives for the learning session. One way to do this is for the facilitator to conduct a needs assessment prior to the training session. The facilitator can set up the material for presentation according to the assessments, therefore having the necessary information planned in advance. In order for the employees to believe that they have a part in planning the session, the objectives should be discussed and written down as a group. The objectives written in the class should mirror those found after conducting the needs assessment.

Although the concept of active learning gained popularity in the 1980's, it is still believed learning will happen when the participant is actively involved in the process. When the body senses of sight, touch, hearing, smelling and tasting are utilized in the learning activity, more information will be digested by the learner. When higher level learning is needed, experiential learning using

the five senses is the most effective (Dwyer 2004).

Another focus of research in adult learning in the workplace is informal learning as compared to formal learning. Berg and Chyung (2008) presented an analogy for understanding the difference in the two. They stated formal learning is like riding a bus, the route and schedule is the same for everyone. Informal learning is like riding a bicycle in that the individual decides the route, schedule and pace.

There is very little flexibility in formal learning. Adults reflect upon past learning experiences and develop their attitudes of workplace learning based on these. Adults have learner identities that were formed from early learning experiences. Adult educators can learn a tremendous amount by listening to the stories that employees tell related to their previous educational experiences. The adult educators need to be sensitive to the emotional responses and statements made by the employees about the training. This information will assist in knowing how to plan for and direct the class. (Wojecki, 2007).

Informal learning has endless possibilities as to when and where it can take place. Informal learning can be incidental within a day to day activity; it can be planned or unplanned, intentional or unintentional, as well as self-directed. Informal learning can happen during social interactions, group activities, mentoring and during problem solving tasks. Adults prefer the informal learning styles. However, informal learning is so embedded in daily life, that many people do not recognize the event as actual learning.

As training needs emerged and changed across the United States, institutions of higher learning and businesses began to examine what types of programs were needed to implement the most efficient and successful training and development for employees. Lewis and Peasha (1998) completed an investigation of a new degree program that has been introduced from this need. It is called Human Resource Development (HRD).

Lewis and Peasha (1998) began their investigation by examining a study completed by the

American Society for Training and Development of the trends and models of practice for HRD. The study identified four areas of competencies needed for practitioners in the HRD field. The first was *technical* which included instructional skills and techniques for identifying skills needed to perform specific job duties. The second was *interpersonal* which included skills in listening, coaching and questioning. The third was in business understanding and the fourth was intellectual.

Along with the information in this study, human resource development professionals have produced a large volume of literature that explores workplace learning. The literature has focused on developing models, identifying the needs of adults learners, how to improve productivity, how to improve attitudes of employees toward work, how to enhance job potential and much more. Many models, ideas and concepts have been developed for workplace learning, but no single method has been set apart. There are major differences between some of the models that have been developed. This leads one to believe more research should be conducted to determine how learning truly develops in the everyday work world (Fenwick, 2008).

Colleges and universities are beginning to develop HRD programs based on the findings above. The programs generally fit into different strands of development. One strand focuses on instruction principles, strategies, teaching methods and choice of materials for teaching. Another strand focuses on instructional design and approaches to instruction. A third strand deals with how training and learning can be transferred (Lewis and Peasha, 1998). All of these strands relate to the material presented in this paper on adult learning in the workplace.

As businesses begin to examine the training and development needs of their employees, they also examine the HRD section of the business. Since HRD is a relatively new concept, it can be considered unique. HRD has its own set of norms, values and beliefs. However, it is not regulated, there are no set standards or requirements for becoming a practitioner and there is no licensure requirement in the United States. This leaves the

field open for many interpretations and beliefs. When developing HRD programs, employers are left to their own ideas and devices as to what type of program they chose for their employees. This does not guarantee a successful program for training and development.

The HRD programs of higher learning will hopefully elevate the problem noted by Dwyer (2004) which was that trainers do not have knowledge of how adults learn and therefore much of the training that is done in the workplace is not beneficial. HRD programs can enhance the knowledge of what works in teaching adults. With the implementation of the correct methods, employers can see efficiency, production and profits increase. A major need in the field of HRD is in obtaining empirical research which shows the value of HRD programs and need for businesses to invest in trained HRD employees.

In listening and talking with co-participants of many training sessions, I have heard statements of dread in having to attend a training session developed by the employers. Co-participants have made very strong statements that their time is valuable, they want the information to be useful to their job and they want the instructor to have more knowledge of a particular subject than they do. Many times this is not the case. The facilitator or teacher has put together a program about which they have no working knowledge. They have no idea about how adults learn and the session becomes a lecture that does not stimulate thought or problem solving.

