

Theses and Dissertations

---

2015

## Teaching style preferences of educators: a meta-analysis

Lawrence E. Oslund

Follow this and additional works at: <https://digitalcommons.pepperdine.edu/etd>

---

### Recommended Citation

Oslund, Lawrence E., "Teaching style preferences of educators: a meta-analysis" (2015). *Theses and Dissertations*. 620.

<https://digitalcommons.pepperdine.edu/etd/620>

This Dissertation is brought to you for free and open access by Pepperdine Digital Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of Pepperdine Digital Commons. For more information, please contact [bailey.berry@pepperdine.edu](mailto:bailey.berry@pepperdine.edu).

Pepperdine University  
Graduate School of Education and Psychology

TEACHING STYLE PREFERENCES  
OF EDUCATORS: A META-ANALYSIS

A dissertation submitted in partial satisfaction  
of the requirements for the degree of  
Doctor of Education in Educational Technology

by

Lawrence E Oslund

August, 2015

Ray Gen, Ed.D. – Dissertation Chairperson

This dissertation, written by

Lawrence E Oslund

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

Doctoral Committee:

Ray Gen, Ed.D., Dissertation Chairperson

Paul Sparks, Ph.D.

Farzin Madjidi, Ed.D.

© Copyright by Lawrence E Oslund (2015)

All Rights Reserved

## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
DEDICATION .....	viii
VITA.....	ix
ABSTRACT.....	x
Chapter 1. The Problem.....	1
Introduction.....	1
Background of Problem .....	2
Training Misconceptions .....	7
Importance of the Study and Purpose .....	11
Academia-Industry Partnership .....	13
Collaboration.....	14
Research Questions.....	15
Clarification of Terms.....	15
Summary .....	16
Chapter 2. Review of Relevant Literature .....	18
Overview.....	18
Adult Learning Theory .....	18
Teaching.....	27
Pull Information .....	31
Situational Leadership .....	33
Self-Directed Learners .....	35
Why Corporate Training Fails .....	40
Developing Training.....	45
Academia-Industry Partnership .....	46
Practitioner’s Perspective.....	46
Salesperson Training.....	47
Common Training Methodologies.....	51
Training Effectiveness .....	54
Principles of Adult Learning Scale (PALS).....	58
Personal Human Resource Development (HRD) .....	62
Meta-Analysis.....	62
Summary .....	65

Chapter 3. Methodology and Procedures.....	68
Overview.....	68
Research Questions.....	68
Meta-Analysis as a Research Tool.....	68
Publication Manual.....	70
Criticisms of Meta-Analysis.....	71
Availability and Locating Studies.....	73
Coding Protocol.....	74
Included / Exclusion Criteria.....	75
Effect Sizes Based on Means.....	75
Statistical Analysis.....	77
Forest Plots.....	78
Visual Meta-Analysis.....	78
Summary.....	80
Chapter 4. Results.....	81
Overview.....	81
Dissertation Collection Results.....	81
Results Research Question 1.....	86
Results Research Question 2.....	89
Results Research Question 3.....	91
Results Research Question 4.....	92
Summary.....	93
Chapter 5. Discussion.....	95
Overview.....	95
Restatement of Purpose and Research Questions.....	96
Principles of Adult Learning Scale.....	97
Findings Related to the Hypotheses.....	99
Conclusions.....	105
Recommendations for Future Research.....	109
REFERENCES.....	111
APPENDIX A: Coding Sheet – Study Descriptors.....	135
APPENDIX B: Included Dissertations.....	136
APPENDIX C: Non-Human Subjects Determination Notice.....	137

## LIST OF TABLES

	Page
Table 1. Individual Development Levels, Situational Leadership Style & Leader Time Obligation .	34
Table 2. Sales Training Objective Allocation of Time Preferences by Respondent .....	50
Table 3. Two Categories of Eight Common Training Methodologies .....	52
Table 4. Visual Meta-Analysis .....	79
Table 5. Excluded: Dissertations Not Retrieved.....	82
Table 6. Excluded: Means, SD, N Statistics Not Provided.....	83
Table 7. Excluded: Other Reasons.....	84
Table 8. Summary of Dissertation Studies .....	86
Table 9. PALS Total: All Groups .....	87
Table 10. PALS Total Group: Four-Year College (N = 1020).....	89
Table 11. PALS Total Group: Two-Year College (N = 1387).....	90
Table 12. PALS Total Group: Other Educators (N = 1311).....	91

## LIST OF FIGURES

	Page
Figure 1. The staged self-directed learning model.....	36
Figure 2. Match and mismatch between learner stages and teacher styles.....	38
Figure 3. Applying the staged self-direction model to a course .....	39
Figure 4. Five studies and their ranking of sales training methodologies .....	53
Figure 5. Visual explanation of meta-analysis.....	80
Figure 6. Total PALS four year college forest plot .....	87
Figure 7. Total PALS two year college forest plot.....	88
Figure 8. Total PALS other educator forest plot.....	88
Figure 9. 95% Confidence interval three groups .....	92
Figure 10. Scatterplot is illustrating the regression linear trend line for each group.....	93



## DEDICATION

Loretta, my loving wife. She was instrumental in my decision to take on this milestone, never realizing how long this process would take. She was continually there for me.

Ray Gen, my dissertation chair, has been with me since my comprehensive exam. He was always available and provided remarkable two-day turnaround on my submitted work, which keep me busy. I appreciated his support and guidance that was always on point. He had me thinking and rethinking my topic, nudging, but never pushing.

Paul Sparks, Farzin Madjidi, my committee members. They provided encouragement and offered brilliant ideas during my orals. It was a remark made at my Prelims that started me thinking about using meta-analysis. I appreciate your trust and support through this process.

Linda Polin directed this amazing Educational Technology program. Whenever I discuss EdTech with my peers outside of Pepperdine, they are amazed that such an engaging and relevant program exists. How many programs meet the authors of their assigned readings, or spend a week in Washington DC as a component of a policy class? All of my Pepperdine faculty has been instrumental in providing this unique learning experience.

Cadre mates have been very supportive. In particular, Nick Real, and Abir Alameddine. It has been a circuitous journey, and your continued support contributed to my success.

Christie Dailo. Words are not enough to say how much I appreciate your kind help. Whenever I had a question, you either knew the answer or found the answer. Pepperdine is very fortunate to have a person with your knowledge, attention to detail, and desire to provide excellent student support.

Prof. Cumming, La Trobe University (Melbourne, AU). My meta-analysis materialized with your email coaching. His New Statistics book and ESCI software were a tremendous help.

## VITA

## ACADEMIC HISTORY

- 2015            Doctor of Education in Educational Technology  
Pepperdine University, West Los Angeles, California
- 2002            Master of Business Administration in eCommerce  
University of Phoenix Online, Phoenix, Arizona
- 1985            Master of Science in Naval Architecture and Marine Engineering  
Massachusetts Institute of Technology, Cambridge, Massachusetts
- 1975            Bachelor of Science in Math Methods and Operations Research  
Columbia University, New York, New York

## PROFESSIONAL EXPERIENCE

- 2014            Adjunct Faculty  
Pepperdine University West Los Angeles, California
- 2009 – present    Instructor  
University of Phoenix San Diego, California
- 2002 – present    Instructor  
University of Phoenix Online, Phoenix, Arizona
- 1998 - 2004        Quality and Aftermarket Manager  
Acme Inc. (pseudonym), Anaheim, California
- 1996 - 1998        Quality Engineer  
John Ryan Company, Minneapolis, Minnesota
- 1994 - 1996        Director of Manufacturing  
Augustine Medical, Eden Prairie, Minnesota
- 1991 - 1994        Director of Operations  
Augustine Medical S.A., Courtelary, Switzerland
- 1975 - 1991        Naval engineer  
US Navy

## ABSTRACT

This study was initially planned to be a single study using the Principles of Adult Learning Scale (PALS) by Conti (1978), surveying students and alumni of a four-year university. These plans were redirected to conducting a meta-analysis, utilizing 30 years of dissertations that utilized the PALS instrument.

The motivation for this study was to determine if educators might be a collaborative resource to aid corporate trainers in developing a learner-centered training program. College instructors could become corporate consultants if they reinforced the learner-center approach. A learner-centered instructor would inquire and recognize the inconsistencies in the trainer's teacher-centered training materials. This motive was based on first-hand experience with Acme Corporation.

There were 108 dissertations identified. Eighteen were not retrieved, and 35 dissertations did not meet the inclusion criteria. Fifty-five dissertations were used with nearly 5,300 subjects. A complete list was provided by name and ProQuest number with exclusion reasons.

The retrieved dissertations were grouped: (a) four-year colleges; (b) two-year colleges; (c) other educators. The third group consists of educators with a Masters or a Doctorate degree and teaches adult students outside of the traditional college environment.

The results showed that PALS composite mean was statistically significant for each group, and within one standard deviation of the norm mean ( $M = 146$ ). Conti and Welborn (1986) categorized these as intermediate teacher-centered. The seven factors were analyzed, and the mean was less than one standard deviation and teacher-centered and several factors were not significantly different from the factor's norm mean. No scores were found to be learner-centered. Linear regression analysis was performed over three decades of dissertations to determine if there was a trend towards learner-centered style. The results indicate no correlation exists.

## Chapter 1: The Problem

### Introduction

The ability of a corporation to train its employees effectively depends on how well the trainers understand what to teach, how to design the training context and how to design the learning activities. These are needed to deliver the context in a process-driven manner (Berman, 2001; Knowles, Holton, & Swanson, 2011). As evidenced by the researcher having observed Acme (corporate pseudonym), this knowledge was not well understood by the corporate trainers. There were months of lost sales that may take years for Acme to recover. Although their new product launched on time, the effective launch date was not until the salespersons were properly trained and able to sell.

Sales training at Acme was trainer-centered. The technical subject matter expert trainer developed the course content without input from the salesperson trainees or their managers. During training, this seemed like the right approach with a week of lectures and product artifacts. However, when the sales budget failed to materialize several months after training, senior management tasked the regional sales managers to conduct one-on-one training in the field. The success of the field training was evident by a significant increase in sales performance. What the regional sales managers did not realize was that their hands-on training was essentially an effective learner-centered teaching style.

The difference between the two training approaches was the relevance and delivery of the content to the salespersons. The initial training concentrated on product engineering and field issues rather than sales techniques, such as peer-to-peer rehearsal and developing market and product knowledge for the upcoming new markets. It was apparent to the researcher, after the fact, that using a learner-centered teaching style along with hands-on practice was not intuitive.

When the trainer's educational experience was teacher-centered, he or she would not be familiar with a learner-centered technique. After all, his 18-year educational journey was a student in a teacher-centered environment. Lindeman (1926) stated that "Youth educated in terms of adult ideas and taught to think of learning as a process which ends when real life begins will make no better use of intelligence than the elders who prescribe the system" (p. 3).

### **Background of Problem**

Acme is a leader in the industrial printer technology. Their mastery is in research, product development, and manufacturing, and was occasionally tasked to train sales employees of the parent company's subsidiaries and their distributors. Acme is a subsidiary of its parent company and is the technical support center for other global subsidiaries that market, service, and sell their industrial printers. While Acme is not a sales channel, it is intimately familiar with the global sales force through daily involvement on the sales intranet, answering questions and resolving technical issues. Acme is also a small-business entity with fewer than 60 employees, but none with training in adult education.

During this period, the researcher was Acme's quality manager and developed ancillary aftermarket products for their printers. He was instrumental in bringing together all departments to achieve the corporate registration to ISO 9001 Quality management system and handled maintaining the program. This registration process involved senior management to integrate the quality program into the business systems, to improve the effectiveness via process performance metrics, and continuous improvement techniques. The researcher also provided assistance in training salespersons as it pertained to ancillary products. However, planning for each training session, questions arose for his one-hour spot, such as breadth over depth, hands-on or lecture. There were no resources to resolve these issues, thus opted for depth and hands-on. Still, this was not learner-centered as the topics were his and not the students.

Acme's project manager followed a formal process for developing new products that met ISO 9001 requirements and certified as a new product development professional by the Product Development and Management Association (PDMA). The PDMA Handbook and body of knowledge is pragmatic and considers the process after the launch to be vital. Nagle (2005) writes:

Because launch is the time when an organization begins to recover its investment in a product or service, and success is often determined in its first weeks in the marketplace, managing launch is a critical part of the product development. However, organizations are just beginning to understand and institutionalize best practices in managing new product and services launches. (p. 455)

Based on the researcher's observation, Acme followed through after their product launch. Acme employed a seasoned salesperson that was knowledgeable about this new technology. Also, Acme developed and implemented a formal salesperson weeklong training program that would complete just prior to product launch. The engineering subject matter expert, whose purpose was also to monitor the sales intranet, was in charge of developing the training. From the researcher's perspective, it appeared to be well organized and an above-and-beyond effort. However, something went wrong in the training. By the launch date, the salespersons could not sell the product, which resulted in more than three months of dismal sales.

**Printer products.** The Acme industrial printing equipment is used to print expiry dates on labels, plastics, electronic printed circuit boards, glass, carton, to name a few. Since Acme's inception, their dominant technology was a dot-matrix printer. This printer could mark with near letter quality at lower printing speeds but also delivered high-speed printing of expiry dates of about 1,200 labels per minute or 20 labels per second. Changes to this equipment over the years

have resulted primarily in gains in printing performance, cost reduction, and cosmetic improvements. The sales force was provided with technical and marketing memos when these changes occurred. Informal training amounted to a 30-minute presentation and discussion during the annual sales meetings. This training appeared to be sufficient using the budget as a benchmark.

The basis of this study came with the induction of Acme's newest printer technology that would augment their dot-matrix printer line. This scribing printer provided a letter quality mark to support market-driven demands of certain customers that desired printing 2D barcodes and graphics such as a corporate logo. Thus, new capabilities became available with this technology, such as printing on curios, printed circuit boards, IC chips, and similarly manufactured parts. This created different and unique markets for Acme. In the interim, Acme's loyal customers were becoming impatient as this technology was becoming used increasingly by their competitors.

Acme was not prepared to offer this new technology but estimated that development could be completed in two years. This period was ameliorated by using an exclusive agreement with an original equipment manufacturer (OEM) to purchase and rebrand their field-tested scribing printer. This deal provided Acme with a product for immediate sales and allowed them sufficient time to develop their scribing printer. The contract allowed the OEM to continue to sell their own-branded printer, which was done solely through a passive Internet channel. Knowing the OEM's sales per month metric became an important benchmark after Acme's launched the rebranded device. Acme could compare their sales to this benchmark to measure their sales success.

This scribing printer operated differently and was physically unlike their dot-matrix legacy printers. A well-trained salesperson could install the scribing printer on a production line with minimal or no technical support. However, this machine required different software to support a two-dimensional scribing pattern on the product. Moreover, there was no similarity to the software used in the dot-matrix printer. There was no question this was an entirely new printer, and formal salespersons training would be essential.

**Salesperson training.** Prior to the printer launch, Acme summoned the salespersons to the manufacturing plant for a week of training. Both seasoned and junior salespersons were included. The researcher observed the training conducted by the plant's senior engineer and technologist. It was largely in lecture format with numerous printer piece-parts passed around the table. The theory of printer operation, software programming, and practical advice was provided during the training. Slide presentations were the dominant media. By Friday, most salespersons headed home around midday to catch up on their business and recuperate. Hands-on training was scheduled the last day of training, but only a few salespersons stayed. This lab training was mostly for demonstration, so missing this exhibition probably would not have had a significant impact. Training continued each week until all US, Canadian, and Mexican salespersons completed.

In reflection, the researcher was impressed with what appeared to be a successful training program. However, the researcher's observation was through a pedagogical teacher-centered lens based on his traditional education. The problem of meager sales did not surface until months after the printer was launched as compared to the budget and the OEM's monthly sales benchmark.



**OEM Printer launched.** It became readily apparent in the first three months that the sales budget would not be met. The modest sales trended for yet another three months. The OEM's Internet passive monthly sales benchmark had exceeded Acme's sales thus indicating that something was amiss. To the researcher, this performance seemed unrepresentative of the efforts that went into the preparation, training plus hiring sales support staff. About six months after launch, senior management ordered a massive field retraining effort. Regional sales managers met with their salespersons one-on-one and together went on sales calls. This hands-on training paid off as the scribing printer sales finally began to meet sales budget expectations.

The researcher was curious why sales did not meet budget expectations after the launch, but there was no attempt to find the cause. None of the possible reasons suggested that the original training was at fault. Other factors, such as quotas, sales commissions (the scribing printer was half the cost of the dot-matrix printer), new markets, and having to make cold sales calls were contributing factors. These questions laid dormant until history was repeated two years later when Acme launched their developed printer.

**Acme's printer launched.** After two years in development, Acme launched their scribing printer. This machine was physically different. It was smaller than the dot-matrix printer, and assembly was different. The performance characteristics were different as it printed faster than the OEM machine. However, the software remained the same. There were expectations that the transition would be smooth and salespersons would be more energized, but that was not the case.

Salesperson training was similar to the first launch with an emphasis on the new machine's capabilities. From a business perspective, there were hopes that sales would meet or exceed current scribing printer sales. There was anticipation that certain customers could replace

their existing dot-matrix printers for this efficient and less expensive printer, but that was not the case. There were anecdotal reports that some salespersons were selling dot matrix printers when the Acme scribing printer would have sufficed.

The researcher was perplexed why Acme's newest printer sales were less than expected. The new printer had more capability than the OEM printer, and the operational complexity had not changed significantly. It was becoming evident that the salespersons' difficulties were in part related to the training and the misconceptions the trainer had when establishing the training program.

### **Training Misconceptions**

The Acme engineer and subject matter expert (SME), created the sales training program to what he thought would meet the salespersons' needs. After all, he monitored and provided daily technical support to the global sales force, so he was the appropriate person. However, it was also apparent that the pedagogical training approach failed to train the salespersons adequately as evidenced by the massive field retraining effort. As an inquiry into the training materials provided to the China sales channel, the director of sales and marketing at the Shanghai, China, office said the Acme training materials were mostly unused. His approach was to direct the regional sales managers to train their salespersons over two days (X. Min, personal communication, June 13, 2007).

Berman (2001) discussed three stages for developing corporate courseware from the perspective of an instructional designer. Corporate personnel whose job is to train as a collateral duty may inherently complete these steps without being fully aware they exist. The first step is to decide on what material the salesperson must learn or have familiarity. The content should include technology, sales, and marketing. The technology would cover the theory of scribing

printer operation, computer software setup and function, ancillary equipment, and differences between the two technologies. Sales and marketing would discuss the new markets that could be served, new warranty process, quotation process, and potential problems to name a few. The second step is developing the content and progression for each training day, necessary artifacts for the training room, and creating a presentation. The final step is the room setup and delivery to the salespersons. What will likely not be included are student learning styles, in-class real or realistic activities, facilitation methods, hands-on training, team building, and having formative and summative assessments.

These misconceptions are commonplace by corporate trainers that lack awareness of adult learning. The Acme trainer had high expectations of his salesperson trainees since he was spending his time to prepare and deliver the materials he thought were relevant. It was up to the trainees to do what was needed to understand the material and to ask questions. By the end of the day, the trainer felt that each salesperson was accountable for his or her knowledge.

The trainer with a pedagogical approach knows what is best, but that was insufficient to train Acme's salespersons. Knowles (1980, 1984, 1989) coined the word *andragogy* to differentiate a model that supported adult learners (at that time). Andragogy was defined as "the art and science of helping adults learn" (Merriam, 2001, p. 5). Andragogy focused more on adult learners and their life instead of focusing on the learning process (Merriam, Caffarella, & Baumgartner, 2007). The main premise of andragogy is that adults learn differently and have dissimilar needs from pedagogical students, thus must be taught differently.

**What could Acme training have been?** There could have been a learner-centered approach based on the trainee's needs. For instance, there could be two phases, the classroom, and the experiential. The content input of these two modules would come from the sales channel with support from the SME.

The classroom phase completes training modules online while the salespersons remained at home managing their sales. The content owners such as marketing, sales, technical, and accounting would create these modules per a curriculum map to ensure connectivity. Modules may include a video podcast that would provide support for aural and visual learners. Module delivery could be through the corporate intranet that later be used for collaboration, or provide feedback once the training is complete. After each module, the salesperson finishes with a formative quiz to highlight their knowledge weakness and to provide feedback to the trainer. Experienced salespersons may choose to test out of a module and move to the next module. Once the salespersons complete all modules, a summative exam would need to be passed before starting the second phase.

An alternative to using the corporate intranet is through an automated computer-based training system, such as a massive open online course (MOOC). Challenges in MOOCs is the ability to automate the generation of problems, the creation of solutions, and grading to deal with a large number of trainees (Sadigh, Seshia, & Gupta, 2012). However, an organization such as Coursera (2013) has mastered many of those issues. After a beta-test, the trainees would begin training at their pace. When complete, the trainees visit the plant for the experiential phase. Another benefit to the MOOC is to promote participation amongst the peers rather than the trainer having to field all the questions. The salespersons would require passing a summative exam would need to be passed before starting the second phase.

The second phase would be hands-on learning. It might go like this. The first day would be to answer questions, review the training plan, and prepare for their first customer sales call. For this call, teams are established and meet with the customer on-site, answer customer questions, set up a quotation, plan the equipment, install the equipment, and train the operators. Troubleshooting and warranty service would be included to the extent that a salesperson would handle those details. All aspects of the sales process would be hands-on. The salespersons would be required to complete two experiences satisfactorily. In the classroom, additional role-playing takes place to gain further experience in new markets. By the end of training, the salespersons will have gained self-confidence, motivation and have the ability to sell the new scribing printers.

The important elements are to develop materials based on what the salespersons need. Secondly, replacing lectures with online materials that are self-paced and assessed. The next element is using hands-on learning in place of the conference room lectured training. The final element includes follow-up assessments and training.

**Trainer-centered example.** An Acme technical trainer returned from teaching technicians about servicing the OEM scribing printer. He was lamenting about the time and effort he put into planning his training, developing a detailed slide presentation, and carrying out the training. By course end, only half of the students passed the final exam. During the training, he constantly asked the trainees “Do you have any questions?” but rarely a hand went up. He had no clue of what went wrong. The researcher (at that time) was aware of the trainer’s efforts but could offer no explanation. Teaching adult learners is not intuitive.

**Student-centered example.** The researcher handled setting up, conducting the training, and overseeing Acme's quality internal audit program in Acme's ISO quality management program. With the experience from previous companies and discussions with his peers, quality audits were identified as the single most important task that never seems to complete correctly. Traditionally, the quality manager trains all internal auditors in the concepts of performing a quality audit in one setting. Later in the year, when the auditor prepares for an audit, most of that knowledge has been forgotten. Secondly, there is tension between the auditor and auditee... the auditors were often referred to as the ISO police. Finally, the corrective actions created from the audit tend to drag on beyond the due date because the auditee does not fully understand what needs to be corrected. After returning from a corporate Group conference, the researcher tried a different tact. Training was set up for the auditor and auditee together on the day of the audit. The researcher (quality manager) facilitated the training by identifying the audit area and obtaining consensus on the audit requirements. When the training was complete, a formal desk audit had been completed, and only the observation and documentation remained. The auditee had no reluctance in signing the corrective actions, as the gaps were understood. What was unexpected was the prompt completion of the corrective actions before the due date. Training was successful because the auditee was part of training and understood the requirements and reason for the correction. At that time, the researcher did not fully comprehend why this technique worked so well.

### **Importance of the Study and Purpose**

Acme is a product leader in printing technologies. It is a quality-minded organization with bright entrepreneurial employees. What they do well are their research, product development, and manufacturing. Salesperson training was an ad hoc collateral duty that was

bestowed upon the subject matter expert who understands the technical aspects of the equipment. As shown twice, this does not translate to an effective training program.

Many small businesses are similar to Acme and lack the knowledge to train their sales force. Moreover, trainers have no reason to question their trainer-centered method since this is what they learned from childhood. If nothing else, they know and expect that an expert provide assignments and lectures to students. These paradigms are mostly untrue as learning suffers, and resources are wasted.