In contrast, I have talked to individuals who were please with the outcomes of a training session. Although I have no data to prove the statement, it has appeared that the training sessions people have been pleased with have been ones where the facilitator has a deep knowledge of the topic. The facilitator engaged the employee in critical thinking, problem solving and relating the information to their particular job.

Millions of dollars are spent each year across the United States in training and development for employees. Some of the training is conducted in the workplace and some is done by the employee traveling to another site. It would be most

beneficial for employers to become proactive in determining the wants and needs of the employees for training. The research clearly shows that employees will benefit most when they take part in the decision making and can set the course for their training.

### References

- Berg, S.A., and Chyung, S. Y. (2008). Factors that influence informal learning in the workplace. *Journal of Workplace Learning*, 20(4), 229-244.
- Dixon-Krauss, L.A., (2003). Does action research count as scientifically-based research? A Vygotskian meditational response. *American Educational Research Association*, 1-16.
- Dwyer, R., (2004). Employee development using adult education principles. *Industrial and Commercial Training*, 36(2), 79-85.
- Fenwick, T., (2008). Workplace learning: Emerging trends and new perspectives. *New Directions for Adult and Continuing Education*, 119, 17-26.
- Inman, P. and Vernon, S. (1997). Assessing workplace learning: New trends and possibilities. *New Directions for Adult and Continuing Education*, 75, 75-85.
- Lewis, T., and Peasah, K. (1998). An investigation of the instructional thoughts, beliefs, and preferences of selected HRD practitioners. *Journal of Industrial Teacher Education*, 35(2), 6-28.
- Matthews, P. (1999). Workplace learning: developing an holistic model. *The Learning Organization*, 6(1), 18-29.
- Merriman, R., Caffarella, R., and Baumgartner, L. (2007). *Learning in Adulthood: A comprehensive guide*. San Francisco: Jossey-Bass.
- Peca, K., (2000). Critical theory in education, philosophical, research, sociobehavioral and organizational assumptions. *Document Resume*.  
Senge, P. The Fifth Discipline Fieldbook, New

York: Doubleday, 1994.

- Spencer, B., (2001). Changing questions of workplace learning researchers. *New Directions for Adult and Continuing Education*, 92, 31-40
- Wojecki, A., (2007). 'What's identity got to do with it, anyway?' Constructing adult learner identities in the workplace. *Studies in the Education of Adults*, 39(1), 168-182.

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## Secondary Education Collaborates With “The Business of Art and Design” Postsecondary Program

Virginia R. Jones and Ben Capozzi

### Abstract:

Halifax County Public Schools and the Southern Virginia Higher Education collaborate to offer students a unique opportunity to study two creative skills programs – digital arts and design and product design and development. Based on 21<sup>st</sup> skills of creative applications and use of technology, the schools developed a program of high school, community college, and four-year college study emphasizing the skills necessary for design oriented and creative careers as well as other professions through real-world experience of project-based learning and collaboration.

### Secondary Education Collaborates With “The Business of Art and Design” Postsecondary Program

The workforce of today requires students versed in creative thinking skills to succeed in work and life (Pink, 2005). Historically, public education, especially in academic areas, focuses on science, mathematics, and technology. These skills enable students to understand the “what” and the “how.” Embracing creative thinking practices in the classroom along with art theory integration into the overall curriculum also enables students to create and imagine as well as explore the “why” which is vital to compete in the 21<sup>st</sup> century global workplace (Skorton, 2008).

Halifax County Public Schools and the Southern Virginia Higher Education Center (SVHED) are collaborating to provide local students with a unique opportunity to study two creative skills programs - digital arts and design and product design and development - while in high school. Participating students receive dual-enrollment credits from the two local community colleges, Danville and Southside Virginia Community while still in high school. This articulation agreement between secondary and postsecondary allows the students to continue their studies at the

SVHED and pursue an Associate in Applied Sciences degree from the community colleges in either focus area. The vision of the SVHED program is to “develop creative and sustainable human capital for industry and entrepreneurship in a collaborative, multidisciplinary learning environment” (Capozzi, 2009). This program emphasizes business skills necessary for success in design-oriented and creative careers as well as other professions through the real-world experience of project-based learning and collaboration.