Secondly, the speed of technological change relies on the salespersons' ability to keep trained and to sell. While incremental changes on the dot-matrix printer were completed with low-level training, a redesign and launch of new products necessitated an effective training program. The method of planning the training must solicit the needs of the salespersons with the appropriate level of marketing intelligence, experiential learning, and follow up on their training success. In doing so, the launch of the new product and the ability of the salesperson to sell the product will correspond. In this global economy, time to market is essential. The time to retrain the salespersons incurs overhead costs and delays to market entry. In Acme's case, it took about six months or added 25% to the planned development time, from 24 to 30 months.

Since a learner-center approach is not intuitive, would an external source, such as a college be helpful? The motivation of this study was to determine if college instructors or other educators could be a collaborative resource for corporate trainers. A learner-centered instructor could recognize inconsistencies in teacher-centered training materials and recommend changes (Knowles et al., 2011). For instance, had an educator questioned the Acme trainer's lack of salespersons' participation in developing the training, the training outcome might have been entirely different.

## **Academia-Industry Partnership**

Academia-industry relationships have been used for various reasons and lengths of service. Walker (2009) discusses the duration of academia-industry relationships from one semester to several years, based on a handshake to a contractual agreement. They may involve a student's internship or multi-year research project. The researcher was a student at MIT's Laboratory for Manufacturing and Productivity (LMP) Polymer Processing Program (PPP) in 1984 in support of E. I. du Pont de Nemours and Company and the U.S. Navy (Hatakenaka, 2004; Nemarich, Whitesel, & Sarkady, 1989; Oslund, 1985). The research characterized particulate sizes in a viscous solution. Du Pont was researching a quality polymer mix while the Navy was interested with particulates in equipment lubrication systems. Faculty may also be solicited to solve particular problems.

The President of Martin Supply Company attended a sales seminar delivered by a local university. He decided to replace his on-the-job training for a more formal and professional program. The University of North Alabama was qualified as they had a management and marketing program with a sales concentration. A training program was developed for Martin Supply salespersons and consisted of 24 contact hours plus several semi-monthly follow-up sessions. The program supported novice and experienced salespersons with training objectives of the organization, presentation, follow-up, cold calling, and probing. The program exemplified a learner-centered approach as the professor listened to the needs of the company and the salespersons. The salespersons' performance was evident by their customer-centric approach to selling instead of just trying to get a sale (Kelly, 1993).

An academic-industry partnership is a valuable relationship for many facets of the business. Maximizing the partnership is the chosen path for this study. Considering educators to



support corporations and especially small businesses is a reasonable approach.

### **Collaboration**

The ability to train adult learners requires an awareness of the misconceptions discussed earlier. The training design necessitates involvement from the trainees, relevant content, and as much as possible, hands-on delivery. These requirements suggest that a student-centered teaching style would be a desirable approach. The dilemma is where would the corporate trainer gain this awareness to include the learner into the course design? Hiring a consultant would be costly, not in the budget, and not always effective as discussed in Berman's (2001) study. Could the faculty from an educational institution provide collaboration with a corporate trainer? Do educators understand the differences between andragogical and pedagogical models and embrace a teaching style that learner-centered? Is faculty learner-centered?

The purpose of this study was to evaluate educators from colleges and industry as potential collaborative sources for corporate trainers. The desire is to support corporate trainers in developing their training program. This hinges on whether the educators' teaching style was learner-centered. There is also an opportunity to identify a trend of PALS means over the 30 years with *meta-analysis*. Glass (1976) defined meta-analysis: "statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings" (p. 3). Lipsey and Wilson (2001) referred to meta-analysis as analogous to a survey of research studies rather than a survey of people.

The outcome will determine if the educators' teaching style is teacher-centered, student-centered, or some combination of both. For instance, Rogers (2009) found that faculty in her college were moderately teacher-centered. However, four of the seven factors (which make up the PALS composite score) were student-centered; there is more detail on the seven factors in the next chapter.

## **Research Questions**

RQ1: What are the teaching style preferences of educators as measured by Principles of Adult Learning Scale (PALS)?

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

RQ3: Is there a difference in teaching style preferences of educators, as measured by PALS, based on four-year colleges, two-year colleges, and other educators?

RQ4: Is there a correlation in teaching style preferences based on the period from 1982 to 2014?

## **Clarification of Terms**

The following terms provided are for clarification purposes as used in this study:

**Andragogy.** Knowles (1984) defined andragogy as the art and science of helping adults learn though, in general, andragogy supports a learner-focused educational approach.

**Educator.** An individual who has earned a masters or terminal degree and taught adults.

**Corporate trainers.** Instructors who teach or train company employees. This study considered salesperson training but could also apply to other occupations.

**Effect size.** A descriptive statistic metric, independent of sample size, for comparing across research studies. This study uses a single group, original data PALS composite mean,  $E_s = \bar{X}$ , because the variable is measured the same way for each study (Lipsey & Wilson, 2001, p. 41).

**Learning style.** Pertains to learner-centered approach or a teacher-centered approach, both extremes along a continuum (Knowles et al., 2011)

Meta-Analysis is a statistical analysis of a large collection of analysis from individual studies to integrate the findings (Glass, 1976). This study chose to use doctoral dissertations between the period 1982 and 2014.

Original Equipment Manufacturer (OEM). A company that produces equipment to be used as another company's end product. In this study, an OEM produced a scribing printer for Acme as a temporary measure to allow immediate market entry while Acme's design was being developed.

Principles of Adult Learning Scale (PALS). Conti (1978) developed a 44-item validated survey instrument to quantify the educator's level of a learner-centered versus a teacher-centered methodology or some combination of both. Conti (1983) developed factor analysis with seven sub-scales. These will be elaborated in Chapter 2.

Pedagogy. Knowles (1984) defined pedagogy as the art and science of helping children learn and a teacher-focused educational experience. Subsequently, pedagogy reflects on a trainer-centered educational approach.

## **Summary**

Acme produced a dot matrix printer, then after a decade, added a new line of scribing printers to support the growing needs of current and potential customers. The initial scribing printer came from an OEM then two years later Acme had developed and manufactured their scribing printer. The scribing printers differed in size, functionality, performance, sales markets, the industrial operating environment, and installation from their dot-matrix printer. Salesperson training was extensive yet failed to prepare them adequately to sell this equipment immediately after product launch. The expected sales did not materialize for several months after product launch and then only after extensive retraining in the field.

Misconceptions are common in corporate training as it replicates the teacher-centered, lecture-based learning model. Most trainers have had 12 or more years of this method of instruction as they grew up. This instructional method leads to an inefficient and ineffective ability for trainees to learn and transfer knowledge to their workplace. The instruction may not cover the areas of greatest need as was demonstrated with Acme. Academia-industry support may be an aid to corporate trainers, such as educators from local colleges or other institutions, providing they be learner-centered. A learner-centered educator would look for certain elements and inquire if the students had a part of the instructional design.

The meta-analysis will be used in analyzing dozens of studies that had used the Principles of Adult Learning Scale (PALS). The analysis will determine if educators are teacher- or learner-centered.

## **Chapter 2: Review of Relevant Literature**

### **Overview**

Acme incurred training problems, in part, because of their method of instruction and the training content did not support their salespersons' needs. Their approach was teacher-centered; the trainer decided on the content and its delivery without support or input from the trainees. In some respects, the Acme trainer understood the product issues where the salespersons frequently had problems and these were addressed. However, the training was provided through lectures, discussions and had minimal or no sales experiential exposure. There was no emphasis on new markets that the scribing printer could now approach. There was very little of the technical training that mattered in the day-to-day sales process, yet that was the emphasis of the training.

### **Adult Learning Theory**

The current pedagog model is a philosophy based on teaching and learning assumptions that evolved since the seventh century. With the organization of secular schools in later centuries, and public schools in the nineteenth century, pedagogy was the only available educational model (Knowles et al., 2011; Lindeman, 1926). Thus, the entire educational enterprise in schools became permanent (Knowles et al., 2011). Systematic efforts to establish adult education programs after the First World War reinforced the use of the pedagogical model because it was the only one available (Knowles et al., 2011).

In Lindeman's (1926) words:

Many educators who have come to realize that most of their subject-matter disappears from the minds of students shortly after graduation fall back upon the consolation that at least students have been disciplined - they will know how to find knowledge even if they do not possess it. This apology carries the premise another step in the wrong direction:

our minds, our personalities, are not repositories into which knowledge is dumped in the hope that it can be reclaimed in the hour of need. If we could fish in the waters of memory for needed knowledge, our catches would be perpetual disappointments: knowledge like fish, either grows or dies. And if knowledge grows, it is because knowing was once a part of experiencing. (pp. 176-177)

Lindeman was an advocate of adult education and believed the experience was the primary element of learning. He was adamant that knowledge transfer through the current pedagogical model would not be lasting. Lindeman helped to support the andragogical learner-centered approach with the experiential instructional design. Trainers teach how they learned, and there is a lack of awareness of the importance of incorporating the experiential element.

Knowles (1984) first awareness of adult learning was from writings of Lindeman. Lindeman (1926) stated, "In conventional education the student is required to adjust himself to an established curriculum; in adult education the curriculum is built around the student's needs and interests" (p. 8).

Lindeman (1926) describes adult learning:

When discussion is used as method of adult teaching, the teacher becomes group chairman; he no longer sets problems and then casts about with various kinds of bait until he gets back his preconceived answer; nor is he the oracle who supplies answers which students carry off in their notebooks; his function is not to profess but to evoke - to draw out, not pour in; he performs in various degrees the office of interlocutor (one who questions and interprets), prolocutor (one who brings all expressions before the group), coach (one who trains individuals for team-play), and strategist (one who organizes parts into wholes and keeps the total action aligned with the group's purpose). (pp. 188-189)

Lindeman's (1926) was most influential in his writings during this period:

He strongly believed that education is life and not a mere preparation for an unknown future. He believed that "Workers, those who perform essential services, will naturally discover more values in continuing education than will those for whom all knowledge is merely decorative or conversational" (pp. 7-8). He said that the approach to adult education needed to be in terms of situations and not subjects. That currently, "the academic system has grown in reverse order: Subjects and teachers constitute the starting-point, students are secondary" (p. 8). The resource of "highest value in adult education is the learner's experience. If education is life, then life is also education" (p. 9).

In 1935, Knowles (1984) was over the National Youth Administration (NYA), a work-study program for unemployed youth. He informally inquired from a sample of employers in the area to identify what skills were required. Then courses were formed around those needs. During his tenure, he made several generalizations about effective teachers. "The more effective teachers were interested in the students as persons, more informal in their manner, involved students more in preparatory activities, and gave the [students] more helpful support" (Knowles, 1984, pp. 1-3).

Knowles (1950) formalized the characteristics of teaching having spent time in the military, and completing his Master's thesis. Below is the listing of 13 principles of adult teaching:

- "The students should understand and subscribe to the purposes of the course." The students will work more efficiently when they have a clear idea of the course's direction and objectives. Furthermore, for students to work enthusiastically, they need to have a part in setting their objectives at the start of the course.

- “The students should want to learn.” There is an assumption that students want to learn. There are instances when the teacher needs to provide motivation or to help students who are so overwhelmed that they lose the desire to learn.
- “There should be a friendly and informal climate in the learning situation.” There are a number of elements that make up this principle (a) learning takes place when there is class interaction established by the teacher; (b) the teacher needs to have an attitude of understanding and respect; (c) have students introduce themselves with a brief statement about their experience and interests; (d) the teacher views his or her role as a facilitator, leader and learner.
- “Physical conditions should be favorable.” The primary interest is for the students to be comfortable with the proper temperature, ventilation, lighting, and not distracted. The arrangement of the tables and chairs need to be adaptable to the needs of the instruction and classroom work.
- “The students should participate and should accept some responsibility for the learning process.” There is an emphasis on the instructor to allow students to have a voice in developing and self-managing their group activities. The intent is to increase active participation and the students’ enjoyment in learning. Increased hands-on experience provides an opportunity for remembering the content.
- “Learning should be related to and should make use of the students' experience.” Adults learn more efficiently when they can associate new content to their experiences, relating the unknown with the known. Students with varied experiences also provide a shared benefit to the entire class. The teacher needs a method to apply the lessons to the kinds of experiences in the class.



- “The teacher should know his subject matter.” An effective teacher must have subject matter knowledge. Experience is necessary to organize the course with teaching aids, textbooks, and the sequencing the content. The teacher has to be a resource for guiding students to a valuable learning experience.
- “The teacher should be enthusiastic about his subject and about teaching it.” An enthusiastic teacher who gains personal satisfaction from teaching will have students who are motivated to learning.
- “Students should be able to learn at their own pace.” It is important to accommodate learners who have diverse experiences, educations, aptitudes, interests, and abilities. The environment that is competitive may marginalize slower students. The fast learners may benefit from advanced work or used to help the slower students. Certain laws may also be applicable. The Americans with Disabilities Act of 1990, the Rehabilitation Act of 1973, and the ADA Amendments Act of 2008, prohibits discrimination based on disability. The Act requires the organization to provide reasonable accommodations to qualified disabled students (U.S. Department of Justice, 2015).
- “The student should be aware of his own progress and should have a sense of accomplishment.” Learning is improved when feedback combines with practical instruction. Feedback may be a simple dichotomous OK or fix, or extend along a continuum to providing detailed instruction or to adding new content (Hattie & Timperley, 2007; Kulhavy, 1977). The extent of the instruction depends on the student’s understanding, learning style, and link to his or her experiences.

- “The methods of instruction should be varied.” Learning styles refers to the concept that individuals differ regarding what mode of instruction or study is most effective for them (Pashler, McDaniel, Rohrer, & Bjork, 2008). They hypothesized “...the instructional method that proves most effective for students with one learning style is not the most effective method for students with a different learning style” (p. 105). Evidence in their analysis did not show an interaction that would justify the need to perform learning style assessments for students.

Further research hypothesizes that these findings do not negate offering different methods of instruction (Gilakjani, 2012). However, the results showed that matching an instructor’s teaching style to a student’s learning style does not guarantee greater student success.

Learning styles should not dictate the instruction as much as a teacher who is skillful to vary his or her teaching style depending on the situation and the student’s needs. For instance, students who work in the service industry would desire examples from within their industry. As well, students may prefer learning a concept or process by watching a five-minute video podcast than reading the textbook; other students would rather have a textbook or eBook to cuddle.

- “The teacher should have a sense of growth.” A student raised his hand and asked, “I don’t understand these logarithms”. To his surprise, the teacher responded, “I don’t understand why you don’t understand” then provided the same explanation that was not understood. The student pondered at why the teacher did not provide a concrete example.

A teacher who is the student of his or her class is sure to be more motivating than a teacher constrained to his or her canned lectures. Knowles (1950) states “The attitude of the teacher is the strongest force in determining the climate of the group and the attitudes of the students” (p. 35).

- “The teacher should have a flexible plan for the course.” The syllabus needs to outline a clear path, start to finish, of the course objectives developed in part by the students. The rigidity of the syllabus supports the course content; math and sciences may have less flexibility than other disciplines. Knowles (1950) states “...the plan should be formulated in such a way that (a) the learning sequence is from simple to complex, (b) from known to unknown; (c) that the aims of each unit are connected with the aims of the course as a whole; (d) that the need for illustrative materials is predictable in order that they will be available when needed.” (p. 36)

In 1970, Knowles’ experience and studies produced his first discourse on adult learning by coining the term, andragogy. He initially defined adult learning as the art and science of adult learning in several assumptions. The adult learner is:

- Self-directing and embraces full responsibility for his or her learning.
- Brings experience to the classroom.
- Ready to learn when the need arises.
- Able to perform a task, solve a problem or live better.
- Has internal self-actualization.

Knowles (1989) later came to agree that andragogy is less of a theory of adult learning than "a model of assumptions about learning or a conceptual framework that serves as a basis for an emergent theory" (p. 112). There is criticism that andragogy does exist to the extent that the

assumptions are unique to adult learners only. Some adults are highly dependent on [an instructor] for structure while some children are independent, self-directed learners. The same [applies to] motivation. Adults may be externally motivated to learn, as in [salesperson] training while children may be motivated by curiosity or the pleasure of learning” (Merriam, 2001, p. 5). Knowles et al. (2011) clarifies, “if I were now, at age 66, to undertake to learn a body of entirely strange content (for example, the higher mathematics of nuclear physics), I would be a totally dependent learner” (as cited in Knowles, 1979). He goes on to say, “...an ideological pedagog would want to keep me dependent on a teacher, whereas a true andragog would want to do everything possible to provide me with whatever foundational content I would need...” (as cited in Knowles, 1979).

**Andragogy.** Knowles et al. (2011) compared andragogy and pedagogy in his assumptions as follows:

- The need to know.

Andragogy: Adults know why they want to learn. Tough (1978) determined that adults that undertake active learning will spend time determining the pros and cons gained from their learning experience. Facilitators need to help with the learners gaining awareness.

Pedagogy: In this approach, the learner needs to know what the teacher presents for passing the course. There is no emphasis on how the material will apply to the learner’s life.

- Learner’s self-concept:

Andragogy: These learners are self-directed and make decisions on their educational needs, and may become apathetic with trainer-center traditional instruction. They

need to be considered capable and treated with respect. As an aside, some of Acme's senior salespersons found excuses to leave the training room.

**Pedagogy:** Learners are dependent on the learning environment and give their trainers full responsibility for making decisions on the content and teaching methods.

- Role of the learners' experiences:

**Andragogy:** A breadth of trainee experiences is magnified when using experiential teaching techniques, such as problem-solving activities, case methods, and group discussions.

**Pedagogy:** The learners' experience is put aside for that of the trainers'. Lectures, audio-visual podcasts, and assigned readings are the fundamental means of knowledge transfer.

- Readiness to learn:

**Andragogy:** Learners come ready to study material that is relevant and applicable to their livelihood. The trainees' interest increases after having reached a certain career point and are now looking for new ways to acquire new knowledge.

**Pedagogy:** Young students prepare to learn what they are told and need to progress to the next level.

- Orientation to learning.

**Andragogy:** Learners go into a course with a problem-centered or task-centered orientation. Their sole focus is to learn the content.

**Pedagogy:** Learners go into a course with a subject-centered orientation. They look for clues that are relevant to real-life situations (Knowles, 1989).

- Motivation.

Andragogy: Learners are responsive to some extrinsic motivators such as a better job, promotion, or salary increase to some extent. Intrinsic motivators such as quality of life, responsibility, or job satisfaction have more influence on adults (Knowles et al., 2011).

Pedagogy: These learners are motivated primarily by external factors, such as a teacher or parent or sometimes peer.

Originally, these six assumptions were written dichotomously of adult (andragogy) versus children (pedagogy). Knowles (1980) later expanded this concept of pedagogy and andragogy as entities lying along a learning continuum, and that age is less relevant.

### **Teaching**

Rogers and Freiberg (1994) state: “Teaching... is a vastly overrated function” (p. 151). The purpose of his statement is that he defines teaching to directing, imparting knowledge, or otherwise supporting a teacher-centered teaching style. While that is fine for a stable society (Rogers refers to the Aborigine elders teaching their young in Australia), it is less acceptable in a society where theories and practices are constantly changing. He states, “The only man who is educated is the person who has learned how to learn; the person who has learned how to adapt and change...” (p. 152). Rogers further differentiates teachers and facilitators of learning. The teachers would think what is good for their students versus facilitators who would ask the students what they want to learn. He further elaborates on the teachers’ task of keeping order in the classroom. The facilitator’s task is to create an environment for the students to feel curious, free to make mistakes, and be encouraged to learn from others. The emphasis of a facilitator of learning is being learner-centered.

Lindeman (1926) and Rogers and Freiberg (1994) differentiate between experiential learning versus behavioral objectives. Circa 1950, publishers and test developers began relying on teaching materials with behavioral goals. Behavioral objectives may be verified by observable actions, comprised of learning facts. The expectations for thinking and learning are diminished. The objectives are classified as behavioral, affective, and psychomotor (Bloom, 1956). Rogers and Freiberg (1994) provided examples of each type:

- Behavioral objective: “The students will list five contributions of ancient Egypt to modern world societies with 100 percent accuracy” (p. 188).

The following is a similar end goal but adds more to the conditions of learning.

- Experiential learning: “Class members will design, plan, and go on a field trip to visit the ancient Egyptian collection at the fine arts museum” (p. 188).

There is clearly a difference in the content being learned. The first uses rote memory with little relevance. The latter involves some uncertainty. The instructor becomes a support system to help the learners develop their plan and learning experience. An analogy is the researchers experience learning about Greece in High School then being stations in Athens, Greece for 90 days. What was remembered from High School was a picture of the Acropolis. Being there, walking up the path past ice cream vendors, then actually touching the Acropolis was real. Had the salespersons training at Acme been experiential, the results would have been different.

Rogers and Freiberg (1994) exemplifies being student centered through several methods. These will emphasize what they are and how the method may apply to salesperson training:

**Contracts.** The purpose of a contract with the trainee is to set goals that will allow the person to plan what they wish to learn, within requirements of the sales management team. The contract will provide the trainee a choice of accomplishing minimum requirements to pass then

full requirements for the maximum benefits. The trainee understands what the outcome will be on completion of each choice. While aspects of the contract may be self-directed, failure to complete is unacceptable. Acme, for instance, may require these two basic elements:

- Explain key features of the scribing printer and benefits of dot matrix printer
- Explain how the scribing printer is different from the dot matrix in terms of line speed, characters per second, print size
- Explain the printer operation

Deeper knowledge for the scribing printer may entail. Learning takes place online.

- Markets within the trainee's sales region include existing customers a new markets
- Order print samples on customer's product packaging that would illustrate an improvement over their current equipment – develop benefits for purchasing
- Develop a sales plan for approaching each customer within the trainee's sales region. Learn about the potential customer's product will be necessary.
- Compare Acme's printer to competition is the trainee's sales region

The following elements take place at the corporate training plant.

- Role-play their sales plan
- Troubleshoot equipment and software issues (at the modular level)

The following will take place at corporate training with an onsite visit. These would be mock transactions. The trainer would ensure there were available customer sites similar to the trainee's sales region (if possible).

- Set up an equipment demonstration. Consider location for marking product that is clean, safe, and has utilities available
- Present their proposal for each site



- Create a quotation for each site
- Make the sale for each site.

Explain the warranty process, turn-around, temporary equipment replacement

When the trainees return to their home office

- Make sales calls within first week
- Make the first sale

The trainer and regional sales manager will follow-up with trainee each month.

The pass or fail is measured by Level 2, Level 3, and Level 4 evaluations (Kirkpatrick, 1998). There are four segments of the contract: (a) basic knowledge; (b) marketing; (c) corporate training; (d) home office sales. The first two segments need to complete prior to onsite corporate training. Corporate training must be satisfactory before approaching new customers. The process to achieve satisfactory results is iterative to ensure the salespersons have gained the self-confidence, knowledge, and skills to sell the new printer.

Resources to aid the trainees would include several departments, including marketing, sales, senior trainees, and technical. The information will come on a *pull* basis (Maqsood, Walker, & Finegan, 2007; Marsh & Conard, 2008). That is, the trainee will need to ask for the material. The purpose is to develop resourcefulness that will be needed in their career.

**Community Engagement and Projects.** The basis is to study a situation then experience the situation in the field. These activities were exemplified in the four segments in Contracts. The community was learning about the opportunities for selling the scribing printer in the salesperson's sales region. The project begins with the mock transactions at corporate then follows through to the first sale.

**Peer Teaching.** Rogers and Freiberg (1994) described this as a practice of the most knowledgeable student tutoring the less experienced. When this experiment was set up, there was a consideration of who would be the tutors. Some of these elements included personality, knowledge, sense of responsibility, and enthusiasm. This same practice may be applied to Acme sales training. For instance, those who have sold the scribing printers would be candidates for peer teaching. Further criteria could be a national customer (a corporation that has business in multiple sales regions) or market (Electronic Computers, e.g., Dell Inc.), where the largest gains could be achieved. The teaching would primarily focus on salespersons that have not had a sale after their training. The trainee would make all the preparations then invite the peer teacher to review the preparation and accompany a presentation with a potential customer.

Rogers and Freiberg (1994) emphasize a move away from passive, lecture-based teaching to an authentic learning program to demonstrate to the salesperson the company's commitment to their personal success. More than helping the salesperson to be their best, it also embraces other units within the company to provide a support system.

### **Pull Information**

For salespersons to be effective and efficient in selling, they will need current marketing intelligence about their potential customer, competitors, and industry, especially when entering a new market. While the onus is on marketing to provide some or all of this information, it is up to the salesperson to request what they need and when (given a certain lead-time). The benefit of the pull method over a push process is to ensure up-to-date information is efficiently provided to the salesperson.

Toyota initially developed the just-in-time (JIT) model and introduced to America in the early 1980s. The just-in-time production system has two characteristics in Japan. While JIT has

taken on a definition of having only the necessary products, at the necessary time, in the necessary quantities, there is a secondary and equally important characteristic. Sakakibara, Flynn, Schroeder, and Morris (1997) research discovered the corporate infrastructure of “respect for human systems, which focused on active employee participation ... and self-display of worker’s capabilities by entrusting them with greater responsibility and authority” (p. 1248). Their research has shown demonstrated benefits when JIT and infrastructure characteristics are utilized together in a pull system. This concept applies to marketing sales support in terms of a lower workload by not maintaining unneeded intelligence. Their efforts are applied on what matters at the time and not what might be needed in the future. A pull system and JIT would reduce response time to process salespersons requests by Little’s Law (Little, 1961). The marketing department efforts are directly supporting the sales.

Marsh and Conard (2008) researched the services aspect of the pull systems. Would the pull system result in faster task completion times and no difference in the quality of performance for knowledge worker than a push delegation system? The results indicated that the completion time for cognitive tasks improved under a pull system, and there was no change in output quality, stress levels, or satisfaction.

Maqsood et al. (2007) research was to determine if academic pulled from an academic knowledge source could have a practical use by a certain organization. They found that there was a benefit in the use of pulling knowledge. Their finding also commented how “useful academic research goes unnoticed because of a lack of interest” by certain organizations. Their recommendation is that there is a benefit “in attending knowledge events such as conferences, symposiums” or to participate in a joint research programs (p. 94).

## **Situational Leadership**

Hersey and Blanchard (1972) originated the life cycle theory of leadership in 1969. In 1972, it was renamed situational leadership and published in the second edition of *Management of Organizational Behavior*. Blanchard, Zigarmi, and Zigarmi (2013) updated version of situational leader illustrates business management. The situational leader uses various management techniques depending on the developmental level of the individual (an individual is purposely used instead of an employee). Competence and commitment categorize the individual's four levels of preparedness and experience. As seen in Table 1, the level 1 begins with low competence but has a high commitment (or enthusiasm). As the individual becomes involved with the task, reality sets in along with uncertainty, and the amount of commitment drops off. Given the right encouragement, increases the competence, certainty, and brings along the rise in commitment. However, if the leader is unaware or fails to ameliorate the level 2 frustrations, the individual may depart. Level 4 the individual is fully competent to the task and commitment is restored.

The situational leader style varies depending on the person's level. The level 1 leader style is directing with specifics of who, what, when, where and how. The performance is monitored closely during this phase, and little remains to chance. As the individual matures with the task, the leader's style adapts to coaching. Coaching involves directive and supportive roles. The leader may solicit ideas and provide the individual with more information about the task. There is an encouragement to increase the individual's commitment. At the third level, competence is growing, and the leader spends more time in the support role. The leader listens to the individual's ideas, and decisions may be made together. At the fourth level, the leader has the confidence to delegate the task. The individual is fully confident and calls on the leader when needed.

The extent of time the leader spends with the individual at each level is indicated in Table 1. The amount of time requires setting goals, which is advocated by Blanchard et al. (2013), using specific, motivating, attainable, relevant, and trackable (SMART). Note, other sources use similar criteria, but most notable, the “T” being time-bound.

Table 1

*Individual Development Levels, Situational Leadership Style & Leader Time Obligation*

Level	Competence	Commitment	Leadership Style	Leader Time
1	Low	High	Directing	High
2	Low to Moderate	Low	Coaching	Medium
3	Moderate to High	Variable	Supporting	Medium
4	High	High	Delegating	Low

**Goal Setting.** Blanchard et al. (2013) illustrate the following questions for the criteria:

## Specific

- What exactly is the goal or task?
- When does the goal or task need to be accomplished?

## Motivating

- Is the goal or task meaningful for the individual?
- Will working on this goal build competence and commitment?
- Will working on this goal add or drain energy?

## Attainable

- Is the goal realistic, reasonable, and achievable?
- Is the goal within the individual’s control?

### Relevant

- Is the goal or task meaningful work for the organization?
- Is the goal or task aligned with organization and work team goals?
- Is the goal or task a high priority in relation to other goals?

### Trackable

- What does a good job look like, at each level of development?
- How will progress and results be measured and tracked? (p. 32)

The individual will progress through the competency levels until achieving level four. If the individual is given another task or a promotion, the process begins all over. It is possible to for an individual to be working at multiple levels. The situational leader will participate with the individual at their level of competency. Should the individual not progress to a higher competency, a redirection will move a step back for additional support and coaching. Blanchard et al. (2013) is resolute for keeping the feedback positive but also not to give false praise.

### **Self-Directed Learners**

Grow (1991) based his study on the Hersey and Blanchard (1998) situational leadership to develop a staged self-direct learner (SSDL) model for teachers to understand and support students towards becoming self-directed. This process mirrors the situational leadership model.

Assumptions that were stated (Grow, 1991):

- The goal of the educational process is to produce self-directed learners.
- There is more than one teaching method
- The ability to be self-directed is situational. A student may be self-directed in one subject yet dependent learner in another subject.
- The model builds on the belief that a self-directed learner has more value than being a dependent learner.
- Self-dependency is learnable. (p. 127)

The SSDL model is analogous to the situational leadership model (see Figure 1).

Stage	Student	Teacher	Examples
Stage 1	Dependent	Authority Coach	Coaching with immediate feedback. Drill. Informational lecture. Overcoming deficiencies and resistance.
Stage 2	Interested	Motivator, guide	Inspiring lecture plus guided discussion. Goal-setting and learning strategies.
Stage 3	Involved	Facilitator	Discussion facilitated by teacher who participates as equal. Seminar. Group projects.
Stage 4	Self-directed	Consultant, delegator	Internship, dissertation, individual work or self-directed study-group.

*Figure 1.* The staged self-directed learning model. Adapted from “Teaching learners to be self-directed,” by G. O. Grow, 1991, *Adult Education Quarterly*, 41(3), p. 129. Copyright 1991 by Copyright Holder. Reprinted with permission.

**Stage 1.** Grow (1991) speaks of two approaches to learning, coaching and insight. The coaching approach requires a directive teacher who will establish the student’s goals. The teacher is viewed as an expert, uses an extreme teacher-centered approach, and communication is mainly unilateral. Students have little basis to participate, similar to an apprentice situated in the peripheral learning a trade (Knowles et al., 2011). Grow (1991) emphasizes keeping students busy with more assignments they believe are achievable, providing clear communication, no choices, but ensuring their success. Feedback is frequent, immediate and objective. The success of an extreme teacher-centered approach has been shown to be effective for learning (Conti & Welborn, 1986). The teacher cultivates the students into becoming self-directed learners (Knowles, 1979; Pratt, 1988).

The insight approach is different. Insight involves students in the training design, content, based on who they are and what they need to learn. This method leads students to take responsibility

for their learning earlier in the training. While this tactic is ideal for learning, some students will push back for the more direct approach.

**Stage 2.** The students are more receptive towards learning, more confident though the content is not well understood. The teacher provides more explanation, persuasion and purpose for the assignments, which are acceptable by the students. The approach becomes moderately teacher-centered while preparing the students for becoming self-directed. Goal setting is used, two-way communication, and encouragement over praise. Grow (1991) exemplifies the teacher as being enthusiastic and inspiring performer.

**Stage 3.** The students are knowledgeable at this point. They have become participants in their training. While the students are willing to dig in they may still lack confidence in their abilities. They are increasing their metacognitive skills of self-evaluation. The teacher becomes a mentor to the students and will guide them to self-directed independence.

**Stage 4.** The students have developed into a high degree of being self-directed. The students are now doing all of the elements of instruction the teacher was performing in Stage 1. The teacher no longer teaches (in a formal sense, such as lectures), but encourages the students to learn, and remains available. Such examples of learners may be extended to internships.

**Mismatch between teaching styles and learning stages.** Grow (1991) illustrates the 16 pairings in Figure 2, six are a mismatch, and two are severe. The SSDL approach is independent of content being taught but by the student's stage of self-directedness. Problems result in the severe mismatches, a self-directed learner confronted with a directive teacher (T1/S4) or a dependent learner with an instructor who delegates (T4/S1) without explanation. The T1/S4 relationship may result in a revolt for having to perform low-expectancy work. The teacher may misinterpret the student's reaction to being a troublemaker.



S4: Self-Directed Learner	Severe Mismatch Students resent authoritarian teacher	Mismatch	Near Match	Match
S3: Involved Learner	Mismatch	Near Match	Match	Near Match
S2: Interested Learner	Near Match	Match	Near Match	Mismatch
S1: Dependent Learner	Match	Near Match	Mismatch	Severe Mismatch Students resent freedom they are not ready for
	T1: Authority, Expert	T2: Salesperson, Motivator	T3: Facilitator	T4: Delegator

Figure 2. Match and mismatch between learner stages and teacher styles. Adapted from “Teaching learners to be self-directed,” by G. O. Grow, 1991, *Adult Education Quarterly*, 41(3), p. 137. Copyright 1991 by Copyright Holder. Reprinted with permission.

In the latter T4/S1 mismatch, students are unprepared for the task in terms of knowledge, critical thinking, and unlikely to know how to approach the work. Resentment builds and the feeling of having been pushed into isolation. A T4 teacher may not understand and blame the students for not taking responsibility for their learning.

**Good Teaching.** Grow (1991) offers a reason good teaching is unrecognized through the SSDL model. He states that awards tend to go to teachers who are exceptional in Stage 1 and Stage 2 and less often those who are in the latter two stages. There is disagreement among the teacher ranks as to which style is best. From a student’s perspective, the teacher who matches their needs ( $T_i/S_i$ ,  $i = 1,2,3,4$ ) would be the best. The debate of teacher-centered (T1, T2) and learner-centered (T3, T4) coincides, which is best. In close, Grow (1991) suggests that the SSDL model supports the strengths in both spectrums.

S4: Self-Directed Learner			Independent projects. Student-directed discussions. Discovery learning. Instructor as expert, consultant, and monitor.	
S3: Involved Learner		Application of material. Facilitated discussion. Teams working closely with instructor on real problems. Critical thinking. Learning strategies.		
S2: Interested Learner	Intermediate material. Lecture-Discussion. Applying the basics in a stimulating way. Instructor as motivator.			
S1: Dependent Learner	Introductory material. Lecture. Drill. Immediate correction.			
	T1: Authority, Expert	T2: Salesperson, Motivator	T3: Facilitator	T4: Delegator

Figure 3. Applying the staged self-direction model to a course. Adapted from “Teaching learners to be self-directed,” by G. O. Grow, 1991, *Adult Education Quarterly*, 41(3), p. 143. Copyright 1991 by Copyright Holder. Reprinted with permission.

In Figure 2, there were six cells with severe and mismatch conditions. Block out those areas and combine the near match to the match, see Figure 3. Per Grow (1991), the diagonal from T1S1 to T4S4 provides the “learning field” (143). The course begins with lectures, to directed discussions, less structured discussions, and student directed discussions. The teacher changes roles as the students’ progress through the course. Grow (1991) cautions that the progression is usually nonlinear, and some students will move through the stages at different rates.

**Situational Leadership and DDSL for Salesperson Training.** The Acme salespersons are self-directed in the products that were currently being sold. They are working at Level 4 with only occasional need for assistance. When the salespersons were confronted with a printer that exhibits x-y scribing motion, their understanding became uncertain. The computer that was not more sophisticated than Microsoft® DOS is completely rewritten and a modern Microsoft® Windows operating system with software that was significantly complex with x-y and speed adjustments. The machine was also an entirely different size, altered the shape and attachments to stands were entirely new. In reflection, all salespersons were essentially back to Stage 1 in their understanding. They were dependent learners. It was appropriate to use lectures to help bring the salespersons back to more familiar ground. Lectures would be effective if they were brief and accompanied by hands-on demonstrations and training in the laboratory. Considering the learning curve, having daily practice would be essential to becoming comfortable with the equipment and computer.

After several days of gaining experience and becoming more self-sufficient, the salespersons would be given group assignments to set up a mock station. Finally, to set up a real station on a customer's production line.

Training must also take place on product knowledge, marketing, and roleplaying in a similar manner. Completing both areas will greatly build the salespersons confidence. This insight into training is uncommon knowledge for a salesperson trainer. The trainer tends to do what they know.

### **Why Corporate Training Fails**

Berman (2001) listed 23 teaching misconceptions and 28 design errors that are often made by corporate trainers. With those, there were 21 design principles that supported effective

and efficient training. The three categories these are found are

- Deciding what to teach.
- Designing the training content.
- Design of learning activities.

The misconceptions listed in this section reflect those that were problematic at Acme.

**Deciding what to teach.** Berman (2001) describes several areas where corporate trainers tend to have difficulty deciding what to teach. For an example:

Trainers prepare a wide breadth of information at a shallow level instead of less information in-depth. They decide what to teach by brainstorming many topics that might be relevant. They may borrow materials from previously taught courses. They may model the trainees' jobs, list the facts and skills needed, and then plan to teach everything listed. Training is planned for trainees learn the same information is planned without regard to their experience. Trainees are expected to understand, recognize, and identify the context following a course rather than being able to apply what they learned. This knowledge is equivalent to the least learned level in Bloom's taxonomy (Anderson, Krathwohl, & Bloom, 2001; Bloom, 1956).

**Discussion on deciding what to teach.** These misconceptions may be illustrated by a vertical and a horizontal slice of a job (Berman, 2001). The horizontal slice is a list of all discrete training topics that a salesperson should understand by the end of training. There are three problems with this approach. First, because of the number of topics and limited time, the trainer touches on each without ample depth. Time constraints also eliminate the opportunity for the trainee to have sufficient hands-on practice. Secondly, considering the number of topics and time constraints, the trainer is faced with deciding which topics to keep and which to let go. It is difficult to decide which skills matter the most. Thirdly, trainees learn each topic separately and

not aligned with their corresponding skills. This results in the trainee were not recognizing the connection and led to poor or no retention (Knowles et al., 2011).

The vertical slice provides a thematic approach. It uses a typical job that would be expected of the trainee immediately after training. The training would encompass a start-to-finish arrangement, and performed at the job level in as much as practical. The training ensures that the trainees will gain a full experience of what would be expected of them after training concludes. This training plan would result in fewer topics, but those that were covered would be at the depth of relevant knowledge. The decision on which topics to teach becomes easier to decide for the trainer. Salespersons that have these skills may need less instructional time. The trainer will then be able to modify the training as needs required.

**Designing the training context.** Berman (2001) outlines several areas where the corporate trainers tend to have difficulty designing the training content. For example, trainers believe that trainees can learn abstract concepts without having realistic practice. Trainers believe that trainees given a brief story, or told that there is job relevance, may achieve adequate context for building knowledge. If trainees know this information, then this information and skills will be appropriately applied, and that will enable a transfer to their workplace. If trainees have no difficulty making analogies between different contexts, then they will be able to transfer the use of facts and skills across contexts regardless of their similarity.

Trainers believe that it is better teaching trainees new concepts in a simple form that relates to everyday life events instead of training in a context of what trainees will use in their workplace. They also believe that bells and whistles or excitement with course modules make learning environments more effective. When trainees are told that particular information is ‘really important,’ they will be more likely to remember or will understand how it relates to their workplace.

**Discussion on designing the training context.** Berman (2001) states in a traditional training course the lessons are routine, prepared in advance, and without much consideration for the job. Lectures are unexciting with practice following later. Instructors expect the trainees to perform the practice, but this rarely occurs because the information was inert and was not effectively stored in their memory. At the time when the knowledge is necessary to practice, the trainees then bring up the questions. Ideally, learning and job usage should be conducted at the same. When that is impractical, “trainees should be placed in realistic scenarios relevant to their real life work, in which they have authentic goals to achieve” (p. 206).

Situated cognition states that knowledge is more easily stored and capable of being retrieved when learning is in the context of what will be used in the workplace (Brown, Collins & Duguid, 1989). They found that cognition is revealed through daily activities and that “knowledge is situated, being in part a product of the activity, context and culture in which it is developed and used” (Brown et al., 1989, p. 32). Thus, if information and skills are not taught together in the context, the trainees may not be able to use what they have learned effectively.

**Design the learning activities.** Berman (2001) defines several areas where the corporate trainers tend to have difficulty designing the learning activities. For example, trainers have the misconception that trainees learn by listening or learning new skills without needing hands-on experience. They believe what is to be taught should be said aloud, and what they say is more important than what trainees want to say. They also believe “active learning” means any form of trainee active participation in the learning environment. They understand it is the trainees’ responsibility to take control of their learning experience by taking notes and asking questions, and that good trainees pay attention and take notes. As a corollary, trainees that listen and take notes will also learn.

Trainers have the misconception that trainees should not be asked to practice a skill before they are taught it in a decontextualized manner first. They also believe that distributing reference materials before formal instruction renders the instruction redundant since trainees may have already seen the presentation. Similarly, trainers mistakenly believe that distributing reference materials before a formal instruction is imprudent because it becomes unnecessary for trainees to pay attention during the lecture.

**Discussion on designing the learning activities.** Cognitive psychology began in the mid-60s, and that science explains many of the misconceptions listed above. The mystery is why educators are unaware or indifferent to using this science (Rogers & Freiberg, 1994). Unfortunately, what trainers and trainees experience in their K-12 and college classrooms transfers to corporate training and perpetuates the misconceptions (Berman, 2001). Training is enhanced when training and practice are completed within the same context and authenticity of the workplace (Brown et al., 1989; Reder, Anderson, & Simon, 1996).

Along this vein, Berman (2001) emphasized several key course design principles. Teach what is most relevant by prioritizing those topics and skills. The vertical slice method focuses on the needs of the training event and areas that could be trimmed could be topics that an experienced salesperson could have intuitively worked out. A second element is to provide individual or small group instruction at the time trainees have questions. Answering questions becomes a learning opportunity when the trainee is most receptive and able to put the information immediately to work. It is essential to have actual or realistic hands-on experience follow or precede new instruction (Brown et al., 1989). As a corollary, experienced trainees could be moved directly into a hands-on experience then be assisted when obstacles arise. Another thing is to create informational resources for the trainees that are easily accessible, and

able to be provided at the time of need for maximum operational efficiency (Davenport & Prusak, 1998).

An observation made during the massive open online course (MOOC) was that two sets of presentation materials were provided to students. One set was clean, and the other was marked up as the result of the lecture (Massachusetts Institute of Technology, 2012). The second set allowed the students to follow the lecture then add occasional clarifying notes. At the end of the lecture, the presentation material provided a quick reference to the taught concepts.

Reflecting on Acme, while the researcher does not intend to show that training was the primary culprit for the tepid sales performance, it certainly was a huge contributor. When the regional sales managers provided local on-the-job training, the results were evident in the budget. Possibly one of the overriding mistakes was not measuring the training effectiveness, which would have provided feedback for improvement (Kirkpatrick, 1998).

### **Developing Training**

Berman (2001) discussed developing training like to a vertical slice of a typical job that would be expected of the trainee immediately after training. The training material is concentrated on the essential elements rather than the nice-to-know (Hopkins, 1978). How does the corporate trainer know what is essential and what is not? Wiggins and McTighe (2006) describes the method of *backward design*. There are “three stages, identify desired results, determine acceptable evidence, and plan learning experiences and instruction” (Wiggins & McTighe, 2006, pp. 17-19).

What skills should the salespersons have once their training is complete? That becomes the starting point in developing the training. Would the salesperson rattle off performance specs to a client have as much importance as understanding and being able to discuss the customer’s



business and potential needs? What assessments will provide sufficient evidence that the training was successful? What lessons need to be developed to help the salespersons achieve their end goal? Beginning with the end result in mind tends to focus the training content. However, the ability for small business to adapt the sophistication to build a quality plan for training salespersons is far from simple. Thus, the collaboration with learner-centered adult educators would improve the outcome.

### **Academia-Industry Partnership**

The primary roles that a contemporary university plays nowadays can be classified as the triad of teaching, research, and service (Santoro, 2000).

**Barriers to university-corporate collaborations.** University perspective: Hasselmo and McKinnell (2001) discuss factors that may avert research partnerships with industry from being successful:

- The practical problems of negotiating and managing an alliance
- The possible harmful effects on faculty and students.
- The possible impact on the mission, reputation, and financing of the university.
- State or local officials' expectations of university contributions to regional economic development.

Company perspective: Hurdles that companies must overcome to foster greater numbers of collaborations include respecting the value of research collaborations, incorporating university research into product development, and management barriers.

### **Practitioner's Perspective**

At the start of the doctoral program, the researcher serendipitously discovered Berman's (2001) dissertation on reasons why corporate training fails. This discourse explored the common

misconceptions trainers have about learning, the resulting course design errors, and the design principles for constructing effective training courses. The researcher, whose background was engineering and an occasional corporate trainer was in awe – so many of these misconceptions resonated deeply.

One of Berman's findings was the lack of availability of books and training materials that supported learner-centered training, so it would be very difficult for a trainer to self-improve or to find guidance. However, would this have mattered for Acme or companies in a similar dilemma? When trainers are unaware of a learner-centered training style, it is unlikely they will make any effort to acquire or construct that knowledge (Pintrich, 2002). Moreover, this was such the case with the SME trainer at Acme.

The significance of Berman's (2001) findings lay in the misconceptions instructors make at the inception, the creation and then the delivery of training. She approached adult learning from a constructionist instructional designer. She illustrated 22 misconceptions and nearly 30 design errors in deciding what to teach, designing the training context, designing the learning activities, and instructor and student roles and responsibilities.

### **Salesperson Training**

Konrath (1992) describes four levels of salesperson selling situations between existing and new customers and existing and new products. Each level is increasingly more difficult to master for the salesperson, especially if training was deficient.

1. Existing Customer and Existing Product. The salespersons understand the needs of the customer and the capabilities of the product. They understand how their product helps solve the customer's problem. The customer knows the salesperson and the integrity of the company.
2. Existing Customer and New Product. The salespersons understand the needs of the

customer but are still learning the capabilities of the product. They may not fully understand how their product helps solve the customer's problem. The customer knows the salesperson and the integrity of the company.

3. New Customer and Existing Product. The salespersons do not fully understand the needs of the customer, especially in a new market but do understand the capabilities of the product. They may not fully understand how their product helps solve the customer's problem. The customer does not know the salesperson and may not know the integrity of the company.

4. New Customer and New Product. The salespersons do not fully understand the needs of the customer, especially in a new market and are still learning the capabilities of the product. They may not fully understand how their product helps solve the customer's problem. The customer does not know the salesperson and may not know the integrity of the company.

Acme salespersons worked in Level 1 and modified Level 3 environments. In both levels, the company brand was known within the industry. The launch of the scribing printers added two new levels, Level 2 and Level 4. Level 2 was intended to offer existing customers new equipment at nearly half the price of the current printer. Salespersons were more comfortable selling the current equipment because they were uncertain about the new equipment. Level 4 sales were new opportunities for this business but did not manifest as expected. If the salesperson could not sell to customers they knew and within a familiar industry, then Level 4 was beyond their ability. Sales training did not address how to cope with these new situations.