Halifax County Public Schools (HCPS) employs a comprehensive academy approach for its secondary course offerings. In an effort to provide the students with a more personalized and successful learning opportunity in an extremely large consolidated countywide high school, the HCPS Academy Approach developed programs of study within seven academies. The mission of the HCPS Academy Approach is to provide students with small, specialized learning environments that are rigorous and relevant to the Virginia Department of Education adopted career pathways. Halifax County Public Schools has made great strides in the last three years educating new leaders and thinkers through its HCPS Academy Approach. Currently, 64% of the total school population (5,823 students of which 50% are minority students) receive free and reduced lunch. Additionally, 20% of the student population receives special education services. Great strides have been made in spite of these obstacles as the school system has been fully accredited by the Commonwealth of Virginia and has made Adequate Yearly Progress (AYP) under the Federal No Child Left Behind (NCLB) Act.

Since the implementation of the HCPS Academy Approach, student on-time graduation rates have increased 7%, with dropout rates declining. The HCPS Academy Approach embraces the concept of the dual enrollment program in which students earn college credit at the high school level through partnerships with Danville Community College and Southside Virginia Community Col-



lege. Currently, HCPS offers 129 college courses and employs 45 teachers who hold the required credentials to hold the position of adjunct faculty with the community college system. Since the academy approach inception in 2004, 62% of high school students and 72% of black male high school students graduating from Halifax County High School have earned college credits and received a college transcript. In addition, 53 high school students have earned their Associate of Arts and Sciences degree from Southside Virginia Community College prior to graduating from high school. This academic year of 2008-09, 60 students will receive their Associate of Arts and Sciences degree. Halifax County leads the way in the Commonwealth of Virginia in dual enrollment credits, industry certifications, and students graduating with a two-year degree.

At the beginning of the 2008-09 school year, Halifax County Public Schools expanded their partnership with the Southern Virginia Higher Education Center by offering junior and senior high school students a two-fold opportunity in the business of arts and design. The business of arts and design focus is to make students visual communication professionals. The end product of this focus is students that are creative, technically flexible, and enterprising; they are able to communicate ideas and agendas across a broad range of media to a host of audiences.

One pathway of the business of arts and design is to study digital art and design utilizing the higher education center's 20-station state-of-the-art Apple Mac Lab. The center provides a certified graphic arts master teacher to instruct the students in the use of this computer operating platform as well as instruction in Photoshop, digital composition, digital design, and digital literacy. The courses students take in high school transfer to the local community college and could culminate in an Associate in Applied Sciences in Design and Visual Communication. According to the Bureau of Labor Statistics (2007), the demand for graphic designers will increase by 10% over the period of 2006-2012. Salary averages for the middle 50 percent of graphic designers are between \$30,600 and \$53,310. Increasingly, employers expect new graphic designers to be familiar with computer graphics and design soft-

ware. Graphic designers must keep up with new and updated software, on their own or through software training programs (Bureau of Labor Statistics, 2007). This program provides familiarity and practical applications of graphics design software through the use of the industry-standard computer operating platform that is often a new system for most high school students.

The second pathway is through an innovative program called WoodLinks USA. Although this program is used widely in the Midwestern states, Halifax County is the first public school system, in partnership with the Southern Virginia Higher Education Center, to provide this curriculum on the east coast of the United States. Students learn fine woodworking, computer aided machining, computer aided design, and creative technologies. The students in the class have utilized a modern chair design digitized by the high school CAD students, crafted in oak, and based on the classical lines of the Queen Anne chair. This curriculum also transfers to the local community college culminating in an Associate in Applied Sciences in Product Design and Development. Both programs have articulation agreements in development with Longwood University and Virginia Tech.

Research states that routine labor and tasks will be increasingly automated and outsourced; the Halifax County Public School system and the higher education center realize the need to train students for multiple jobs and the ability to innovate as a competitive advantage. Importantly, the program trains students to work in the creative professions of today such as animator, 3-D graphics artist, games designer or developer, layout artist, film maker as well as the unknown jobs as yet to emerge in the future economy. Traditional media is undergoing a tremendous upsurge and change; the way people consume information and their expectations of its presentation and delivery, are changing into new entities as rapidly as technological development can progress. The business of arts and design program embraces the collaboration and innovation age of today's students and developed courses utilizing creativity, innovation, collaboration, critical thinking, complex problem solving abilities, and entrepreneurship.