Konrath (1992) further explained salesperson training during new products launches. Management has a desire to train quickly salesperson on the equipment features and benefits and why it is superior to existing products on the market. With complex equipment (similar to Acme's scribing printer) salespersons are trained to provide quotations, ordering, and set up

demonstrations. The problem with this approach is that training is product centered rather than being customer centered. A sale falls through. When salespersons ask for help, they are told that it is their job to figure out.

Honeycutt, Howe, and Ingram (1993) investigated how sales training objectives were being established across three types of firms, industrial products, consumer products and services. The first analysis was to query the training executives, training managers, and salespersons on their primary sales objectives. The single most important objective all three agreed upon was to increase the sales volume. The next was to decrease turnover by the training executives, training managers while the salespersons felt an improved use of time should be an objective.

For the initial salesperson training, training executives, training managers, and salespersons were asked about time allocation in four primary categories. The aggregate averages from the three types of firms were:

- Product information (36.8%).
- Sales technique (31%).
- Market information (14%)
- Company information (11.7%).

There was variation significance between firms in product information and sales technique. Twenty-eight percent of the respondents indicated there was no system of setting objectives. Thirty-five percent indicated that only one individual or department set the training objectives, and 47% indicated that objectives were set through a joint effort. Honeycutt et al. (1993) showed the distribution of optimal time allocation in Table 2. It is notable to observe that training executives and salespersons have contrary preferences; the salespersons felt knowledgeable with their selling skills. The sales managers' preferences lie between the executive' and salespersons' preferences.

Table 2

*Sales Training Objective Allocation of Time Preferences by Respondent*

Respondent	Objectives	
	Sales Technique	Product and/or Market Knowledge
Training Executives (n=113)	60%	34%
Sales Managers (n=100)	51%	47%
Salespersons (n=85)	36%	60%

*Note: Percentages are not intended to sum to a 100%.*

Sales managers that utilize training objectives to plan their training program would reap benefits in the ability to evaluate the program. The payback is a known return on investment and return on customer expectations (Honeycutt et al., 1993; Kirkpatrick & Kirkpatrick, 2010; Phillips, 1998).

Chonko, Tanner, and Weeks (1993) study of sales training programs failed to solicit input from salespeople. They suggest asking salespersons what they need or want from training, and this would help to ensure salespersons had involvement and increased the chances that they will accept the training.

Honeycutt, Ford, and Tanner (1994) researched on the relationship between sales managers and sales trainers in the sales training program. Their findings indicated that joint participation was improving but was concerned in two areas.

Large companies: Sales trainers that handled sales training did not solicit involvement from the sales managers when creating, implementing, and evaluating training programs.

Small companies: Sales managers that handled sales training conducted fewer training evaluations or provided follow-up activities.

The salespeople expressed concerns:

- Training order. Topics in complex sales are taught before prerequisite knowledge is gained. When these are taught outside of normal progression, the salespeople may not make the necessary connections. Also, when trainees learn each topic separately and not with their corresponding skills, the trainee does not recognize the connection. This separation leads to poor or no retention (Berman, 2001; Honeycutt et al., 1994; Knowles et al., 2011).
- Follow-Up. Sales managers do not follow up when salespersons feel uncertain when trying new techniques. To reinforce the classroom training, salespersons want follow up with field coaching (Honeycutt et al., 1994). Berman's (2001) misconception 4, trainers believe "that it is sufficient for students to 'understand,' 'recognize,' and 'identify,' following a course, rather than being able to do what they learned" (p. 146). Kirkpatrick and Kirkpatrick (2013) observed that trainers are "spending relatively little time in... follow-up activities that translate into the positive behavior change and subsequent results (Levels 3 and 4) that organizations seek" (p. 90).

### **Common Training Methodologies**

Eight of the most common training methodologies used for corporate training are readings, pre-workshop assignments, program instruction, lecture, discussion, on-the-job (OJT), case study, and role play (Kurzrock, 1990; Lupton, Weiss, & Peterson, 1999). Each of the methods are categorized as being a self-study or a workshop, see Table 3. These were then used to identify the diversity of training objectives in Figure 4.

Table 3

*Two Categories of Eight Common Training Methodologies*

Self-Study	Workshop
Readings	Lecture
Pre-workshop assignments	Discussion
Programmed instruction	OJT
	Case Study
	Role Play

Five studies were examined and are illustrated in Figure 4. Baker (1990) found lectures to be the dominant training method yet was ranked 10 by Erffmeyer, Russ, and Hair (1992) and ranked second by (Hopkins, 1978). Chonko et al. (1993) placed reading as the dominant training method yet was ranked eighth by Baker (1990). Erffmeyer, Russ, and Hair (1992) dominant training method was role play while ranked second by Hopkins (1978) and fourth by Baker (1990) and Chonko, Tanner, and Weeks (1993). Hopkins (1978) solely had OJT as the dominant training method. Russ, Hair, Erffmeyer, and Easterling (1989) dominant training method was a programmed instruction that centered on interactive video, computer-aided instruction, teleconferencing, and computer managed instruction.

	Baker (1990)	Chonko, Tanner, & Weeks (1993)	Erffmeyer, Russ, & Hair (1992)	Hopkins (1978)*	Russ, Hair, Erffmeyer, & Easterling (1989)
Reading	8	1			
Preworkshop				5 <sup>p</sup>	
Programmed Instruction	3 <sup>m</sup> 7 <sup>o</sup> 6 <sup>n</sup>	2 <sup>f</sup> 6 <sup>h</sup> 3 <sup>g</sup>	2 <sup>a</sup> 8 <sup>r</sup> 5 <sup>b</sup> 6 <sup>c</sup> 9 <sup>e</sup> 7 <sup>d</sup>		1 <sup>i</sup> 2 <sup>k</sup> 3 <sup>l</sup> 4 <sup>j</sup>
Lecture	1		10	2 <sup>q</sup>	
Discussion	2		4	2 <sup>q</sup>	
OJT				1	
Case Study	5	5	3	2 <sup>q</sup>	
Role Play	4	4	1	2 <sup>q</sup>	

Note.

- a. Interactive video rated #2 but placed under programmed instruction
- b. Computer-assisted instruction rated #5 but placed under programmed instruction
- c. Business games rated #6 but placed under programmed instruction
- d. Computer-managed instruction rated #7 but placed under programmed instruction
- e. Videotape rated #9 but placed under programmed instruction
- f. Videotape rated #2 but placed under programmed instruction
- g. Audio tape rated #3 but placed under programmed instruction
- h. Computer simulation rated #6 but placed under programmed instruction
- i. Interactive video rated #1 but placed under programmed instruction
- j. Computer-managed instruction rated #4 but placed under programmed instruction
- k. Computer-aided instruction rated #2 but placed under programmed instruction
- l. Teleconferencing rated #3 but placed under programmed instruction
- m. One-on-one instruction rated #3 but placed under programmed instruction
- n. Films rated #6 but placed under programmed instruction
- o. Self-assessment instruments rated #7 but placed under programmed instruction
- p. All three self-study tools reported as one
- q. Seven workshop tools reported as one
- r. Tele-training rated #8 but placed under programmed instruction

\* Coaching and observation also included in the study

Figure 4. Five studies and their ranking of sales training methodologies. Adapted from "Sales training evaluation model (STEM)," by R. A. Lupton, J. E. Weiss, & R. T. Peterson, 1999, *Industrial Marketing Management*, 28(1), p. 79. Copyright 1999 by Copyright Holder. Reprinted with permission.



There is significant variability in the rankings. The upper three rows pertain to self-study and the lower five to workshop training methodologies. In terms of rankings, 21 (58%) are self-study while 15 (42%) are the workshop. If the essential rankings 1-5 are considered, self-study and workshop are nearly equally distributed between self-study and workshop.

### **Training Effectiveness**

Kirkpatrick and Phillips both use four levels for assessing the quality of the training. The first three levels are similar then changing in Level 4. Phillips adds a fifth level to analyze the ROI when a project has significant importance. The ROI takes place around 10% of the projects.

**Level 1.** Phillips: Reaction and Perceived Value; Kirkpatrick: Reaction

Both Phillips and Kirkpatrick consider Level 1 as the intent is to measure the participants' satisfaction with their training. Level 1 uses an inexpensive survey with relevance to what trainees feel after the end of the class. It has minimal bearing on how well they retained knowledge or will perform in the field. Still, this evaluation provides useful immediate feedback to the instructor who could make course content or process changes before the next class.

Phillips (YEAR) suggests that the survey should inquire about the trainee's perception of the course content, usefulness, relevance, importance, and appropriateness. Kirkpatrick indicated that about 78% of the training events measured this level (ASTD Research, 2009; Kirkpatrick & Kirkpatrick, 2013).

**Level 2.** Phillips: Learning and Confidence; Kirkpatrick: Learning

Both Phillips and Kirkpatrick consider Level 2 is the extent the participants acquired the intended knowledge, competencies, confidence, skills and attitudes, based on the trainee's efforts in the course. Level 2 is equivalent to a summative assessment or capstone. This survey is inexpensive as it is conducted at course end. It may also be set up as a pre-post training

assessment. Level 2 will not indicate how well the salesperson's knowledge will transfer to the job.

Had Acme used a Level 2 assessment with trainees in each training group, particular knowledge, skills, or attitude gaps may have surfaced. However, these gaps would likely have been from not meeting the trainer's goals, and ameliorating those may not have resulted in more effective sales training.

**Level 3.** Phillips: Application and Implementation; Kirkpatrick: Behavior

Both Phillips and Kirkpatrick consider Level 3 is the extent to which participants can apply what they learned during training once they return to their job. Level 3 provides how well the training program supports the transfer of knowledge to the workplace. The trainee's supervisor will report a month or more on the trainee after they have demonstrated the use of their new knowledge.

Had Acme planned this evaluation into the training, the regional sales managers would have known something was amiss. Whether the manager would have notified the trainer is unknown since plans were not set up to do so. Had plans been in place, the trainer would have received the feedback, which could have revised the next training program based on this evidence.

**Level 4.** Phillips: Impact and Consequences; Kirkpatrick: Results

At this level, Phillips and Kirkpatrick's have similar but very different approaches.

Phillips and Phillips (2002) discusses Level 4 is important for understanding the business consequences of the training. Their emphasis on the collected data is how it draws the attention of the senior management. Level 4 shows the productivity metrics and customer satisfaction connected with the training program; it supports why the training took place. Phillips collected

data is used to segregate the effects of the training program on the objectives. With their extra step, the link between the training and business metrics becomes evident.

Kirkpatrick and Kirkpatrick (2010) emphasize that formal training events do not deliver significant outcomes, and reinforcement is needed after training. Their business partnership model helps to determine the effect of the training. There is less emphasis on using empirical financial formulas as Phillips does to segregate the effects of the training program. However, they do acknowledge that the results always come from a variety of factors. These need to be measured to know which factors affect the knowledge transfer to behavior and subsequent results. The final step produces a return on expectations (ROE) valuation to determine if stakeholder expectations were met. Otherwise, it will be difficult to take credit for success (Stawarski, 2012).

For Acme, the most direct awareness that training was successful was the sales budget. Results may be reviewed at the micro level of the salespersons' ability to meet their quota and at a macro level at corporate with product sales revenue. The revenue loss was noticed at Acme, but without the other two evaluation levels, training was not suspected.

**Level 5.** Phillips: ROI; Kirkpatrick does not use a fifth level.

Return on investment (ROI) shows the monetary benefit of the training to the cost of the training. Phillips and Phillips (2007) stated "This value may be stated in terms of either a benefits/costs ratio, the ROI as a percentage or a payback period. Level 5 requires two important steps: (a) the impact data from Level 4 is converted to monetary values; (b) the cost of the training is captured. Along with the five levels of results and the initial level of activity" (p. 15), another type of data is the intangible benefits. The benefits are not converted to money but nonetheless represent an essential measure of success (Stawarski, 2012).

The following vignette mirrors Acme's training issues and emphasizes the need to reinforce trainees' knowledge once they return to work. Kirkpatrick and Kirkpatrick (2010):

This product was one in a series of similar products. It should have been a slam-dunk. So what was the problem? I [Wendy Kirkpatrick] conducted some analysis. I reviewed the product rollout. The only thing that seemed to be different about this product's introduction was the fact that I had created and conducted the training myself. Could it actually be possible that the training was the cause of the poor sales? At that time, I did not have the tools or expertise to determine if this really was the case, but it seemed like the most plausible explanation. While I had done what I knew at the time, my training program was basically a lecture on how to size the product for the customer. Yet sizing the product accurately is a multistep process that I know now would have lent itself to hands-on on training, with a knowledge demonstration at the end. Sales reps reported that the aisle where the product was housed was the most feared and avoided in the store. Associates didn't really understand how to cut the product, so they stayed away from it in the hope that customers wouldn't ask them to do it. The product was eventually discontinued, resulting in a very expensive buy-back of unsold units. (pp. 26-27).

Phillips and Phillips (2002) list 11 reasons why training fails. Analyzing the above scenario provides some lessons learned. Failure #5 occurs when training is considered as an event because this does not create a behavior change. Failure #6 trainees are not held responsible for their results but instead blame others. Trainees need to be motivated and accountable until there is a behavior change. At Acme, when the regional sales managers conducted one-on-one training in the field, this failure disappeared. Failure #8 occurs when there is the lack of management support before and after training completed. While the training might not have been

perfect, the trainee's management held some responsibility for encouragement and coaching. After all, how well the trainees did affect business revenue and the equipment consumed sales space. Failure #11 lacks feedback to the trainees from management. First, there needed some ability to collect data from the equipment and who were the users. From a business perspective, if the equipment were not earning its place, [Wendy] Kirkpatrick should have been notified.

Two similar but different evaluations, each delivering the training results through different approaches. The Kirkpatrick ROE model would have sufficed for Acme.

### **Principles of Adult Learning Scale (PALS)**

Conti (1978) developed the Principles of Adult Learning Scale (PALS). The PALS is a 44-item instrument that measures the teachers' practices towards teaching and learning principles that are described in the adult education literature (Conti & Fellenz, 1991). Its application is to quantify teaching methodologies and not an examination of andragogy. According to the Conti, teaching styles are not randomly selected and do not change over time. They are linked to an instructor's educational philosophy. Scores on the PALS indicate the level of learner-centered versus a teacher-centered approach or some combination of both styles.

PALS were initiated when there was limited scholarly research on the relationship between the cognitive characteristics of teachers, their teaching behaviors, and the academic success of their students. Conti's (1978) purpose was to create a valid instrument for measuring the degree to which teachers accepted and followed the adult education learning principles. He concluded that his research was possible, thus became the beginning of PALS.

The PALS survey uses a six-point Likert scale. There are 44 items with choices: Always, Almost Always, Often, Seldom, Almost Never, and Never. The norm scores range from zero to 220 with the mean of 146 and standard deviation of 20. The scores above the mean indicate

learner-centered instruction while scores below the mean indicate teacher-centered instruction (Conti & Kolody, 2004).

PALS consist of seven factors as described below. Each factor incorporates items derived from adult learning principles. These seven factors are as follows (Conti, 2004):

- Learner-centered activities.
- Personalizing instruction.
- Relating to experience.
- Assessing student needs.
- Climate building.
- Participation in the learning process.
- Flexibility for personal development.

**Validity.** The validity of PALS (Conti, 1978) was established by an expert jury made up of adult learning pioneers and scholars, Aker, Darkenwald, Knox, Knowles, and Peters. Content validity came through the field tests in full-time public school programs. The criterion-related validity of PALS was determined through comparison with the Flanders Interaction Analysis Categories (FIAC); the FIAC measures classroom interaction through direct observation and matched what faculty reported through the PALS instrument.

**Reliability.** Reliability was established by a test re-test method and has a reliability coefficient of .92 (Conti, 1978). Additionally, the PALS instrument has consistently been used as a measure of learner- and teacher-centered analysis tool in numerous peer-reviewed journals and doctoral dissertations.

Conti (1983) later developed seven sub-scales through the accumulated large number of cases. Factor analysis was achieved with a slightly better than a 10:1 case to a variable ratio that

is still considered the rule of thumb (Costello & Osborne, 2005). He produced identifiable factors of the major concepts from the literature (Conti, 1983) and utilized all 44 items. Factor scores are calculated by adding up the points for each item in the factor. Factors with high scores represent a learner-centered approach while low scores represent a teacher-centered approach. The accumulation of points from all seven factors provides an overall net PALS score of being either learner- or teacher-centered yet some individual factors may portray the opposite.

**Seven factors.** Conti (2004) defined seven factors in PALS:

***Factor 1. Learner-centered activities.*** This main factor consists of 12 items and 26% of the total PALS mean score. This factor has several contrasts such as:

- Use of standardized tests versus informal evaluation techniques.
- A quiet individual study versus having a collaborative approach.
- The belief that students learn the same versus have multiple learning styles.

***Factor 2. Personalizing instruction.*** This factor consists of 9 items and 21% of the total PALS mean score. This factor contrasts:

- Not to personalize the material versus personalize the materials to meet the student's needs
- Inflexible course objectives versus objectives developed to meet the student's motives and abilities.
- The same set of materials for all students versus a variety of materials, methods and assignments.
- Lecture paced versus self-paced.

**Factor 3. *Relating to experience.*** This factor consists of 6 items and 14% of the total PALS mean score. The learner-centered approach emphasizes:

- Planning lessons that support the students' experiences
- Encourages students to relate their new knowledge to their experiences
- Students ask questions that relate content to experience and to promote greater critical thinking.

**Factor 4. *Assessing student needs.*** This factor consists of 4 items and 10% of the total PALS mean score. The learner-centered approach emphasizes:

- A determination of what the student needs to know is important.
- An evaluation of gaps between a student's performance and goals
- Students are mentored on their goals.

**Factor 5. *Climate building.*** This factor consists of 4 items and 11% of the total PALS mean score. The learner-centered approach emphasizes creating a welcoming learning environment that encourages:

- Student and instructor collaboration
- Reduction of learning barriers.
- Risk taking with mistakes allowed as natural part of learning. Students' mistakes provide feedback to the teacher for future course improvement.

**Factor 6. *Participation in the learning process.*** This factor consists of 4 items and 9% of the total PALS mean score. The learner-centered approach emphasizes student's choices.

- Problems that they wish to answer
- To participate in selecting the course topics
- Participate in developing criteria for evaluating classroom performance.



**Factor 7. Flexibility for personal development.** This factor consists of 5 items and 9% of the total PALS mean score. This factor contrasts:

- An instructor versus a facilitator of knowledge
- Objectives are set versus objectives being flexible to meet students' needs
- A disciplined classroom environment in discussion topics versus an environment that allows controversial topics that is subjective to stimulate understanding and personal growth.

### **Personal Human Resource Development (HRD)**

Knowles et al. (2011) created the HRD Style Inventory andragogical measurement instrument in 1987 for the purpose of helping instructors and trainers. This self-assessment tool was designed to give the instructors insight into their general orientation to adult learning, program development, learning methods, and program administration. The instrument has not undergone academic validation thus its potential to understand the theory of andragogy remains unknown.

### **Meta-Analysis**

Before meta-analysis, combining results of similar quantitative studies were transformed into a qualitative summary. The summaries were then vote counted by the number of significant to the number of insignificant studies. Later, summaries were scored through a standardized measure, such as combining p-values. These approaches are rarely used today (Borenstein, 2009; Krathwohl & Smith, 2005).

A meta-analysis has evolved since Glass and Smith (1979) and Glass, McGaw and Smith (1981), who plotted class size against an achievement. Numerous studies showed no relationship between class size and scholarly achievement and further research was unwarranted. It was

believed that it would be unproductive to return to the class-size literature in search of defensible interpretations and conclusions. Glass and Smith determined that the large amount of research literature could bear results with meta-analysis. Their initial questions focused on (a) the relationship between class size and achievement level and how it varies with the students' ages; (b) if there was variation between reading and math instruction. They showed:

- Between a class size of 40 students and one student, there were more than 30 percentile ranks of achievement.
- The difference in groups of 20 students and groups of 10 can be larger than 10 percentile ranks.
- All things equal more is learned in smaller classes.

Meta-analysis uses past studies and categorizes the data into subsets with dissimilar conditions. Glass and Smith (1979) analysis began with coding studies to identify certain properties that might interact with the relationship between class size and achievement. They read several studies, collaborated with experts and made best guesses as to which conditions would represent the relationship. Five broad categories were established:

- Study identification.
- Instruction.
- Classroom demographics.
- Study conditions.
- Outcome variable.

They found 25 specific items that fit these five categories. In the review, some items were found to be rarely declared in the original research but now could be reported. A coding sheet was used to transcribe each study. The major elements of the coding sheet are shown below:

- Identification consisted of year and source of data. The year was used to identify trends in the class size and achievement. The sources that were considered originated from journals, books, thesis, or unpublished sources.
- Instruction consisted of subjects, duration of instruction, the number of students, the number of instructional groups, the number of instructors, and student/instructor ratio. The duration was documented by hours and weeks. The number of students to the number of instructors provided a relative value for the class size.
- Classroom demographics consisted of student ability, student's age, and average ages. Student ability was reported in three categories, IQ below 90, above 110 and the middle. Ages were used when all students were the same age. The average age was used when there were mixed ages.
- Study conditions consist of the assignment of students and teachers to groups. The conditions reflected random, matched, repeated measures or uncontrolled to provide the degree of experimental control during the study.
- Outcome variable consisted of the form of achievement measure and quantification of results. The type of success outcome was from either standardized tests or non-standardized assessments. The quantification of outcomes was the degree of experimental control between pretest-posttest gains or covariance-adjusting posttest means for pretest differences.

Light (1984) identified six areas where research synthesis is more effective than individual studies are:

- Explain which treatment features matter.
- Determine critical outcomes.

- Explain conflicting results.
- Help match the treatment type with recipient type.
- Assess treatment stability
- Assess research design.

In terms of treatment features that matter, Raudenbush (1984) may have dispelled a part of the controversy of the teacher expectancy Pygmalion study (Rosenthal & Jacobson, 1968).

They noticed that the strength of the effect was:

- Greatest when the teacher was informed prior to meeting with the children.
- The effect was nil when the teacher had met with the children for more than two weeks before being informed.

Krathwohl and Smith (2005) suggest particular attention to four questions when using meta-analysis.

- The research question and variables need defining.
- Whether there are a sufficient number of studies available, what literature will be searched, and what will be the study acceptance criteria?
- Whether this will be a descriptive or investigative meta-analysis?
- How will the results of the individual studies be combined and analyzed?

## **Summary**

In the nineteenth century, the American education system accepted a pedagogical model for teaching youth and adults. While there were critics, there was insufficient momentum to make changes. Still today, for most learners, the term and meaning of andragogy is relatively unknown amongst the non-educational-trained practitioners.

Unless corporate trainers have experienced the learner-centered learning model that

aspect of training preparation will automatically default to a teacher-centered model. The burden of training preparation is primarily on the content the trainer believes important. Less thought goes into whether it is the right content for the trainee. Because the content always seems to be greater than the time available, the trainer decides to include the breadth of the content. The trainer should be focusing on those vertical elements the trainees will need when they return to work. Because so much time is spent at the podium, the opportunity for hands-on practice is deferred.

Knowles (1980) stated that andragogy lies on a continuum with pedagogy. Age is not solely a predictor of which method to use. In some cases of complexity, adults will learn better in a pedagogical approach. There has to be a balance or optimization between content that fits the teacher-centered model, and that fits the learner-centered model.

The effectiveness of the training should be significant to trainers. Kirkpatrick (1998) and Philips (2002) developed multiple assessment levels. The first level is whether the classroom training expectations were met. The second is whether knowledge was retained. The third determined the workplace effectiveness. Finally, the fourth assessment determined whether training had an effect on the financial bottom line. Philips (2002) final level is whether there was a return on investment.

Tools are available to help trainers gain insight into adult learning. Conti (1978) developed the PALS that will reveal an instructor's teaching style as a learner- or teacher-centered. PALS is a validated instrument and is often found in dissertations. Since development, Conti (1983) has collected sufficient studies to factor the instrument into seven sub-scales.