The pilot school year 2008-09 has been very successful for both educational facilities. To date, 42 high school students have taken courses in WoodLinks and graphic arts. Registration for these courses next school year has required the adding of more sections to accommodate the demand. The Southern Virginia Higher Education Center has agreed to offer graphic arts for two blocks daily and is renovating space to house the postsecondary course offerings in the fall of 2009. In the planning stages are cooperative agreements with the mainstream printing courses and digital arts and design to provide more in-house, state-of-the-art printing and publication capabilities.

A direct flow of communication between the two facilities especially with high school instructors and higher education center instructors is integral to the program's success. Both facilities have made adjustments to meet the demands and rigor of high school education and its standards based testing environment. Both facilities' administrators and educators embrace the research that a strong foundation in the arts teaches students that problems can have more than one answer and many perspectives. The arts teach students to think through and within the presented material and to express what is presented to them graphically or in any artistic medium (Eisner, 2002). The business of arts and design, in partnership with Halifax County Public Schools, prepares students for 21<sup>st</sup> century workforce skills by keeping the curriculum fluid to meet the ever changing demands of communication media.

### References

- Bureau of Labor Statistics, U.S. Department of Labor (2007, December 18). *Occupational Outlook Handbook, 2008-09 Edition*, Graphic Designers, Retrieved on March 6, 2009 from <http://www.bls.gov/oco/ocos090.htm>
- Capozzi, B (2009). *The business of art & design*. Power point presentation to Southern Virginia Higher Education Center Board of Directors, Danville Community and Southside Virginia Community Colleges.

Eisner, E. (2002). *The Arts and the creation of mind*, In Chapter 4: What the arts teach and how it shows. (pp. 70-92). Yale University Press. NAEA Publications.

Pink, D. H. (2005). *A whole new mind: Moving from the information age to the conceptual age*. New York: Riverhead Books.

Skorton, D.J.. (2008, February/March). The essential arts. *Edutopia*, 24-26.

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**Book Review of:**  
***A Whole New Mind: Why Right-Brainers Will Rule the Future***  
 by Pink, Daniel H. (2006). New York, NY Penguin Group (USA) Inc.

Reviewed by Karen Carter

Reading Daniel H. Pink's book *A Whole New Mind: Why Right-Brainers will Rule the Future* was a very easy and enjoyable read. The theory presented was that our society's future economic success and way of life will depend upon "moving from an economy and society built on the logical, linear, computer-like capabilities of the Information Age, to an economy and society built on the inventive, empathic, big-picture capabilities of what's rising in its place, the Conceptual Age." (p. 1-2) was very well supported with detailed examples, theory, and research.

The book was well organized into two parts with Part One being broken down into three chapters illustrating the meaning of the Conceptual Age through the effects of what the author calls the trilogy of abundance, Asia, and automation. In Part Two six essential aptitudes are elaborated on that society will need to become well versed in as the transition into the Conceptual Age evolves.

The author's willingness to submit himself as a subject during a brain functional test for the National Institute of Mental Health, through which a series of functional magnetic resonance images (fMRI) that captured his brain's reaction to various pictures was classic. This testing procedure helped to show how years of formal education and training have developed our brain's linear reaction to stimuli, the formulation of ideas, and perceptions, along with their biases, regarding people, objects, or ideas and over time effectively wiring us for right-brain dominance.

Scientists have long called the neurological divide of the brain's hemispheres the Mason-Dixon Line. With the left side being rational, analytical, and logical and the right side being mute, nonlinear, and instinctive; still hanging onto the belief that the left side was the essential half. It was not until the 1950s with the research of Roger W. Sperry (Wade, 1994) who won the Nobel Prize in

medicine, would this belief be altered—the right side was not inferior—it was just different. Betty Edwards (1999) continued with this line of research and found that the problem was simply allowing the brain to really see "by quieting the bossy know-it-all left brain so the mellower right brain could do its magic." (p. 15).

Through Sperry and Edwards' research along with the development of the fMRI, the world is shown to be slowly accepting that the left-side (logic) is tempered with the right-side (rational). Additionally, the book notes that the two hemispheres do not operate as on-off switches but have four key differences that require the two sides to work in concert in order to be effective and efficient: (1) the left brain controls the right side of the body and vice versa; (2) left is sequential while the right is simultaneous; (3) the left specializes in text and the right specializes in context; and (4) the left analyzes the details while the right synthesizes the big picture. Basically, the left side knows how to handle logic and the right knows about the world.