Knowles et al. (2011) developed the HRD in 1987, which is an andragogical measurement instrument. This tool was designed to help instructors gain insight into their

orientation to adult learning. This instrument has yet to be validated.

A meta-analysis is advantageous when there have been a number of studies that have not been looked at as a group. The many studies that have used PALS will provide an adequate supply.

## **Chapter 3: Methodology and Procedures**

### **Overview**

Meta-analysis is an effective research tool as it provides a systematic review of multiple studies. The four questions that Krathwohl and Smith (2005) suggested when using meta-analysis include the process for using it and the criticisms against using it. As well, include the criteria to determine the study's eligibility for inclusion and exclusion, how studies are located, the coding protocol, and statistical analysis.

### **Research Questions**

RQ1: What are the teaching style preferences of educators as measured by Principles of Adult Learning Scale (PALS)?

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

RQ3: Is there a difference in teaching style preferences of educators, as measured by PALS, based on four-year colleges, two-year colleges, and other educators?

RQ4: Is there a correlation in teaching style preferences based on the period from 1982 to 2014?

### **Meta-Analysis as a Research Tool**

The Meta-analysis has evolved since Glass and Smith (1979), and Glass, McGaw and Smith (1981) plotted class size against achievement. For instance, numerous studies showed a relationship between class size and student scholarly achievement. Studies supported large class size, small class size, or that class size didn't matter. The result was that further research was unjustified. However, Glass and Smith (1979) applied a more sophisticated analysis than was used in previous studies. Once data were collected, Meta-analysis exposed that there was a

strong relationship between class size and achievement.

Hunt (1997) encapsulates the need for meta-analysis as a remedy for the increasing number of studies of current research. He discussed meta-analysis had the means of combining numerical results of studies with dissimilar findings and producing a more accurate and credible conclusion than any single primary study. The meta-analysis has the possibility of determining how and why studies come up with different results. One example was illustrated in the relationship between class size and scholarly achievement and the Pygmalion study (Rosenthal & Jacobson, 1968; Raudenbush, 1984). Rosenthal and Jacobson's (1968) experiment informed selected public elementary school teachers that certain children could be expected to be high achievers based on fictitious test results. The experiment outcome showed that these children showed a greater intellectual development, thus creating a self-fulfilling prophecy. Raudenbush (1984) meta-analyzed 14 years of research and 18 studies with an outcome that left a question of expectancy and IQ effects. They found a small average effect of expectancy on IQ (Cohen's  $d = 0.11$ ). These results were inconclusive for statistical significance given a low effect size and other factors.

Lipsey and Wilson (2001) elaborated on four advantages of meta-analysis. First, good research necessitates documenting the steps for full transparency. The steps require identifying the criteria that define the population, search strategies, coding the eligible studies, the analysis, and interpretation of the findings. Second, meta-analysis findings are more complex and yet discriminated than the traditional statistical significance testing. The effect size is a variable that is sensitive to the findings of studies of different strengths. In contrast, using significance to differentiate between studies may be misleading. Significance reflects both the magnitude and the sampling error with the latter being a function of the sample size. Studies with small samples



may not be statistically significant because of their low statistical power. Third, with the controversy of the teacher expectancy in the Pygmalion study, obscured relationships with significance tests became known using meta-analysis (Raudenbush, 1984; Rosenthal & Jacobson, 1968). The reason was in the coding employed for the use of meta-analysis.

The coding allows an examination of the relationships between study findings and the study characteristics. By estimating the size of the effect in each study and giving greater weight to larger studies, meta-analysis produces synthesized effect estimates with considerably more statistical power than individual studies Lipsey and Wilson (2001). These results produced meaningful outcomes whether studies agree or disagree; both are more likely to be discovered through utilizing meta-analysis than by less systematic and analytic approaches. Fourth, meta-analysis provides the organizational tools to analyze a relatively large number of studies. Lipsey (1992) conducted a meta-analysis of about 500 studies and over 150 coded items for improving the effectiveness of the juvenile justice program. The data analysis was relatively easy when using research-quality statistical software or dedicated meta-analysis software.

### **Publication Manual**

American Psychological Association recognizes the problem with null hypothesis significance testing (NHST), as research with insignificant findings ( $p\text{-value} > \text{Alpha}$ ) is unlikely to be published. Researchers do not want to invest their resources preparing a manuscript then hoping the publisher will accept it. The American Psychological Association (2009) publication manual intended to change that mindset. It states, “Mention all relevant results, including those that run counter to expectations; be sure to include small effect sizes (or statistically insignificant findings)...” (p. 32). Using studies that only report significance may bias the results of a future meta-analysis. The publication manual also tightens the historical reliance on p-value in the

NHST. NHST may be the starting point but “additional reporting elements such as effect sizes, confidence intervals, and extensive description are needed to convey a complete meaning of the results” (p.33).

### **Criticisms of Meta-Analysis**

The meta-analysis is not without its critics. Borenstein (2009), Lipsey and Wilson (2001), Sharpe (1997) listed several central issues. These concerns bring caution when using meta-analysis. These are addressed in this study:

**Publication bias.** Studies with statistical significance are more likely to be published than studies without significance. Not finding and including all of the unpublished studies may result in having a bias of the meta-analysis. This bias is a legitimate concern and addressed in American Psychological Association (2009) Publication manual. For example:

Cooper, DeNeve, and Charlton (1997) surveyed 33 researchers who had proposed 159 studies to their university’s institutional review board. Eighteen failed to complete surveying the subjects, 30 did not have the data analyzed, and 65 did not prepare a written summary or prepare the study for publication. However, five studies were in revision for submission, 38 became published articles, and three were a book published for a total 25.8% completion.

This concern is less of an issue for this study since it has used doctoral dissertations. Dissertations are published irrespective of whether statistical significance was attained. That reduced the risk of publication bias for this study.

**Mixing dissimilar studies.** While analogous to mixing apples and oranges within the same meta-analysis, the concern is that significant differences will be neglected. It is an important matter as studies included in a meta-analysis are often different.

Fifty-five dissertations were used, and all had used PALS original results in comparison with other validated instruments. For this study, only the PALS original data that met the inclusion criteria was used. Data collection over a 30-year period was possible because PALS was a validated instrument that had remained unchanged since its inception. The dissertation sources were educators from American four-year colleges, two-year colleges, and other educators with advanced degrees who work external to educational institutions.

**The inclusion of poor quality studies.** The concern were studies that differ in their sampling units, methods of measuring, operationalizing independent and dependent variables, and data-analytic approaches; Rosenthal and DiMatteo (2001) implied this was analogous to the garbage in, garbage out metaphor. The solution was to exclude unpublished studies as they were considered to be inferior in comparison to published studies (Sharpe, 1997). Glass (1976) believed that “the difference to be so small that to integrate research results by eliminating the ‘poorly done’ studies is to discard a vast amount of important data” (p. 4).

The results of this study came from a validated instrument that was unaffected by other aspects of the studies. The sampling units used original data. A conversion to standardized values was unnecessary; the reason was due to the methods of measuring was consistent with the PALS instrument in all studies used in this study. However, one variable that could not be controlled was sampling method.

Authors (with few exceptions) attempted random sampling. With constraints on their sampling design, the results often had less than their planned response rate. While meta-analysis cannot correct for the response rate, the results are weighted inversely by the sample size. The forest plots provide a visual of the each study’s results. See Figure 8. Removing Morales Osegueda’s (1997) extreme outlier in group Other, the composite data for the three groups are normally distributed.

## **Availability and Locating Studies**

There are many different channels for conducting an exhaustive search for meta-analysis documents. Cooper (2010) categorizes three distinct channels as direct-to-researcher, quality-controlled, and secondary channels.

**Direct to a researcher.** These require the researcher to locate investigators who may have relevant studies. Four areas are in this category. These include personal contact, mass solicitation, traditional invisible colleges (internal collective linkages of common interests) and electronic invisible college (e.g., listservs, distribution lists, and bulletin boards). This study utilized direct to the researcher through Conti (2008) who provided a bibliographic list of 50 PALS dissertation abstracts published between 1995 to 2008.

**Quality-controlled.** These require the study to meet certain requirements and judged by others. Two areas in this category were professional conference paper presentations and peer-reviewed journals. These studies will likely contain statistically significant research. Since this study only used dissertation, this methods was not utilized.

**Secondary channels.** These provide information on primary research by collecting references from journals, government agencies, and other sources. Six specific areas in this category include (a) research report reference lists; (b) research biographies; (c) prospective registers; (d) Internet searches (key terms); (e) reference databases; (f) citation indexes. This study utilized reference databases, such as ProQuest UMI Dissertation and Thesis database. These were the primary source of finding additional dissertations and retrieval. Other channels included Google Scholar, EBSCOhost databases, and ERIC. Finally, dissertation bibliographies and references were also important for finding unpublished dissertations. The search descriptors primarily used Principles of Adult Learning Scale or PALS in the search field.

When a dissertation abstract was found but the document was unavailable, a search was made for the dissertation at the student's college campus. This tactic did not provide much satisfaction except in one case. In total, 108 dissertations were identified between the years of 1982 to 2014 and all but 18 were collected.

### **Coding Protocol**

The coding protocol designates specific information collected from each study. There were two parts. The researcher must encode information on each study about the characteristics of the study, and these were the study descriptors (Lipsey & Wilson, 2001). Also, information about the empirical findings of each study was encoded so that effect sizes could be appropriately completed and classified as the study statistics. In this meta-analysis, the following descriptors were deemed necessary. See Appendix A.

- Author's last name: First author (if more than one)
- Source ID: Dissertation ProQuest Number; Other Identification Number
- Year published: Year
- Origination: Four-Year Colleges; Two-Year Colleges; Other (educators outside of an academic institution)
- Respondents: Teachers; Trainers (Industry) or Government
- Search Method: ProQuest; Google Scholar; Colleges; Other
- PALS: Composite Total; Seven Factors
- Results: Sample Mean, Sample Standard Deviation, Sample size

### **Included / Exclusion Criteria**

The studies were doctoral dissertations that had used PALS to determine the educators' teaching styles. The dissertations measured teachers from American four-year colleges, two-year colleges and educators outside of the academic institutions, such as hospitals, career and technical education (CTE). The years available were from 1979 to 2015, but collected were from 1982 to 2014.

The studies that were excluded were master's thesis, non-dissertation studies, studies that use student teachers, students that were conducted outside of the US, and studies that did not provide original PALS data (sample mean, sample standard deviation, sample size). There was no attempt to convert or estimate what the original PALS data that was missing. Of the 108 dissertations, 55 (51%) met the inclusion criteria. Thirty-four (of the 55) included the seven factors. The dissertation reasons for exclusion are given in Tables 5, 6, 7.

### **Effect Sizes Based on Means**

Effect sizes may be based on means when the measure has had widespread use and when all studies have used the same scale (Borenstein, 2009; Lipsey & Wilson, 2001). Krathwohl and Smith (2005) state that older studies will not have an effect size thus requires particular reverse engineering and will require making assumptions. They also suggest that some studies use more than one measure resulting in an overrepresentation of the effect data. They also caution not to use a combined effect size to represent a study when multiple effects are available. Each effect needs a separate analysis. For instance, if a study provides combined results for male and female teachers then it would be prudent to analyze each sex separately. In this study, each of the seven PALS factors will be analyzed separately.

Borenstein (2009) suggests three major considerations in choosing an effect size. The first is that effect sizes from different studies should be comparable to one another, measure (at least approximately) the same thing, and not be dependent on the study design that could vary between studies. The second is that estimates of the effect size should be computable from reported information in studies and not require the re-analysis of the raw data (unless these are known to be available). The third is that the effect size should have good technical properties with its sampling distribution should be known so that variances and confidence intervals can be computed. In this study, all three considerations are satisfied. PALS data are comparable to all studies since the instrument has not changed since its inception in 1978; incorporating the factorization did not changing the original 44 questions. The data was normally distributed thus having good technical properties. Re-analysis was not done and resulted in 12 dissertations being excluded when the mean standard deviation or the sample size was not provided in the PALS composite form.

The effect size may use a single arithmetic variable to support the summary and each of the seven-factor in the PALS analysis (Lipsey & Wilson, 2001). Using the original data is appropriate since the PALS instrument was utilized for each study with no material changes were made to the questions. The formulas for using original data follows (Lipsey & Wilson, 2001, p. 41):

Effect size	$ES_m = \bar{X}$
-------------	------------------

Standard error	$SE = s / \sqrt{n}$
----------------	---------------------

Weighting	$w_m = n / s^2$
-----------	-----------------

The Cohen's  $d$  is the most common measure of effect size. There are also the Pearson's correlation coefficient,  $r$ , and the odd's ratio (Field, 2009). While it is acceptable to use a single

arithmetic value, Cohen's d provides a unitless measure of the number of standard deviations the sample mean lies from the population mean. If the sample mean were 136, it would be evident that the study (less than the PALS means of 146) would be teacher-centered. A sample mean of 126 would indicate the same finding. The benefit of Cohen's d is to quantify the extent of the effect through the ratio, mean / standard deviation. The PALS mean, 146, and standard deviation, 20, are used as the population values. Examples:

$$\text{Cohen's } d = \frac{x - \mu}{\sigma} = \frac{136 - 146}{20} = 0.5 \text{ standard deviations}$$

$$\text{Cohen's } d = \frac{x - \mu}{\sigma} = \frac{126 - 146}{20} = 1.0 \text{ standard deviations}$$

The difference in the sample means between the two studies is straightforward. Conti and Welborn (1986) developed several categories used in these studies to describe the strength of the effect subjectively:

Moderate: Mean to one-half standard deviation, Cohen's d (0 to .50) or (-.50 to 0)

Intermediate: One-half to one standard deviation from the mean, Cohen's d (- 1.0 to - .50) or (0.50 to 1.0)

High: One or more standard deviation from the mean, Cohen's d (< -1.0) or (> 1.0) (p. 20).

These categories largely follow Cohen's d reference values 0.2, 0.5, 0.8 for small, medium, and large respectively (Cumming, 2011).

### **Statistical Analysis**

Comprehensive Meta-Analysis is an application software to perform meta-analysis calculations. The features of the program include a spreadsheet interface, data entry with 100 different formats, automatic effect size calculation, and high-resolution forest plots for reporting.



Considering the original means were used in this study, an Excel-based application could be used. ESCI (pronounced *eski*) is a self-calculating Excel macro file developed by Cumming (2007) for use in his book, *The New Statistics* Cumming (2011). Chapters 7 through 9 explain meta-analysis calculations using ESCI. All meta-analytical calculations on research questions 1-4 used ESCI. Statistical software, SPSS (v. 22), was used for the regression analysis on research question 4. Calculations were completed within the meta-analysis ESCI (v. 3) statistical application developed by (Cumming, 2007).

### **Forest Plots**

Each study is represented by a single confidence interval (CI), based on a 95% confidence level and uses the PALS original data. Each CI is stacked in a vertical array called a forest plot. The CI may take one of the three positions. It may (a) lie to the left of the population mean, (b) to the right of the population mean, or (c) it may contain the population mean.

### **Visual Meta-Analysis**

Table 4 provides three (of the 55) dissertation PALS results used in this study. Figure 5 illustrates these studies in a forest plot. At first glance, we notice that Buchannon-Welborn confidence interval lies to the left of the population mean, 146. The Totin-Meyer confidence interval lies to the right of the population mean. Moore's confidence interval mean is to the left of the population mean, but the margin of error causes the interval to straddle the mean. When the confidence interval is clear of the population mean, there would be significance while straddling the population mean indicates no statistical significance (Cumming, 2011; Field, 2009). At first glance, it would appear more emphasis lies to the left of the population mean, perhaps showing a teacher-centered result. That would be an incorrect interpretation. As shown in the summary confidence interval (lowest position), the interval straddles the population mean.

Thus, these three results are not statistically significant.

Example: The p-value for Buchannon-Welborn is ( $p = .034$ ), Totin-Meyer is ( $p < .001$ ) and Meyer is ( $p = .17$ ). The meta-analysis summary p-value is ( $p = .61$ ). The Cohen's d is (medium  $-.41$ , small  $-.20$ , small  $.23$ , and small  $-.10$ ) respectively for the three studies and the meta-analysis summary. Visually, statistical significance is assured when the confidence interval does not contain the population mean,  $m_0$ . In this example, the meta-analysis would not be statistically significant.

Table 4

*Visual Meta-Analysis*

Study	Buchannon-Welborn	Moore	Totin-Meyer	Summary
ID	8605234	3419234	3031775	
$M$	137.81	142	150.5	143.91
$SD$	15.08	18	18.6	65.92
N	18	40	198	256
TC / LC	TC	TC/LC	LC	TC/LC
95% CI	[130.31, 145.31]	[136.24 147.76]	[147.89, 153.11]	[135.83, 151.98}
Cohen's d	-.41	-.20	.23	-.10
$t$	-2.304	-1.41	3.404	-0.51
$p$	.034	.17	< .001	.61
Norm $M$	146	146	146	146
Norm $SD$	20	20	20	20

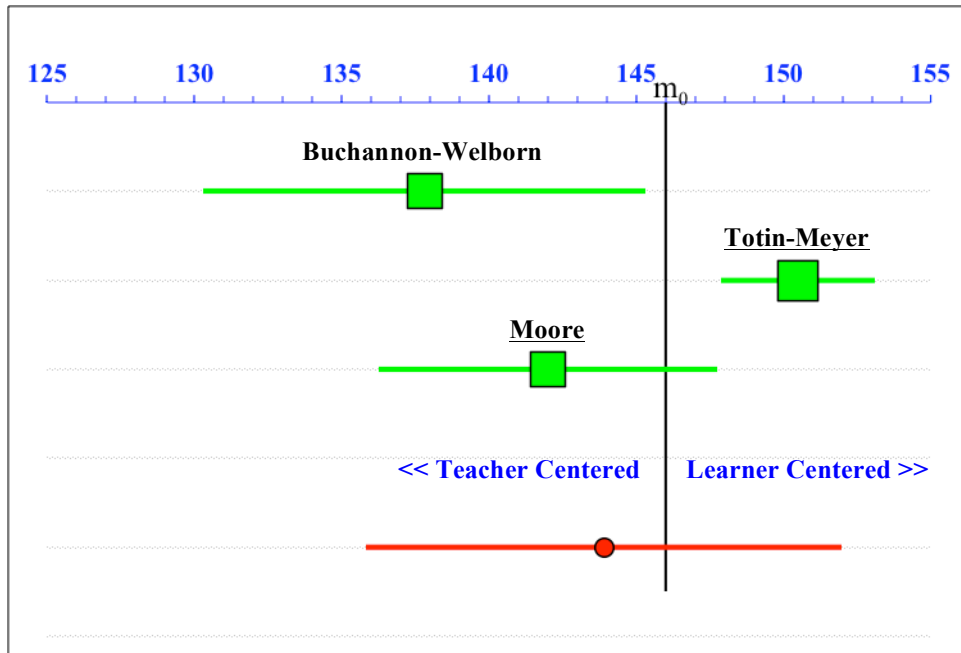


Figure 5: Visual explanation of meta-analysis

### Summary

The motivation behind this study was to determine if college teachers or other educators were learner-centered. If there was statistical significance, academia might be a collaborative resource for corporate trainers in assist in their corporate training design. Secondly, using a primary study (instead of meta-analysis) would have resulted in one more brick being added to the mountain of previous research and unlikely giving more insight than what is currently available. The meta-analysis builds on the abundance of knowledge that already exists from doctoral dissertations that incorporated PALS analysis. The three groups found new findings not previously found in single primary studies. The results are displayed in the tables and charts in Chapters 4 and 5.

## Chapter 4: Results

### Overview

The purpose of this study was to evaluate educators from colleges and industry as potential collaborative sources for corporate trainers. The desire is for educators to assist corporate trainers in developing their training program. This hinges on whether the educators' teaching style was learner-centered. Secondly, evaluate a trend of dissertation PALS means through the last 30 years.

This chapter presents the results of the data collection and analysis based on the research questions presented in Chapters 1 and 3. This section is organized by data collection results, including explanations for inclusion and exclusion. The breadth of the study was extended to include other educators outside of formal academic institutions.

The results are presented in the original PALS composite scores, which are also the effect size. The effect size is the group mean. The forest plots are based on random effects, and the box size displays the weightings.

### Dissertation Collection Results

The search identified 108 dissertations dated between 1980 and 2014. The period of years was possible since the Principles of Adult Learning Scale (PALS) instrument has remained unchanged since its inception (Conti, 1978). Their research was conducted at four-year colleges and two-year colleges, K-12 schools, industry educators, hospital educators, and government agency trainers.

The inclusion criteria was applied:

The dissertations had to be retrievable. Searches on ProQuest® Dissertations & Theses database were mostly successful with the exception of 18 studies between 1981 and 1995 that

provided an abstract but not the full text. Alternative search resources were used that included Google Scholar and searches on their respective dissertation university websites. These efforts were unsuccessful for these 18 studies. No attempt was made to contact the authors (see Table 5).

Table 5

*Excluded: Dissertations Not Retrieved*

#	Author	Identification	Year
1	Cook	9508123	1994
2	Deming	8708649	1986
3	Dinges	8122631	1981
4	Freeland	8827487	1988
5	Graham	8822381	1988
6	Hudspeth	9205509	1991
7	McGowan	8410314	1984
8	Morris	8222882	1982
9	Parisot	9542260	1995
10	Rees	9201606	1991
11	Santucci	8524750	1985
12	Scotney	8629584	1986
13	Shedd	9010600	1989
14	Sua	ED305521 (ERIC)	1989
15	Taylor	9034766	1990
16	Waters	9239417	1992
17	Wegge	9122777	1991
18	Wilson	9603237	1994

*Note:* Identification is ProQuest unless otherwise indicated

The dissertations were required to have the PALS composite score means, standard deviations, and a sample size. The dissertation author calculated the composite PALS scores using Conti's (1978) PALS scoring sheet. The PALS instrument consisted of a six-point Likert scale from zero to five. The sum of the responses (taking into account the negative questions) to the 44 questions provides the composite PALS score. The PALS score ranges between 0 and 220 with the norm mean and standard deviation ( $M = 146$ ,  $SD = 20$ ).

Twelve dissertations were missing the mean, standard deviation or did not use composite scores. Some averaged the Likert scale scores or used standardized T scores. The third group, other educators, required scores to be segregated by education level when a high percentage of the subjects were without a graduate degree. The education level had to meet two-year college requirements to be considered (see Table 6).

Table 6

*Excluded: Means, SD, N Statistics Not Provided*

#	Author	Identification	Year
1	Ahmed	3255090	2006
2	Fries	3524500	2012
3	Hoffrichter	9724489	1997
4	Kargas	3100600	2003
5	Lee	3155524	2004
6	McCoy	9979177	2000
7	Nolte	9427273	1994
8	Pearson	8111574	1980
9	Sachatello -Sawyer	9633825	1996
10	Siebrands , W	9517486	1994
11	Viau	9125867	1991
12	Wang	3055349	2002

*Note:* Identification is ProQuest unless otherwise indicated.

Twenty-three dissertations were excluded for reasons (see Table 7):

- A study took place outside of America.
- Instructors were high school teachers.
- Subjects were not designated as educators.
- Subjects did not have a graduate degree (or degree was unknown)

Table 7

*Excluded: Other Reasons*

#	Author	Identification	Year	Reason
1	Brosseau	MQ47750	2000	Conducted in Morocco
2	Mainville	MQ57055	2000	Conducted in Canada
3	McCollin	9901343	1998	Conducted in Bahamas
4	Needham	MQ64879	1990	Conducted in Canada
5	Osborne	3319382	2008	Conducted in Bermuda
6	Puksa	MQ39868	1999	Conducted in Canada
7	Gathright	9953461	1999	High school teachers (prisons)
8	Jones	8428771	1984	High school teachers
9	Watkins	3220244	2006	High school teachers
10	Wiley	8707491	1986	High school teachers (prisons)
11	Cochran	3167606	2005	Respondents not designated educators
12	Foster	3220240	2006	Respondents not designated educators
13	Öztürk	3482178	2011	Respondents not designated educators
14	Smith	3325347	2008	Respondents not designated educators
15	Byrd	3482151	2010	Respondents without a graduate degree
16	Carr	9825881	1998	Respondents education levels not indicated
17	McCaskey	3372543	2009	Respondents without a graduate degree
18	Robinson	3530870	2012	Respondents without a graduate degree
19	Martin	9951860	1999	Master's thesis study
20	Quinllin	1421643	2004	Master's thesis study
21	Ruhnau	Unpublished	2006	Master's thesis study
22	Hightower	3613711	2014	PALS discussed but not used
23	Scherling	3589630	2013	Partial reporting PALS over 147

*Note:* Identification is ProQuest unless otherwise indicated; MQ is ProQuest Canada

Fifty-five dissertations met the inclusion and exclusion criteria, (see Appendix B). These incorporated the PALS as a quantitative component in the data collection and analysis. The dissertations were placed into three groups, four-year colleges, two-year colleges, and other educators. The latter group is educators from establishments outside of the educational institutions. The dissertations from this last group were studied with a high percentage of graduate degrees.

Conti (1983) developed seven factors that included:

1. Learner-centered activities.
2. Personalizing instruction.
3. Relating to experience.
4. Assessing student needs.
5. Climate building.
6. Participation in the learning process.
7. Flexibility for personal development.

Thirty-four (62%) of the 55 dissertations incorporated these seven factors. Atkinson (1993) and Willson (2006) contributed to both the four-year and the two-year colleges. Atkinson's dissertation was counted with the four-year universities, and Willson's dissertation was counted with the two-year colleges to avoid double counting. On the table, this will show up as having one more study than dissertations (see Table 8).

There were over 5,200 participants. Thirty-seven percent came from four-year universities while 63% were near equally shared between the two-year college and other educators. Seventy percent of the participants (3,680) included the seven factors. The seven factors were 50% from four-year universities, 89% of the two-year colleges and 75% of the other organizations (see Table 8).



Table 8

*Summary of Dissertation Studies*

Research Origination	Quantity of Dissertations			Quantity of Participants	
	Total	PALS (%)	7 Factors (%)	PALS (%)	7 Factors (%)
Four-year college	22	22 (40)	13 (59)	1971 (37)	982 (50)
Two-year college	18	18 (33)	12 (67)	1558 (30)	1387 (89)
Other educators	15	15 (27)	9 (60)	1744 (33)	1311 (75)
Excluded	53	-	-	-	-
Total	108	55 (100)	34 (62)	5273 (100)	3680 (70)

**Results Research Question 1**

RQ1: What are the teaching style preferences of educators as measured by Principles of Adult Learning Scale (PALS)?

The meta-analysis of the three groups total PALS composite scores is shown in Table 9. The means for each group were less than the PALS norm mean ( $M = 146$ ) by nearly one standard deviation ( $SD = 20$ ) for the four-year and two-year college faculty and nearly one-half standard deviation for other educators. All groups are statistically significantly different from the norm mean ( $M = 146$ ). A high Q value indicates a heterogeneity between the study means and central to the random effects model (Cumming, 2011). Each of these means has been indicated as teacher-centered (TC).

The total PALS results are displayed in chronological order (see Figure 6 - Figure 8). As shown here and quantified in RQ4, a significant trend does not exist.

There was an extreme outcome in other educators (Morales Osegueda, 1997). Removing this study would increase the PALS mean ( $M = 134.73$ ) to ( $M = 138.38$ ), and reduce variability ( $SD = 191.62$ ) to ( $SD = 128.52$ ). However, it would not significantly affect the outcome of this study. The 95% confidence interval would become: [132.11, 144.66] from [125.73, 143.72].

Table 9

*PALS Total: All Groups*

Group	<u>Four-Year College</u>	<u>Two-Year College</u>	<u>Other Educators</u>
	PALS Total	PALS Total	PALS Total
<i>M</i>	126.36	128.92	134.73
<i>SD</i>	99.70	70.59	191.62
<i>N</i>	1971	1558	1744
<i>Q Value</i>	502.66	231.65	2039.34
<i>TC / LC</i>	TC	TC	TC
<i>Years (Period)</i>	29 (1985-2014)	27 (1987-2014)	31 (1982-2013)
<i>95% CI</i>	[121.95, 130.76]	[125.41, 132.42]	[125.73, 143.72]
<i>Cohen's d</i>	-0.98	-0.85	-0.56
<i>t</i>	-8.75	-9.55	-2.46
<i>p</i>	< .001	< .001	.01
Norm <i>M</i>	146	146	146
Norm <i>SD</i>	20	20	20

Note: TC = teacher-centered, LC = learner-centered

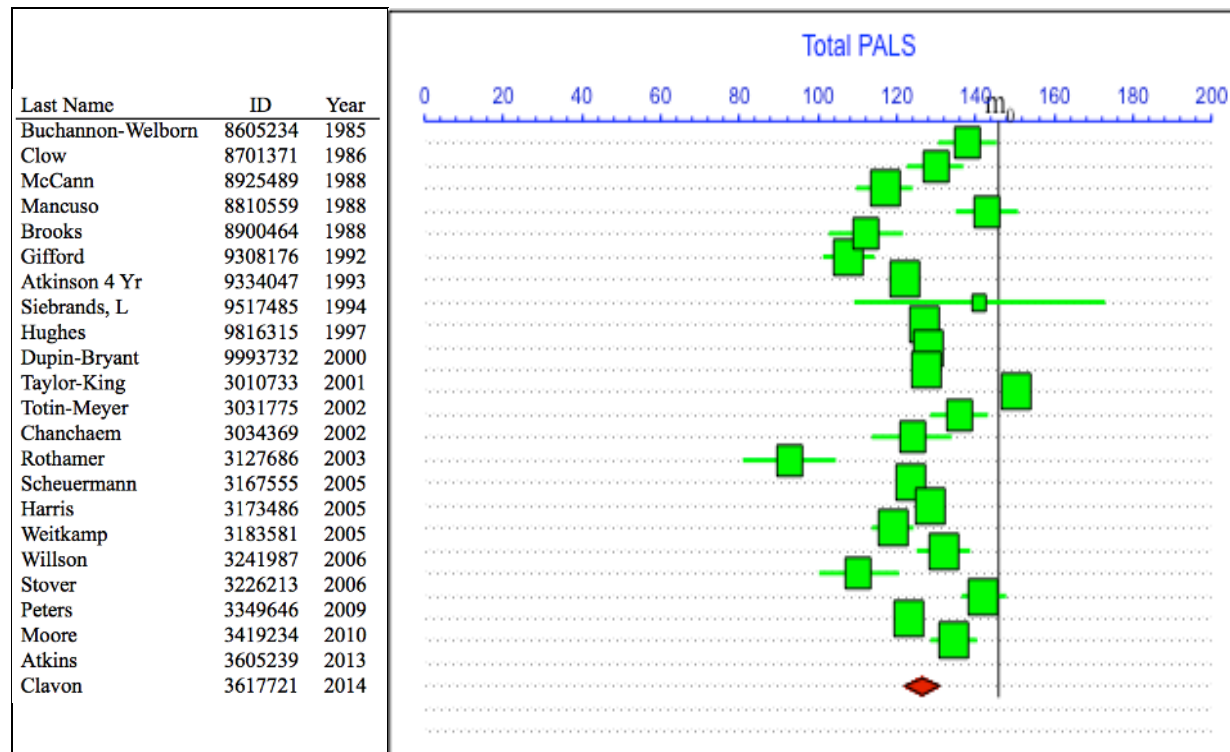


Figure 6. Total PALS four-year college forest plot. This figure illustrates the confidence intervals of 22 dissertations and 23 studies, shown chronologically between years 1985 and 2014.

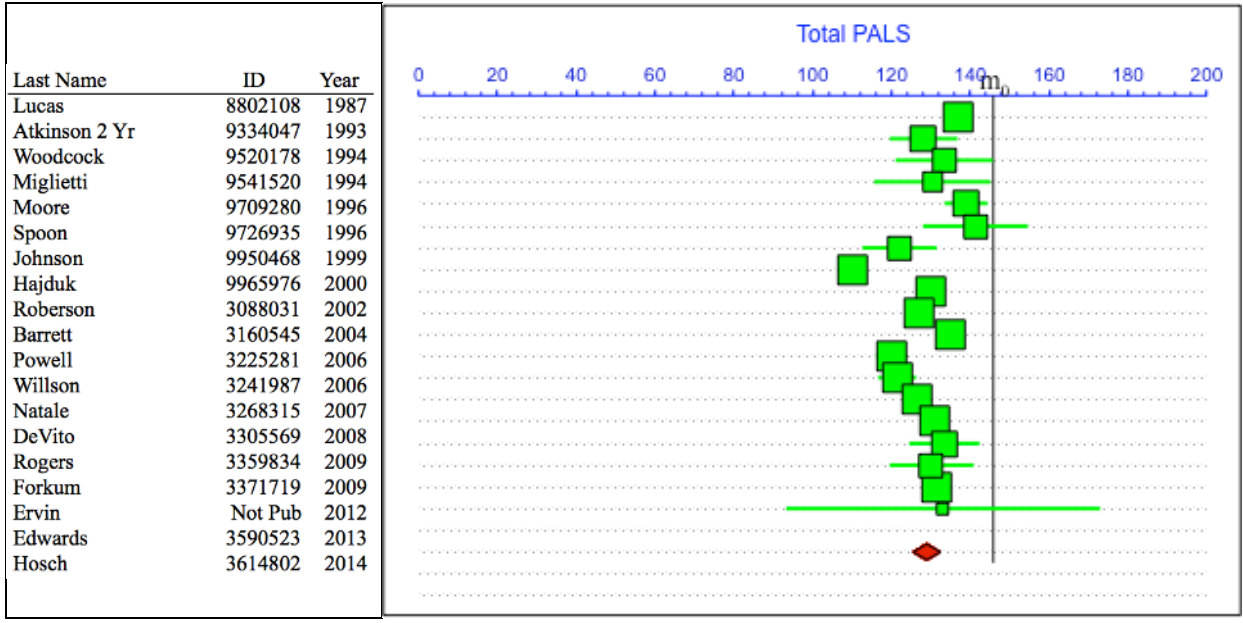


Figure 7. Total PALS two-year college forest plot. This figure illustrates the confidence intervals of 18 dissertations and 19 studies, shown chronologically between years 1987 and 2014.

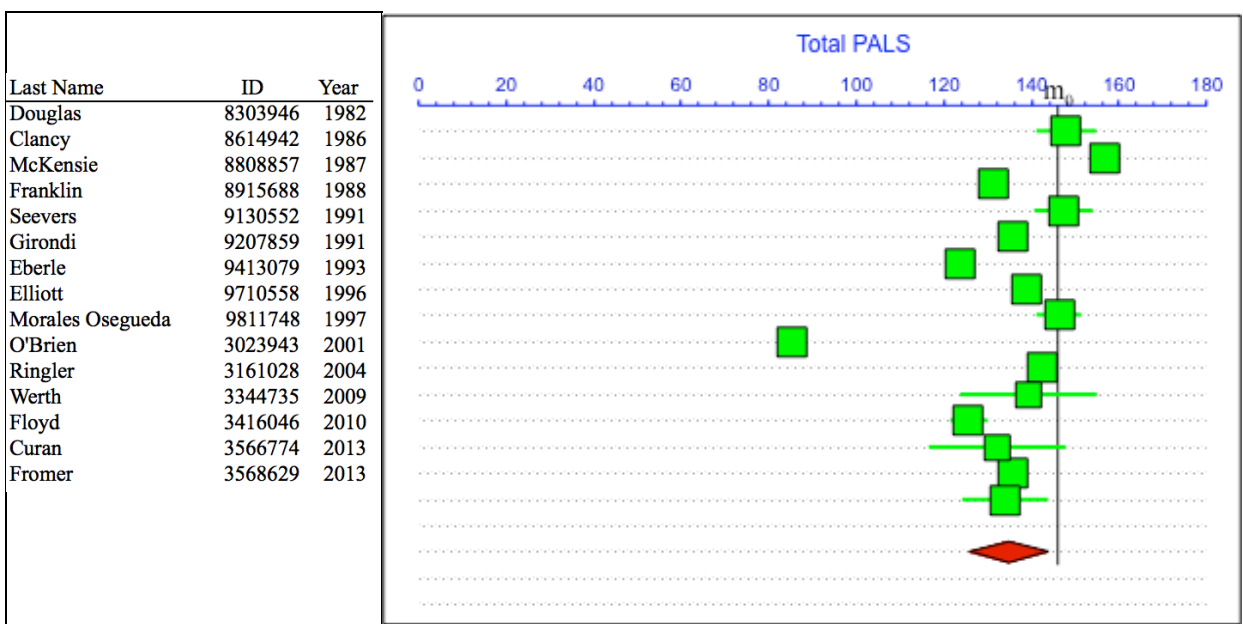


Figure 8. Total PALS other educator forest plot. This figure illustrates the confidence intervals of 15 dissertations and studies, shown chronologically between years 1982 and 2013.

## Results Research Question 2

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

**Four-year college.** The meta-analysis of the four-year college PALS factor scores is shown in Table 10. The means of all factors are below the PALS norm means for each factor. However, there is no statistical significance of Factors 1 and 7 based on the 95% confidence level. Factors 3, 4, and 6 are less than one SD below the mean as shown by Cohen's *d*. Factor 2 is nearly 1.3 SD below the norm SD, and Factor 5 is nearly one SD below the mean as shown by Cohen's *d* (see Table 10).

Table 10

*PALS Total Group: Four-Year College (N = 1020)*

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
<i>M</i>	36.43	22.44	18.39	12.45	13.07	10.37	12.57
<i>SD</i>	45.08	30.58	22.19	15.56	28.78	15.00	11.26
TC / LC	TC/LC	TC	TC	TC	TC	TC	TC/LC
95% CI	[33.67, 39.21]	[20.57, 24.32]	[17.03, 19.75]	[11.49, 13.4]	[11.3, 14.83]	[9.45, 11.29]	[11.88, 13.26]
Cohen's <i>d</i>	-0.19	-1.26	-0.53	-0.43	-0.98	-0.75	-0.11
<i>T</i>	-1.11	-8.94	-3.76	-3.18	-3.25	-5.60	-1.22
<i>P</i>	.27	< .001	< .001	.001	.001	< .001	.22
Norm <i>M</i>	38	31	21	14	16	13	13
Norm <i>SD</i>	8.3	6.8	4.9	3.6	3.0	3.5	3.9

*Note:* TC = teacher-centered, LC = learner-centered

**Two-year college.** The meta-analysis of the two-year college PALS factor scores is shown in Table 11. The means of all factors are below the PALS norm means for each factor. However, there is no statistical significance on Factors 1 and 4 based on the 95% confidence level. Factors 3, 5, 6, and 7 are less than one SD below the mean. Factor 2 is nearly 1.1 SD below the norm SD (see Table 11).

Table 11

*PALS Total Group: Two-Year College (N = 1387)*

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
<i>M</i>	35.90	23.82	19.33	13.16	13.94	10.13	12.07
<i>SD</i>	65.11	41.99	27.48	25.36	26.92	19.37	17.24
TC / LC	TC/LC	TC	TC	TC/LC	TC	TC	TC
95% CI	[32.47, 39.33]	[21.61, 26.03]	[17.89, 20.78]	[11.82, 14.49]	[12.52, 15.35]	[9.11, 11.15]	[11.16, 12.98]
Cohen's <i>d</i>	-0.13	-1.06	-0.34	-0.23	-0.69	-0.82	-0.24
<i>t</i>	-1.2	-6.37	-2.26	-1.23	-2.85	-5.52	-2.01
<i>p</i>	.23	< .001	.02	.22	.004	< .001	.04
Norm <i>M</i>	38	31	21	14	16	13	13
Norm <i>SD</i>	8.3	6.8	4.9	3.6	3.0	3.5	3.9

*Note:* TC = teacher-centered, LC = learner-centered

**Other educators.** The meta-analysis of the other educators group PALS factor scores is shown in Table 12. The means of all factors are below the PALS norm means for each factor. However, there is no statistical significance on Factors 1, 4, 5, 6, and 7 based on the 95% confidence level. Factor 3 is less than one SD below the mean. Factor 2 is one SD below the norm SD (see Table 12).

Table 12

*PALS Total Group: Other Educators (N = 1311)*

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
<i>M</i>	36.95	24.20	17.32	13.26	14.21	10.93	11.67
<i>SD</i>	70.38	48.71	61.17	19.96	33.54	41.46	37.31
TC / LC	TC/LC	TC	TC	TC/LC	TC/LC	TC/LC	TC/LC
95% CI	[33.14, 40.76]	[21.56, 26.84]	[14.01, 20.63]	[12.18, 14.34]	[12.39, 16.03]	[8.68, 13.17]	[9.65, 13.69]
Cohen's <i>d</i>	-0.13	-1.00	-0.75	-0.21	-0.60	-0.59	-0.34
<i>T</i>	-0.54	-5.05	-2.18	-1.34	-1.93	-1.81	-1.29
<i>P</i>	.59	< .001	.03	.18	.053	.07	.20
Norm <i>M</i>	38	31	21	14	16	13	13
Norm <i>SD</i>	8.3	6.8	4.9	3.6	3.0	3.5	3.9

### Results Research Question 3

RQ3: Is there a difference in teaching style preferences of educators, as measured by PALS, based on four-year colleges, two-year colleges, and other educators?

A review of the summary confidence intervals for each group is illustrated (see Figure 9). Though the confidence intervals are different, there is an overlap thus visually demonstrating no statistical difference between the group means (Cumming, 2011; Field, 2009).

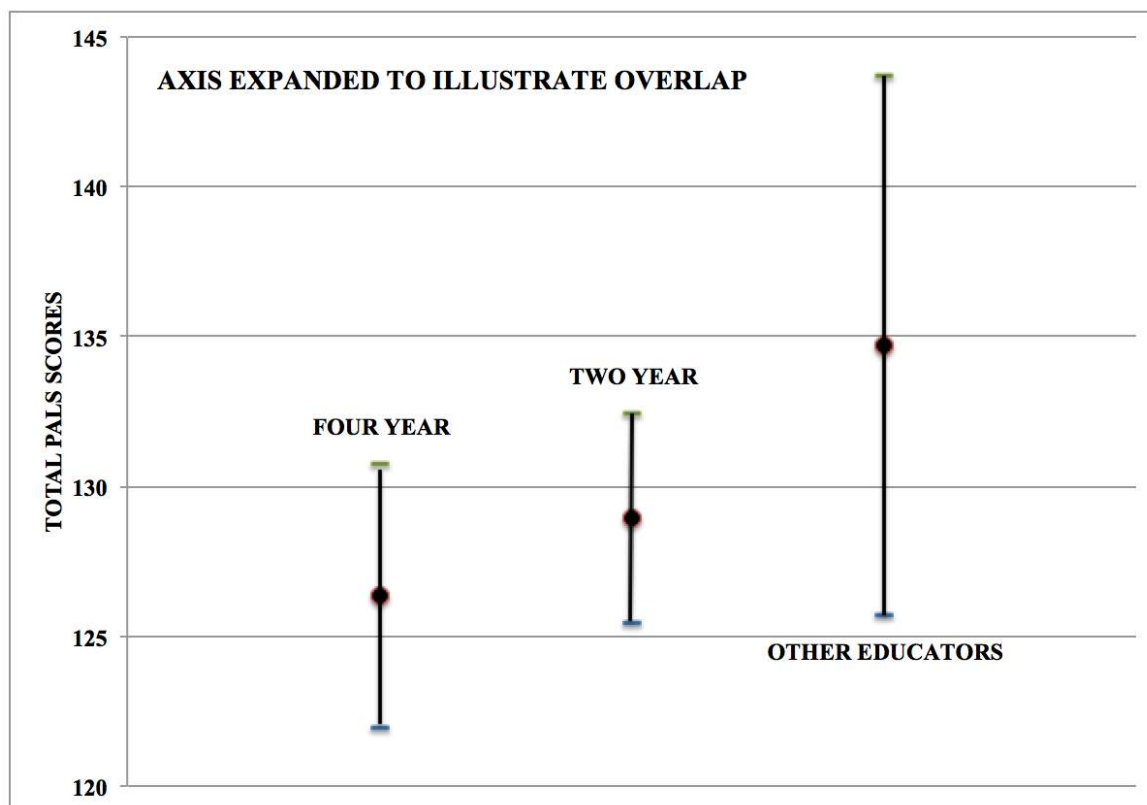


Figure 9. 95% Confidence interval three groups. This figure illustrates the confidence interval overlap of the total PALS scores for the three groups.

#### Results Research Question 4

RQ4: Is there a correlation in teaching style preferences based on the period from 1982 to 2014?

The results represent a span of approximately 32 years.

**Four-year college.** There is no correlation in teaching style preferences based on the period from 1982 to 2009. A linear regression showed that the period from 1982 to 2009 will not statistically significantly predict total PALS scores,  $F(1, 21) = 0.02, p = .88$

**Two-year college.** There is no correlation in teaching style preferences based on the period from 1982 to 2014. A linear regression showed that the period from 1982 to 2014 will not statistically significantly predict total PALS scores,  $F(1, 17) = 0.52, p = .48$ .

**Other educators.** There is no correlation in teaching style preferences based on period from 1986 to 2013. A linear regression showed that the period from 1986 to 2013 will not statistically significantly predict total PALS scores,  $F(1, 13) = 0.78, p = .39$ , (see Figure 10).

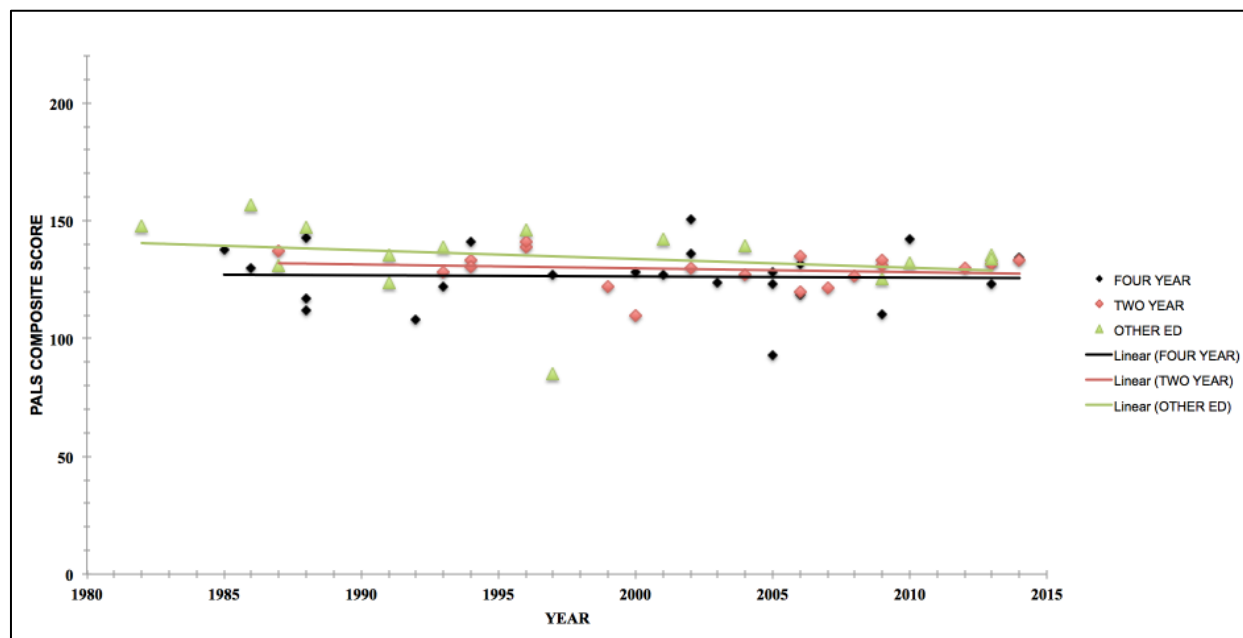


Figure 10. Scatterplot is illustrating the regression linear trend line for each group.