This difference was shown throughout the book as how the world presently operates through the L-Directed Thinking (left-brain) (p.26) these people being lawyers, accountants and engineers while those who with the R-Directed Thinking (right-brain) (p. 26) approach to life become society's inventors, entertainers, and counselors. The use of neuroscience to create these metaphors helps to explain this latter form of thinking and attitude towards life, which has been underemphasized in the Information Age.

Chapter 2 entitled, *Abundance, Asia, and Automation*, discusses how knowledge workers were distinguished from the workforce by their "ability to acquire and to apply theoretical and analytic knowledge" (p. 29)—they were great at L-Directed Thinking giving society's its character, its leadership, and its social profile. These were

the folks who did really well on the Scholastic Aptitude Test (SAT), Graduate Management Achievement Test (GMAT), Law School Admission Test (LSAT) or Medical College Admission Test (MCAT) which measure logic and analysis—notice the common two letters of each test? This phenomenon is not just contained within the United States but many developed nations have devoted much of their resources in identifying and producing their best and brightest L-Directed Thinkers breaking strangleholds on aristocratic societies, opening doors to educational and professional opportunities to the common man which in turn increased not only the world's economy but that of the individual's as well. The result has created the effect of diminished relative importance of L-Directed Thinking and correspondingly increased the importance of R-Directed Thinking.

The development of Asia's workforce seen as a driving force supporting the world's economy is indeed running on L-Directed Learning. This global tsunami (p. 37) of knowledge workers was discussed as being a magnitude of people available for any job that is English-based in markets such as the United States, the United Kingdom, and Australia, which can be done well and more cheaply in India (p. 37). With a typical chip designer in the United States earning about \$7k per month, the outsourced counterpart may earn about \$1k per month. Western societies cannot compete with this pricing scheme, thus as more and more of our functional jobs move to Asia, it will become increasingly important to the business world to not just create a product that is reasonable priced and functional—it must also have beauty and meaning (also known as aesthetic characteristics) to remain competitive.

Automation, the last area discussed, will not eliminate the need for every left-brain job just reshape them. As much of this type of work gets shifted to outsourced countries, L-Directed workers will have to master different aptitudes, relying more on creativity than competence, more on tacit knowledge than technical manuals, and more on fashioning the big picture than sifting the details.

Computers can process the binary logic of decision trees with a swiftness and accuracy no hu-

man can match. Noting how machines and computers do not get tired, show fatigue, get sick, or fail to show up for work has revolutionized the workforce. New technologies are proving they can replace human left-brains, which will become ever more important for white-collar workers as any job that can be automated has or will become so.

Chapter Three's, *High Concept, High Touch*, does an excellent job with depicting the last 150 years of evolution as a three-act drama play. Act I called the Industrial Age known for its massive factories and efficient assembly lines that built Western Civilization into a powerhouse, has the mass production worker. Act II, the Information Age, opens as mass production fades while information and knowledge fuel the economies of a developing world and has the knowledge worker. Act III, the Conceptual Age, noted as currently under construction but with the main characters being the creator and the empathizer whose distinctive ability is mastery of R-Directed thinking notes that "we've moved from an economy built on people's *backs* to an economy built on people's *left brains* ... to an economy and society built more and more on people's *right brains*." (p. 50). The progress fueled by affluence, technological progress, and globalization progresses from a society of factory works to a society of creators, empathizers, pattern recognizers, and meaning makers.

To develop the high concept and high touch concept three questions were presented as requiring consideration by individuals and organization before entering into product development or service facet: (1) Can some overseas country do it cheaper? (2) Can a computer do it faster? (3) Is what I am offering in demand in an age of abundance? High concept involves the ability to create artistic and emotional beauty, to detect patterns and opportunities, to craft a satisfying narrative, and to combine unrelated ideas into an original invention. While high touch involves the ability to empathize, to understand the subtleties of human interaction, to find joy in one's self, to elicit it in others, and to stretch beyond the quotidian, in pursuit of purpose and meaning (p. 52). "Good design is a renaissance attitude that combines technology, cognitive science, human

need, and beauty to produce something that we the world didn't know it was missing." (p. 72)

Six specific high-concept and high-touch aptitudes necessary for transcendence were distilled during Part Two: design, story, symphony, empathy, play and meaning (p. 61). Design being a high-concept that is difficult to outsource or to automate. Described as being the "next wealth of nations" (p. 69) and the well-being of individuals will depend upon how well this artistic sensibility is cultivated. These are the people who will shape and make our environment without precedent in nature, give service to our needs as a means of differentiation, and provide the meaning to our lives—a combination of utility (L-Directed Thinking) and significance (R-Directed Thinking) (p. 70).