## Summary

There were 108 dissertations identified. Eighteen were not retrievable at the time of this writing. Twelve more did not provide an M, SD, or N. Twenty-three were excluded for other reasons. Thus, 55 dissertations were retrieved and used. These dissertations were segregated into three groups for analysis. These were four-year college, two-year college and other educators that came from industry.

A meta-analysis was conducted on the composite PALS scores and the seven factors for each of the three groups. The total PALS were significantly different from the norm mean with the four-year educators being more teacher-centered than two-year educators than other educators, in that order. The means were not significantly different between the three groups.



The four-year college, Factors 1, 7, were not significantly different from their norm mean. The two-year college, Factors 1, 4, were not statistically different from their norm mean. The other educators, all factors except Factor 2, were not statistically different than their norm mean.

A regression analysis was conducted using the composite PALS scores, for each of the three groups, between 1985 and 2014. In each group, there was no evidence that teaching styles have changed over the last three decades.

## Chapter 5: Discussion

### Overview

The ability of a corporation to train its employees effectively depends on how well the trainers understand what to teach, how to design the training context and how to design the learning activities. Acme had been producing a dot-matrix industrial printer since its inception, incurring minor changes over the years. It was not until they launched their first scribing printer when they realized that their salespersons were not making the sales quota, and lagged behind passive Internet sales from the OEM. Two years passed when there was a second launch failure, this time being an Acme designed printer. Again, the sales expectations were unmet. That was the impetus and desire for this researcher to begin this program.

The plan was to work with the Acme salespersons as part of this research. However, as fate has it, the company closed its West Coast doors before his academics were finished. That was probably a blessing as it took this research to a different level. That avenue brought greater awareness of the difficulties in training a sales force. However, as found during this 30-year meta-analytical journey, teaching adults is not intuitive. What trainers experienced during their K-12+ years of schooling are fairly poor examples of excellence in teaching.

The meta-analysis in this study provided an effective research tool for a systematic review of 55 doctoral dissertations. The meta-analysis permitted an examination of 30 years of dissertation studies that incorporated the Principles of Adult Learning Scale (PALS) instrument. The outcome produces consolidated results in terms of the PALS composite mean and standard deviation on three subgroups. These subgroups were studies completed at four-year colleges, two-year colleges, and with educators outside of traditional college institutions. Then, a regression analysis over several decades of Total PALS means was used to identify trends in

instructional teaching styles for each group. No single PALS study could have provided this depth and breadth of information.

This study does not assert that all educators or all studies were teacher-centered. By observing the forest plots, Figures 5, 6, 7, 8, a few studies were student-centered. Though the individual studies were characterized as being teacher-centered, there was student-centered faculty. No effort has been made to identify schools, programs or any characteristics where there were concentrations of each teaching style.

### **Restatement of Purpose and Research Questions**

This study was to determine if educators of adult training could be a collaborative resource to corporate trainers. There has been a strong link between industry and academics thus this avenue was chosen over training consultants. The question arose as to whether the instructors were teacher-centered or learner-centered? A learner-centered instructor could evaluate the corporate salesperson training plan, ask the right questions, and recognize inconsistencies. This action was evident with the Martin Company that worked with a local university to help create a successful salesperson training program (Kelly, 1993). The research questions under study are:

RQ1: What are the teaching style preferences of educators as measured by Principles of Adult Learning Scale (PALS)?

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

RQ3: Is there a difference in teaching style preferences of educators, as measured by PALS, based on four-year colleges, two-year colleges, and other educators?

RQ4: Is there a correlation in teaching style preferences based on the period from 1982 to 2014?

## Principles of Adult Learning Scale

Conti (2004) describes the method for scoring the total composite scores that range between 0 and 220. The descriptive statistic norms were established as the mean ( $M = 146$ ) and the norm standard deviation ( $SD = 20$ ). Scores less than 146 are teacher-centered and greater than 146 are learner-centered. The scores between a half and zero standard deviation are considered moderate levels. Scores between one and a half standard deviation are intermediate levels. Scores greater than one standard deviation are high levels. Scores two or more standard deviations show an extreme commitment to that particular style.

Evidence showed that an extreme commitment to either style had successful outcomes. Conversely, teachers that were in the moderate level of either style, students' grades were not significantly different. Conti and Welborn (1986) offered an explanation that teachers that were borderline might be confusing their students by mixing styles. Thus, why is it important to have a learner-centered instructor for sales training?

A learner-centered trainer will consider the following in developing and facilitating the sales training (Conti, 1983):

**Learner-centered activities.** The trainer would utilize informal evaluation techniques, such as classroom assessment techniques. These low-risk assessments will help the trainee understand their knowledge gaps, and the trainer will discover weaknesses to improve the course materials (Angelo & Cross, 1993). Quick assessments will improve topic retention and be reflective of content likely to be misunderstood. The trainer will embrace a collaborative training approach. Collaboration would be beneficial for sharing knowledge and experiences between the junior and senior salespersons. More importantly, this supports a collaborative intranet support system once back in the field. The trainer is sensitive to

trainees that have different learning styles and offer accommodate by varying the types of course materials.

**Personalizing instruction.** The trainer listens to their trainees' requests while ensuring the content meets corporate requirements. Objectives may be flexible to meet the trainee's needs and abilities. The trainer provides a variety of materials, methods and assignments. Lectures are minimized. When possible, the assignments may be self-paced. Note: Some assignments may be completed outside of the classroom to provide this flexibility. For instance, the salespersons at Acme would have liked to study online so they could mind their business during the day. They would come to the corporate training site for their experiential training after their online assignments are accomplished, and Level 2 course examination completed.

**Relating to experience.** The trainer creates lessons that support the trainees' sales experiences, encourages collaboration, sharing ideas, and inspires asking questions. The trainee will be invited to relate their new knowledge to their experience. In class, discussions will help the junior salespersons to gain insight into successful selling techniques. The junior salesperson might bring some up questions that invoke new ideas. While the junior salesperson may not have as much product experience, they may have more new market experience. Thoughtful questions that relate content to their experience also promote critical thinking. There is intent to support the trainees' becoming resourceful and independent.

**Assessing trainee needs.** The trainer will assist the trainees to determine their needs, and to help them set short-term and long-term goals. An evaluation of gaps between a trainee's performance and his or her goals is made.

**Climate building.** The learner-centered approach emphasizes creating a welcoming learning environment that encourages trainee and trainer collaboration. The instruction encourages the trainee to take risks and accept mistakes as a natural part of learning.

**Participation in the learning process.** The learner-centered approach emphasizes trainee's choices. The trainer encourages trainees to identify problems they wish to solve then coaches the trainee towards discovering a solution. Listen to trainees and allowing them to participate in selecting the course topics. Allow trainees a part in developing the criteria for evaluating classroom performance.

**Flexibility for personal development.** The trainer feels that she or he is a resource to the class rather than being the sage. Some flexibility in the objectives supports the trainee's needs. The classroom becomes a collaborative learning environment.

### **Findings Related to the Research Questions**

RQ1: What are the teaching style preferences of educators as measured by Principles of Adult Learning Scale (PALS)?

**Four-year college results.** The composite score was approximately one standard deviation of the mean and results are significantly different from the norm mean and have an intermediate teacher-centered teaching style.

**Two-year college results.** This composite score is approximately one standard deviation of the mean. These results are significantly different from the norm mean and have an intermediate teacher-centered style.

**Other educator results.** This composite score is approximately one standard deviation of the mean. The results are significantly different from the norm mean and have an intermediate teacher-centered style.

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

**Four-year college results.** Following are the results from the seven factors.

**Factor 1.** Learner-centered activities. The score results are not significantly different from the norm mean and lie in the moderate region of not having a teacher-centered or learner-centered style. This mean norm score represents 26% of the total PALS mean score.

**Factor 2.** Personalizing instruction. The score is results are significantly different from the norm mean and have a high teacher-centered teaching style. Scoring low means the instruction is not developed on behalf of the students' motives for being in class and cognitive abilities. Instructional methods to create assignments and materials to accommodate particular student learning styles are underutilized. There may be the encouragement to compete with classmates. This mean norm score represents 21% of the total PALS mean score.

**Factor 3.** Relating to experience. The score results are significantly different from the norm mean and have an intermediate teacher-centered teaching style. Scoring low means that instruction does not intellectually challenge students by combining their prior experience with the new. There is less support for students to gain greater independent from others. Instruction may not relate to everyday problems or the nature of their society. This mean norm score represents 14% of the total PALS mean score.

**Factor 4.** Assessing student needs. The score results are significantly different from the norm mean and have a moderate teacher-centered teaching style. Scoring low means there are no informal discussions with students to determine their wants and needs to meet short- and long-term learning goals, or to understand their knowledge gaps. This mean norm score represents 10% of the total PALS mean score.

**Factor 5.** Climate building. The score results are significantly different from the norm mean and have an intermediate teacher-centered teaching style. Scoring low means a formal atmosphere is maintained with rules of dialog with classmates, and periodic breaks. Students' learning barriers are not purposely addressed. A failure in an assignment is considered a lack of competency rather than a learning experience to build competencies. This mean norm score represents 11% of the total PALS mean score.

**Factor 6.** Participation in the learning process. The score results are significantly different from the norm mean and have an intermediate teacher-centered teaching style. Scoring low means using fixed classroom performance criteria and a topic list without students' input. Helping students' use of metacognitive techniques to identify and correct problems are underemphasized. This mean norm score represents 9% of the total PALS mean score.

**Factor 7.** Flexibility for personal development. The score results are not significantly different from the norm mean and lie in the eclectic region of not having a moderate teacher-centered or learner-centered style. This mean norm score represents 9% of the total PALS mean score.

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

**Two-year college results.** Following are the results from the seven factors.

**Factor 1.** Learner-centered activities. The score results are not significantly different from the norm mean and lie in the moderate region of not having a teacher-centered or learner-centered style. This mean norm score represents 26% of the total PALS mean score.



**Factor 2.** Personalizing instruction. The score results are significantly different from the norm mean and have a high teacher-centered teaching style. Scoring low means the instruction is not developed on behalf of the students' motives for being in class and cognitive abilities. Instructional methods to create assignments and materials to accommodate particular student learning styles are underutilized. There may be the encouragement to compete with classmates. This mean norm score represents 21% of the total PALS mean score.

**Factor 3.** Relating to experience. The score results are significantly different from the norm mean and have a moderate teacher-centered teaching style. Scoring low means that instruction does not intellectually challenge students by combining their prior experience with the new. There is less support for students to gain greater independent from others. Instruction may not relate to everyday problems or the nature of their society. This mean norm score represents 14% of the total PALS mean score.

**Factor 4.** Assessing student needs. The score results are not significantly different from the norm mean and have a moderate teacher-centered teaching style. This mean norm score represents 10% of the total PALS mean score.

**Factor 5.** Climate building. The score results are significantly different from the norm mean and have an intermediate teacher-centered teaching style. Scoring low means a formal atmosphere is maintained with rules of dialog with classmates, and periodic breaks. Students' learning barriers are not purposely addressed. A failure in an assignment is considered a lack of competency rather than a learning experience to build competencies. This mean norm score represents 11% of the total PALS mean score.

**Factor 6.** Participation in the learning process. The score results are significantly different from the norm mean and have an intermediate teacher-centered teaching style. Scoring low means using fixed classroom performance criteria and a topic list without students' input. Helping students' use of metacognitive techniques to identify and correct problems are underemphasized. This mean norm score represents 9% of the total PALS mean score.

**Factor 7.** Flexibility for personal development. The score results are significantly different from the norm mean and have a moderate teacher-centered teaching style. Scoring low means the teacher is a provider of knowledge rather than a knowledge resource and facilitator. The teacher will tend to focus on meeting the instructional objectives, maintain an orderly classroom and avoid controversial subjects that may require value judgments. This mean norm score represents 9% of the total PALS mean score.

RQ2: What are the teaching style preferences of educators as measured by the seven PALS subscales?

**Other educator results.** Following are the results from the seven factors.

**Factor 1.** Learner-centered activities. The score results are not significantly different from the norm mean and lie in the moderate region of not having a teacher-centered or learner-centered style. This mean norm score represents 26% of the total PALS mean score.

**Factor 2.** Personalizing instruction. The score results are significantly different from the norm mean and have a high teacher-centered style. Scoring low means the instruction is not developed on behalf of the students' motives for being in class and cognitive abilities. Instructional methods to create assignments and materials to accommodate particular student learning styles are underutilized. There may be the encouragement to compete with classmates. This mean norm score represents 21% of the total PALS mean score.

**Factor 3.** Relating to experience. The score results are significantly different from the norm mean and have an intermediate teacher-centered style. Scoring low means that instruction does not intellectually challenge students by combining their prior experience with the new. There is less support for students to gain greater independent from others. Instruction may not relate to everyday problems or the nature of their society. This mean norm score represents 14% of the total PALS mean score.

**Factor 4.** Assessing student needs. The score results are not significantly different from the norm mean and lie in the moderate region of not having a teacher-centered or learner-centered style. This mean norm score represents 10% of the total PALS mean score.

**Factor 5.** Climate building. The score results are not significantly different from the norm mean ( $M = 16$ ) and lie in the intermediate region of not having a teacher-centered or learner-centered style. This mean norm score represents 11% of the total PALS mean score.

**Factor 6.** Participation in the learning process. The score results are not significantly different from the norm mean and lie in the intermediate region of not having a teacher-centered or learner-centered style. This mean norm score represents 9% of the total PALS mean score.

**Factor 7.** Flexibility for personal development. The score results are not significantly different from the norm mean and lie in the moderate region of not having a teacher-centered or learner-centered style. This mean norm score represents 9% of the total PALS mean score.

RQ3: Is there a difference in teaching style preferences of educators, as measured by PALS, based on four-year colleges, two-year colleges, and other educators?

A review of the summary confidence intervals for each group was illustrated (see Figure 9). Though the confidence intervals were different, there is an overlap of the three groups. There is no statistical difference between the group means (Cumming, 2011; Field, 2009).

RQ4: Is there a correlation in teaching style preferences based on the period from 1982 to 2014?

There was an interest whether teaching styles have changed during the period from 1982 to 2014. A linear regression analysis of the three groups (four-year college, two-year college, other educators) displayed no correlation in teaching style preferences. The analysis of the data during this period was not statistically significantly to predict the total PALS score.

### **Conclusion**

Why did the Acme salespersons fail to sell the company's new scribing printer? While an elaborate training program took place prior to the launch of the scribing printer, the delay caused by lackluster sales presented a lost economic opportunity for Acme. Then, this problem occurred a second time. There were many factors that entered into reasons for the salespersons failure to sell. One of the primary reasons was the prelaunch classroom training catered to the product. Sales improved months after launch with one-on-one field training.

**Course objectives.** These were not established. Not having objectives is not unusual. Honeycutt et al. (1993) determined sales training objectives were not established by 28 percent of their sample because the respondents indicated there was no system of setting objectives. Thirty-five percent used one individual to set objectives. Forty-seven percent indicated that objectives were set through a joint effort, which they declared is the preferred manner.

Objectives are important for several reasons. To be learner-centered, Knowles (1950) reinforced the need for having a clear set of objectives. The students will work more efficiently when they know the direction of the training. Students will also be more eager when they participate in setting their objectives at the start of the course. Kirkpatrick and Kirkpatrick (2010) discuss establishing learning objectives for Levels 2, 3, 4 evaluation methods. Level 2 would be

learning objectives, Level 3 performance objectives and Level 4 business objectives. The trainers must begin with desired end results in mind then determine what behavior is needed to accomplish them (Kirkpatrick & Kirkpatrick, 2010; Wiggins & McTighe, 2006). Training objectives are necessary to quantify the level of success and to provide feedback to the trainer. With feedback, the objectives and course content may be updated.

Lesson learned: Without measurable objectives, the salespersons did not have a full understanding of their training program. Also, salespersons did not have significant input, quantifiable evaluation of training did not take place, and there was no feedback to the trainer from the field.

**Trainer tailored training for him.** Trainer's desires over the trainees were customary for corporate trainers without schooling in learner-centered adult learning. When the trainer's educational experience was teacher-centered, he or she would not be familiar with a learner-centered technique (Lindeman, 1926). Berman (2001) listed 23 teaching misconceptions and 28 design errors that are frequently made by corporate trainers from an instructional design perspective. Trainers do not know what to teach, how to design the training content, or how to create learning activities that are relevant to the level expected of the students when they exit the classroom.

Experiential training, which included hands-on product training and role-playing, was missing from Acme. Trainers teach how they were taught, and there is a lack of awareness of the importance of incorporating the experiential element. Lindeman's (1926) experience that knowledge transfer through the current pedagogical model would not be lasting.

**Marketing input.** Training executives, training managers, and salespersons were asked about time allocation in four primary categories, for the initial salesperson training. Market information was 14% (one hour per seven-hour training period) and barely ahead of company information at 11.7% (Honeycutt et al., 1993). That would not be enough time to inform, role-play, and evaluate at Level 2. Knowledge of the market for a new product in an existing or new market is essential.

Konrath (1992) introduced several scenarios between the salesperson's knowledge of the customer and the product.

For an existing customer and new product, the salesperson may understand the needs of the customer is still learning how the product capabilities fit or solve the customer's problem. The relationship exists between the parties.

When the salesperson is faced with a new customer with an existing product, the salespersons may not fully understand the needs of the customer or how the product may fit. The salesperson does understand the capabilities of the product. The customer does not know the salesperson and may not know the integrity of the company.

When the salesperson is faced with a new customer and new product, she or he does not fully understand the needs of the customer or the market and is still learning the capabilities of the product. Without having role-played and understand the customer, the salesperson may not attempt a sale if there are other opportunities awaiting. During Acme's 4.5 days of training, marketing only earned a couple slides. It was assumed that the salespersons would figure it out for themselves.

**SWOT.** An excellent task for marketing is to investigate the people, client products, competitors and complete an analysis of the strengths, weaknesses, opportunities and threats

(SWOT). In context to new markets and new equipment, the strengths and weaknesses are factors to consider with the potential client, and opportunities and threats deal with competitors of the new product. Marketing will find the means to collect information on potential customers and their competitors to the new product through their channels or by asking salespersons to be alert. The responsibility for the analysis rests with marketing. For completeness, develop a comparison matrix of competitor scribing printers (Walker, 2006). The trainer must initiate the marketing effort based on product knowledge, and interests of the trainees.

Lesson learned: Areas that were overlooked by Acme were product comparative knowledge and selling in unfamiliar markets. Takeaways from the class would be training aids that clearly and visually provide intelligence about the potential clients, their business needs, how they measure success, and whom the current competitors are currently serving the market. Then, role-playing will provide a level of comfort, self-esteem, and to drive sales.

**Training evaluation.** First are the evaluations that may be completed in the classroom. How well behaviors are learned and how they affect the corporate bottom line will come from the field. Gaps between what was taught and what was learned are then brought to the trainer's attention.

If objectives are not in place, it makes this task less quantifiable. As a matter of practice, a standing order, it should be understood that if the trainees are not performing as expected as a result of not understanding their job, the sales manager must speak up. From the trainer's perspective, she or he must be willing to discuss the knowledge gaps and investigate corrective methods. Having a plan in place provides a fail-safe system on training.

Lessons learned: Teaching is an art and science. Under the best conditions, the lesson plan will need to be revised. There must be an understood method to trigger this change. At

Acme, there was no inquiry why the first sales failure occurred thus a second failure ensued. There was no investigation into why the second training failure.

### **Recommendations for Future Research**

There is a need to support corporations in their employee training programs. This study focused on sales training, but there are many other training areas that are important. In smaller businesses, such as Acme, the instructional design was left to the SME. While his training appeared to be an excellent teacher-centered product, it did not work because of the product complexity. There is an understandable lack of intuition in developing a trainee-centric training program. Where are learner-centered educators, would learner-centered educators be good consultants to companies, and how would a learner-centered consultant be vetted?

**Where are the learner-centered educators?** This meta-analysis showed a propensity of teacher-centered educators. In just about every study, there was learner-centered faculty. To further meta-analysis, other demographics may be investigated to determine if there are particular schools, locations, programs, years teaching, the number of adult learning courses were taken, ethnicity, or gender.

**Would a learner-centered educators be a good consultant?** The Martin Company might have been fortunate finding an educator who was learner-centered (Kelly, 1993). However, would a learner-centered educator be able to guide a company for improving their corporate training program? The first step would be to ensure the educator was learner-centered.



**How to vet a learner-centered consultant?** A small business wants to bring on a consultant who indicates she or he is a seasoned learner-centered trainer. What instrument, such as PALS, would help validate that claim? This research could identify (and test) a method for businesses to vet a potential candidates. Berman (2001) was frustrated with her experience with professional trainers. The Martin Company researched other avenues to help them with their training needs before finding the local university (Kelly, 1993).

## References

References marked with an asterisk indicate studies included in the meta-analysis (American Psychological Association, 2001, p. 222; Jackson, 2012).