Secondly, stories are our history—rich in emotion and understanding of how events evolve to place us within society and the world. Stories make things easier to remember because it is *how* we remember (p.101). We, as a society, organize our experiences, our knowledge, and our thinking into stories—remember John Henry and the steam engine? When asked to recall a fact pure and simple it is difficult but when asked to recall a story, this is more easily done because of narrative imagining. Additionally, information, once housed in buildings and places that only a few had access or even knew how to access, is now readily and instantly available through the Internet. More importantly is what is noted here as the turning point of what begins to matter increasingly is the ability to place these facts in context and to delivery of them with emotional impact—context enriched by emotion (p. 103). A story packs an emotional punch and awakens the power of a narrative that in turn becomes a key way to distinguish goods and services in an abundant society.

Symphony was the third element discussed dealing with relationships and having the ability to see the big picture. Being able to grasp relationships between seemingly unconnected elements that generally goes unnoticed, will become key during this transcendence to the new Age. Society will see three types of people emerge: (1) the boundary crosser who develops expertise in mul-

iple spheres, (e.g. multi-lingual); (2) the inventor who will have the ability to forge inspired and inventive relationships; and (3) the metaphor makers who will help society to understand others as we become a global society (p.134). The Conceptual Age will demand this ability to grasp the *relationships between relationships* (p. 141) creating a meta-ability of seeing the big picture.

Fourth in the aptitude list was that of empathy. The author carefully described empathy is not sympathy rather a sense of what it must be like to be that person—the ultimate virtual reality if you will. The Information Age, having dubbed this type of emotion touchy-feely, used it often to dismiss an idea. As we move into the conceptual age empathy is a proven area that computers cannot reproduce and very difficult for outsourced workers to match. The most sophisticated software on the planet running on the world's most powerful computers cannot divine our emotions (p. 164). Empathy has been dubbed the vocational skill necessary for surviving 21<sup>st</sup> century labor markets as well as becoming our ethic for living.

Another important dimension of the Conceptual Age will be the ability to play. A move away from sober seriousness by elevating play to a high-touch aptitude skill. Much like the other five aptitudes, play is emerging from the shadows of frivolousness and assuming a place in the spotlight by manifesting itself in three ways: games, humor, and joyfulness (p.186). The aptitudes players are mastering are especially well suited to an age that relies on the right side of the brain which is unlimited. Indeed, humor and joyfulness are aptitudes that cannot be replicated by computers which makes play an increasingly valuable.

Meaning, the final aptitude is a paradigm shift from the "Materialist" set of values (emphasizing economic and physical security above all) to one of "Postmaterialist" (emphasizing self-expression and the quality of life) (p. 219). The author's use of a labyrinth metaphor verses a maze to describe societal issues as a spiral-walking course that frees the right brain is excellent (p. 228). Making the transition from the Information Age to the Conceptual Age is like moving from a landscape of L-Directed Thinking to one of R-

Directed Thinking, adding the capacity for art and heart to our penchant for logic and analysis.

At the conclusion of each aptitude, included are excellent examples within the portfolio section of the chapter describing steps and strategies to help the transition into the Conceptual Age. The peril is that the world moves fast with computers and networks growing faster and more interconnected every day. The Conceptual Age simply glitters with opportunity, "but it is as unkind to the slow of foot as it is to the rigid of mind." (p.247).

This has great implications for the career and technical fields and workforce development. Our workforce will need to be educated and trained to do what outsourced workers cannot do equally well for much less money—using R-Directed abilities. Forging relationships rather than executing transactions, tackling novel challenges instead of solving routine problems, and synthesizing the big picture rather than analyzing a single component (p. 39) will be essential to workforce of the Conceptual Age. This book would be an excellent read for any student, educator, or trainer charged with the development and design of a 21<sup>st</sup> century workforce and who would do well to take heed of including as many of the activities, if not all, within their curricula.

### References

Edwards, B. (1999). *The new drawing on the right side of the brain*. United States: Tarcher/ Putnam.

Wade, N. (1994, April 20). Roger Sperry, a Nobel winner for brain studies, dies at 80. *New York Times*.

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