- \* Ahmed, M. M. (2006). *Patient education: Speech-language pathologists' perceptions regarding the use, effectiveness, and barriers to adult education principles* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3255090)
- \* Atkins, R. D. (2013). *A perceptual study of engineering faculty teaching learning behavior in the classroom* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3605239)
- \* Atkinson, J. J. (1993). *Faculty perceptions of teaching styles at three selected post-secondary institutions in north west Arkansas relating to the andragogical model* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9334047)
- \* Barrett, K. R. (2004). *A comparison of online teaching styles in Florida community colleges* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3160545)
- \* Brooks, P. M. (1988). *Perceptions of instructional behaviors among college faculty members and students in a liberal arts college setting* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8900464)
- \* Brosseau, M. J. A. (2000). *University students' preferences for a teacher and teaching style: A case study of Moroccan students* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT MQ47750)
- \* Buchannon Welborn, R. A. (1985). *The relationship of learning and teaching styles to achievement among nontraditional health professional students* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 86052324)

- \* Byrd, J. L. (2010). *Educational philosophies, teaching styles, learning strategy preferences, and attitude toward continuing education of nationally certified sign language interpreters* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3482151)
- \* Carr, C. M. (1998). *Assessing teaching style preference and factors that influence teaching style preference of registered dietitians* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9825881)
- \* Chanchaem, N. (2002). *The transformation of teaching approach from a face-to-face classroom to an online classroom* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3034369)
- \* Clancy, C. A. (1986). *An investigation of the use of the collaborative teaching-learning mode by graduate social work field instructors* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8614942)
- \* Clavon, A. M. (2014). *The teaching styles of nurse educators at private and public universities in the northern and southern regions of the United States* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3617721)
- \* Clow, T. L. (1986). *Difference between teachers professed collaborative teaching mode and adult student perception of collaborative teaching model* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8701371)
- \* Cochran, T. A. (2005). *Practices of adult learning principles and learning strategies of financial aid administrators in Oklahoma* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3167606)
- \* Cook, S. C. (1994). *A descriptive analysis of the degree of adherence to the collaborative*

- teaching-learning mode among correctional educators in South Carolina* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9508123)
- \* Curran, M. K. (2013). *The teaching styles and use of adult learning theory among nursing professional development educators* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3566774)
- \* Deming, M. L. (1986). *The use of the collaborative teaching-learning mode in hospital-based community health education programs* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8708649)
- \* DeVito, T. R. (2008). *A study of the teaching strategies of paramedic educators* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3305569)
- \* Dinges, R. F. (1981). *The degree of utilization of the collaborative teaching-learning mode by adult basic education teachers in Illinois* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8122631)
- \* Douglas, J. F. (1982). *An analysis of the relationship between professional training in adult education and orientation to the collaborative teaching-learning mode in Washington State hospitals and the Washington State cooperative extension service* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8303946)
- \* Dupin-Bryant, P. A. (2000). *Identifying teaching styles of interactive television instructors and variables related to distance education teaching style* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9993732)
- \* Eberle, J. H. (1993). *Perceptions of the use of the collaborative teaching-learning mode by county agents of the Kansas State University cooperative extension service* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9413079)

- \* Edwards, S. E. (2013). *Learner-centered teaching style: comparing face-to-face and online adult educators' commitment levels* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3590523)
- \* Elliott, D. L. (1996). *The teaching styles of adult educators at the Buckeye leadership workshop as measured by the principles of adult learning scale* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9710558)
- \* Ervin, B. J. (2012). *Learner-centered education: Bridging the gap between ideal and actual practice* (Doctoral dissertation). Retrieved from [http://rave.ohiolink.edu/etdc/view?acc\\_num=dayton1354295092](http://rave.ohiolink.edu/etdc/view?acc_num=dayton1354295092)
- \* Floyd, T. D. (2010). *An exploratory study of the philosophy and teaching styles of Georgia workforce educators and entrepreneurship instructors* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3416046)
- \* Forkum, J. W. (2009). *Assessment of adult learning practices in health education at a large community college district in Northern California* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3371719)
- \* Foster, V. L. (2006). *Teaching-learning style preferences of special education teacher candidates at Northeastern State University in Oklahoma* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3220240)
- \* Franklin, J. E. (1988). *The collaborative teaching-learning mode: Adult learning principles and managers of training and development in business* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8915688)
- \* Freeland, D. K. (1988). *The collaborative teaching-learning mode: Health education professors and adult learning principles* (Doctoral dissertation). Available from ProQuest

- Digital Dissertations. (AAT 8827487)
- \* Fries, C. H. (2012). *Teaching style preferences and educational philosophy of teacher education faculty at a state university* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3524500)
- \* Fromer, R. F. (2013). *A theory-driven integrative process/outcome evaluation of a concept-based nursing curriculum* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3568629)
- \* Gathright, G. L. (1999). *An analysis of the Principles of Adult Learning Scale in a correctional education setting* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9953461)
- \* Gifford, N. K. T. (1992). *The relationship of moral reasoning level of instructors to their style and adult student perception of the learning environment* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9308176)
- \* Girondi, R. A. (1991). *Teaching styles of instructors in selected postsecondary proprietary schools* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9207859)
- \* Graham, S. L. R. (1988). *The collaborative mode, selected community college instructor characteristics, and student retention* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8822381)
- \* Hajduk, M. A. (2000). *Differences between full and part-time faculties' student-centered instructional format as identified by PALS and APALS when teaching adults in academic credit courses in a community college* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9965976)

- \* Harris, S. (2005). *The relationship between cognitive and teaching style preferences of students attending the Air Force Reserve Officer Training Instructor Course at the Academic Instructor School* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3173486)
- \* Hightower, S. (2014). *Effect of active learning on students' academic success in the medical classroom* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3613711)
- \* Hoffrichter, B. (1997). *Teaching style assessment of program directors of hospital-based certificate and college/university degree programs of radiologic technology* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9724489)
- \* Hosch, M. L. (2014). *The effect of an educator's teaching style on the math anxiety of adult learners* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3614802)
- \* Hudspeth, J. H. (1991). *Student outcomes: The relationship of teaching style to readiness for self-directed learning* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9205509)
- \* Hughes, C. L. (1997). *Adult education philosophies and teaching styles of faculty at Ricks College* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9816315)
- \* Johnson, C. S. (1999). *A comparison of the teaching styles of full-time and part-time community college faculty* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9950468)
- \* Jones, M. J. E. (1984). *The effects of teaching modes on the academic gain of central stream*

- secondary migrant students of Texas* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8428771)
- \* Kargas, J. R. (2003). *Patient education: Physical therapists' perceptions regarding the use, effectiveness, and barriers of adult education principles* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3100600)
- \* Lee, J. G. (2004). *An investigation and analysis of the teaching styles of faculty members in Midwestern Christian colleges and universities* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3155524)
- \* Lucas, M. M. (1987). *Collaborative adult learning principles in baccalaureate community health education curricula* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8802108)
- \* Mainville, L. (2000). *Etude de la relation entre l'utilisation d'une approche d'enseignement et l'orientation epistemique de formateurs responsables d'apprenants adultes au palier secondaire en Ontario* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT MQ57055)
- \* Mancuso, S. K. (1988). *Self-directedness, age, and nontraditional higher education* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8810559)
- \* Martin, J. W. (1999). *Adult education philosophies and teaching styles of construction management faculty of the Associated Schools of Construction* (Master's thesis). Available from ProQuest Digital Dissertations. (AAT 9951860)
- \* McCann, M. T. (1988). *Academic achievement as a function of instructor teaching orientation among nontraditional university students* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8925489)



- \* McCaskey, S. J. (2009). *Teaching styles and learning strategies of Illinois secondary career and technical education teachers* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3372543)
- \* McCollin, E. D. (1998). *Faculty and student perceptions of teaching styles: Do teaching styles differ for traditional and nontraditional students* (Doctoral dissertation)? Available from ProQuest Digital Dissertations. (AAT 9901343)
- \* McCoy, M. R. (2000). *Blackboards and badges: Teaching style in law enforcement education and training in Oklahoma* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9979177)
- \* McGowan, J. M. (1984). *Exploratory study of the relationship between learning and teaching styles in community college faculty* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8410314)
- \* McKenzie, P. A. (1987). *Associate degree nursing programs in Texas: A survey of the instructors' teaching style and the schools' licensure examination results* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8808857)
- \* Miglietti, C. L. (1994). *The relationship of teaching styles, expectations of classroom environments, and learning styles of adult students at a two-year college* (Doctoral dissertation). Available. Retrieved from ProQuest Digital Dissertations. (AAT 9541520)
- \* Moore, J. A. L. (1996). *Competency of community college developmental reading instructors in the principles of adult learning* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9709280)
- \* Moore, L. S. (2010). *Study of effective approaches for teaching adults* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3419234)

- \* Morales Osegueda, S. G. (1997). *An assessment of teaching/training style preferences among Oklahoma Cooperative Extension field staff* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9811748)
- \* Morris, L. V. (1982). *A study of perceived teaching effectiveness in the North Carolina Elderhostel program* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8222882)
- \* Natale, R. D. (2007). *Faculty knowledge of adult learning styles as predictors of success in community college preparatory mathematics* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3268315)
- \* Needham, M. K. (1990). *Pre-service teacher training of adult educators in Singapore: A follow-up study* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT MQ64879)
- \* Nolte, J. L. (1994). *Effects of inservice training on part-time continuing education faculty* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9427273)
- \* O'Brien, M. D. (2001). *Teaching style and teaching philosophy of rehabilitation educators* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3023943)
- \* Osborne, L. Y. (2008). *Adult students and learner-centered instruction at a small community college: A mixed method study* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3319382)
- \* Öztürk, M. (2011). *Teaching style preferences of trainees at police in-service training* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3482178)
- \* Parisot, A. H. (1995). *Technology and teaching: The adoption and diffusion of technological innovations by a community college faculty* (Doctoral dissertation). Available from

- ProQuest Digital Dissertations. (AAT 9542260)
- \* Pearson, T. G. (1980). *Managerial philosophy and adult learning principles: training and development professionals as managers of collaborative learning* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8111574)
  - \* Peters, M. (2009). *The influence of classroom climate on student's mathematics self-efficacy and achievement: A multi-level analysis* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3349646)
  - \* Powell, L. (2006). *An exploratory study of the philosophy and teaching styles of Alabama workforce education and entrepreneurship instructors* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3225281)
  - \* Puksa, M. A. (1999). *Nursing students' perceptions of teachers' collaborative teaching style and self-efficacy for collaborative learning* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT MQ39868)
  - \* Quinllin, A. A. (2004). *The teaching styles of UAA school of nursing faculty* (Master's thesis). Available from ProQuest Digital Dissertations. (AAT 1421643)
  - \* Rees, C. V. (1991). *Faculty perceptions of teaching: A comparison between courses designed for adults and courses designed for traditional-age students* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9201606)
  - \* Ringler, M. C. (2004). *Determining the use of principles of adult learning in professional development* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3161028)
  - \* Roberson, V. R. (2002). *Use of adult learning principles by adult basic skills instructors in an urban community college district* (Doctoral dissertation). Available from ProQuest

- Digital Dissertations. (AAT 3088031)
- \* Robinson, L. M. (2012). *Expanding the description of facilitators of adult learning: Workplace facilitator teaching styles, theories of action, and perspectives of teaching* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3530870)
  - \* Rogers, D. F. (2009). *Development of learner-centered teaching styles by select California community college faculty* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3359834)
  - \* Rothamer, F. R. (2003). *Business faculty knowledge of adult learning styles: Cooperative education vs. Non-cooperative education institutions* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3127686)
  - \* Ruhnau, K. (2006). *An analysis of learning outcomes of adult students: Learning styles versus teaching styles* (Doctoral dissertation). Available from [www2.uwstout.edu/content/lib/thesis/2006/2006ruhnauk.pdf](http://www2.uwstout.edu/content/lib/thesis/2006/2006ruhnauk.pdf)
  - \* Sachatello-Sawyer, B. (1996). *Coming of age: An assessment of the status of adult education methodology in museums* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9633825)
  - \* Santucci, M. A. (1985). *Collaborative teaching in degree completion baccalaureate programs for registered nurses* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8524750)
  - \* Scherling, S. E. (2013). *Learner-centered instructors' beliefs about adult learning: A phenomenological study* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3589630)
  - \* Scheuermann, M. E. (2005). *Perceptions of nontraditional students and their instructors*

- regarding the collaborative teaching and learning mode and the socialized expectations students bring from the workplace into the undergraduate classrooms* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3167555)
- \* Scotney, D. W. (1986). *An analysis of the relationship between the level of knowledge and understanding of the collaborative teaching-learning mode and teaching practices in the classroom (part-time teacher, continuing education)* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8629584)
- \* Seevers, B. S. (1991). *Factors related to teaching style preference of Ohio cooperative extension faculty and program staff* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9130552)
- \* Shedd, P. E. (1989). *The use of the Principles of Adult Learning Scale to assess instructional development needs in a community college* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9010600)
- \* Siebrands, L. D. (1994). *Defining the personality characteristics of an andragogically inclined instructor* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9517485)
- \* Siebrands, W. L. (1994). *The influence of educational experience on instructional stance* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9517486)
- \* Smith, T. M. (2007). *Integrating multiple intelligences and andragogical principles into a preservice teacher education program* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3325347)
- \* Spoon, J. C. (1996). *Impact of student learning style and instructor teaching style on achievement of adult basic skills students* (Doctoral dissertation). Available from

ProQuest Digital Dissertations. (AAT 9726935)

- \* Stover, S. E. (2006). *Shifting toward learning-centered principles: A faculty development experiment* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3226213)
- \* Sua, D. W. (1989). *A comparison of correctional adult educators and formal adult educators in terms of their expressed beliefs in the collaborative teaching mode. theory and methods of adult education* (Doctorial dissertation). Abstract retrieved from ERIC database. (ED305521)
- \* Taylor, D. A. (1990). *A study of the extent to which collaborative methods are employed by instructors in business and industry* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9034766)
- \* Taylor-King, S. (2001). *Differences between full- and part-time faculty in the practice of and value for learner-centered teaching: A case study at a private urban liberal arts college* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3010733)
- \* Totin Meyer, M. A. T. (2002). *The use of the principles of adult learning scale to assess the instructional practices of clinical instructors/preceptors for graduate nurse practitioner students in North Carolina* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3031775)
- \* Viau, P. A. (1991). *Adult educational principles and strategies employed by nursing staff development educators within the hospital milieu: An exploratory study* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9125867)
- \* Wang, C. (2002). *Instructional preferences of adult educators and perceptions of their adult students in distance learning settings* (Doctoral dissertation). Available from ProQuest

- Digital Dissertations. (AAT 3055349)
- \* Waters, D. H. (1992). *Community college faculty's use of adult learning principles as measured by the Principles of Adult Learning Scale* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9239417)
  - \* Watkins, J. B. (2006). *The educational beliefs and attitudes of Title I teachers in Tulsa public schools* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3220244)
  - \* Wegge, N. B. (1991). *The effect of an inservice training program on the educational orientation of part-time adult continuing education instructors* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9122777)
  - \* Weitkamp, E. W. (2005). *Teaching style and technology: The role of educational values in the adoption of information technology innovations in the classroom* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3183581)
  - \* Werth, E. P. (2009). *Problem-Based Learning in police academies: Adult learning principles utilized by police trainers* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3344735)
  - \* Wiley, L. J. (1986). *The effect of teaching style on the development of moral judgment in prison inmates* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 8707491)
  - \* Willson, A. (2006). *Predictors of teaching styles and the adult education philosophies of instructors of radiologic technology programs* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3241987)
  - \* Wilson, N. L. (1994). *A study of the extent to which the instructional practices of teachers of*

- adults differ from the instructional preferences of adult learners enrolled in post-secondary credit courses* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9603237)
- \* Woodcock, J. F. (1994). *The relationship of student satisfaction with instructors' and students' scores on the Principles of Adult Learning Scale (PALS)* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 9520178)
- Anderson, L. W., Krathwohl, D. R., & Bloom, B. S. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives* (Abridged ed.). New York, NY: Longman.
- Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.). San Francisco, CA: Jossey-Bass Publishers.
- American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: American Psychological Association.
- American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: American Psychological Association.
- ASTD Research. (2009). *Value of evaluation: Making training evaluations more effective*. Retrieved from <https://www.td.org/Publications/Research-Reports/2009/2009-Value-of-Evaluation-Making>
- Baker, J. A. (1990). How video and film can improve your sales training presentations. In R. L. Craig & L. Kelly (Eds.), *Sales Training Handbook: A Guide to Developing Sale Performance* (pp. 469-491). Englewood Cliffs, NJ: Prentice Hall Trade.
- Berman, T. R. (2001). *Why corporate training doesn't work: Trainers' common misconceptions about leaning, resulting course design errors, and design principles for constructing*



- effective training courses* (Doctorial dissertation). Available from ProQuest Digital dissertations. (AAT 3033448)
- Blanchard, K., Zigarmi, P., & Zigarmi, D. (2013). *Leadership and the one minute manager: Increasing effectiveness through situational leadership II*. New York, NY: Harper Collins.
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals* (1st ed.). New York: NY: Longman.
- Borenstein, M. (2009). *Introduction to meta-analysis*. Hoboken, NJ: John Wiley & Sons.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42. Retrieved from:  
<http://www.jstor.org/journals/aera.html>
- Chonko, L. B., Tanner, J. F., & Weeks, W. A. (1993). Sales training: Status and needs. *The Journal of Personal Selling & Sales Management*, 13(4), 81-86. Retrieved from  
<http://www.jpssm.org/>
- Comprehensive Meta-Analysis (Version 3) [Computer software]. Englewood, NJ: Biostat
- Conti, G. J. (1978). *Principles of adult learning scale: An instrument for measuring teacher behavior related to the collaborative teaching-learning mode* (Doctorial dissertation). Available from ProQuest Digital Dissertations. (AAT 3326506)
- Conti, G. J. (1983). *Principles of adult learning scale: Follow-up and factor analysis*. Paper presented at the 24th Annual Adult Education Research Conference, Ann Arbor, MI.
- Conti, G. J. (2004). Identifying your teaching style. In M. W. Galbraith (Ed.), *Adult learning methods: A guide for effective instruction* (3rd ed., pp. 75-92). Malabar, FL: Krieger Publishing.

- Conti, G. J. (2008). *Resource materials for the Principles of Adult Learning Scale (PALS)*. Retrieved from [http://www.conti-creations.com/PALS\\_resources.htm](http://www.conti-creations.com/PALS_resources.htm)
- Conti, G. J., & Fellenz, R. A. (1991). *Assessing adult learning strategies*. *Lifelong Learning*, 9(8), 20-24. Retrieved from ERIC database. (ED339847)
- Conti, G. J., & Kolody, R. C. (2004). Guidelines for selecting methods and techniques. In M. W. Galbraith (Ed.), *Adult learning methods: A guide for effective instruction* (3rd ed., pp. 181-192). Malabar, FL: Krieger Publishing.
- Conti, G. J., & Welborn, R. B. (1986). *Teaching-learning styles and the adult learner*. Abstract retrieved from ERIC database. (EJ335474)
- Cooper, H., DeNeve, K., & Charlton, K. (1997). Finding the missing science: The fate of studies submitted for review by a human subjects committee. *Psychological Methods*, 2(4), 447-452. doi: 10.1037/1082-989X.2.4.447
- Cooper, H. M. (2010). *Research synthesis and meta-analysis: A step-by-step approach* (4th ed.). Los Angeles, CA: Sage.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9. Retrieved from <http://pareonline.net/getvn.asp?v=10&n=7>
- Coursera. (2013). *About Coursera*. Retrieved from <https://www.coursera.org/about>
- Cumming, G. (2007). ESCI (Version 3) [Computer software]. Retrieved from <http://www.latrobe.edu.au/psy/research/cognitive-and-developmental-psychology/esci>
- Cumming, G. (2011). *Understanding the new statistics effect sizes, confidence intervals, and meta-analysis*. New York, NY: Routledge.

- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Boston, MA: Harvard Business School Press.
- Erffmeyer, R. C., Russ, K. R., & Hair, J. F. (1992). Traditional and high-tech sales training methods. *Industrial Marketing Management*, 21(2), 125-131. doi: 10.1016/0019-8501(92)90007-G
- Field, A. P. (2009). *Discovering statistics using SPSS* (3rd ed.). Los Angeles: CA: Sage.
- Gilakjani, A. P. (2012). A match or mismatch between learning styles of the learners and teaching styles of the teachers. *International Journal of Modern Education and Computer Science*, 4(11), 51-60. doi: 10.5815/ijmeecs.2012.11.05
- Glass, G. V. (1976). Primary, secondary, and meta-analysis of research. *Educational Researcher*, 5(3), 3-8. doi: 10.3102/0013189X005010003
- Glass, G. V., McGaw, B., & Smith, M. L. (1981). *Meta-analysis in social research*. Beverly Hills, CA: Sage Publications.
- Glass, G. V., & Smith, M. L. (1979). Meta-analysis of research on class size and achievement. *Educational Evaluation And Policy Analysis*, 1(1), 1-16. doi: 10.3102/01623737001001002
- Grow, G. O. (1991). Teaching learners to be self-directed. *Adult Education Quarterly*, 41(3), 125-149. doi: 10.1177/0001848191041003001
- Hasselmo, N., & McKinnell, H. (2001). *Working together, creating knowledge: The university-industry research collaboration initiative*. Washington, D.C.: Business-Higher Education Forum. Retrieved from <http://www.bhef.com/publications/working-together-creating-knowledge-university-industry-research-collaboration>.
- Hatakenaka, S. (2004). *University-industry partnerships in MIT, Cambridge, and Tokyo*:

- Storytelling across boundaries*. New York: NY: RoutledgeFalmer.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112. doi: 10.3102/003465430298487
- Hersey, P., & Blanchard, K. H. (1972). *Management of organizational behavior: Utilizing human resources* (2d ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Hersey, P., & Blanchard, K. H. (1998). *Management of organizational behavior; utilizing human resources* (5th ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Honeycutt, E. D., Ford, J. B., & Tanner, J. F. (1994). Who trains salespeople?: The role of sales trainers and sales managers. *Industrial Marketing Management*, 23(1), 65-70. doi: 10.1016/0019-8501(94)90028-0
- Honeycutt, E. D., Howe, V., & Ingram, T. N. (1993). *Shortcomings of sales training programs*. *Industrial Marketing Management*, 22(2), 117-123. doi: 10.1016/0019-8501(93)90037-8
- Hopkins, D. S. (1978). *Training the sales force: A progress report. A research report from the Conference Board's Division of Management Research Conference Board*. New York, NY: The Conference Board.
- Hunt, M. M. (1997). *How science takes stock: The story of meta-analysis*. New York, NY: Russell Sage Foundation.
- Kelly, W. (1993). Training: 'just plain lousy' or 'too important to ignore'? *Sales and Marketing Management*, 145(3), 69-71. Retrieved from <http://www.salesandmarketing.com/>
- Kirkpatrick, D. L. (1998). *Evaluating training programs: The four levels* (2nd ed.). San Francisco, CA: Berrett-Koehler Publishers.
- Kirkpatrick, D. L., & Kirkpatrick, W. K. (2010). *Training on trial: How workplace learning must reinvent itself to remain relevant*. New York, NY: AMACOM.

- Kirkpatrick, D. L., & Kirkpatrick, W. K. (2013). *Bringing business partnership to life: The story of the Brunei window washer*. USA: CreateSpace.
- Knowles, M. S. (1950). *Informal adult education: A guide for administrators, leaders, and teachers*. New York, NY: Association Press.
- Knowles, M. S. (1979). Andragogy revisited II. *Adult Education*, 30(1), 52-53.
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. New York, NY: Cambridge.
- Knowles, M. S. (1984). *Andragogy in action*. San Francisco, CA: Jossey-Bass.
- Knowles, M. S. (1989). *The making of an adult educator: A autobiographical journey*. San Francisco, CA: Jossey-Bass.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2011). *The adult learner: The definitive classic in adult education and human resource development* (7th ed.). Oxford, UK: Elsevier.
- Konrath, J. (1992). Why new products fail. *Sales and Marketing Management*, 144(14), 48-56.  
Retrieved from <http://www.salesandmarketing.com/>
- Krathwohl, D. R., & Smith, N. L. (2005). *How to prepare a dissertation proposal: Suggestions for students in education and the social and behavioral sciences*. Syracuse, NY: Syracuse University Press.
- Kulhavy, R. W. (1977). Feedback in written instruction. *Review of Educational Research*, 41(2), 211-232 doi: 0.3102/00346543047002211
- Kurzrock, D. (1990). Developing and writing successful sales training programs. In R. L. Craig & L. Kelly (Eds.), *Sales Training Handbook: A Guide to Developing Sale Performance* (193-216). Englewood Cliffs, NJ: Prentice Hall Trade.

- Light, R. J. (1984). Six evaluation issues that synthesis can resolve better than single studies. *New Directions for Program Evaluation, 1984(24)*, 57-73. doi: 10.1002/ev.1378
- Lindeman, E. C. (1926). *The meaning of adult education*. New York, NY: New Republic.
- Lipsey, M. W. (1992). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims and Offenders, 4(4)*, 124–147. doi: 10.1080/15564880802612573
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis. Applied Social Research Methods Series* (Vol. 49). Thousand Oaks, CA: Sage.
- Little, J. D. C. (1961). A proof for the queuing formula:  $L = \lambda W$ . *Operations Research, 9(3)*, 383-387. doi: 10.1287/opre.9.3.383
- Lupton, R. A., Weiss, J. E., & Peterson, R. T. (1999). Sales training evaluation model (STEM): A conceptual framework. *Industrial Marketing Management, 28(1)*, 73-86. doi: 10.1016/S0019-8501(98)00024-8
- Maqsood, T., Walker, D. H. T., & Finegan, A. D. (2007). Facilitating knowledge pull to deliver innovation through knowledge management: A case study. *Engineering, Construction and Architectural Management, 14(1)*, 94-109. doi: 10.1108/09699980710717007
- Marsh, R. F., & Conard, M. A. (2008). A pull system for delegating knowledge work. *Operations Management Research, 1(1)*, 61–68. doi: 10.1007/s12063-008-0006-y
- Massachusetts Institute of Technology (Producer). (2012, March 5). 6.002x Circuits and Electronics. Retrieved from <https://6002x.mitx.mit.edu/>
- Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. In S. B. Merriam (Ed.), *The new update on adult learning theory. New directions for adult and continuing education* (pp. 3-13). San Francisco, CA: Jossey-Bass.

- Merriam, S. B., Caffarella, R. S., & Baumgartner, L. M. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). San Francisco, CA: Jossey-Bass.
- Nagle, S. (2005). Managing new product and service launch. In K. B. Kahn (Ed.), *The PDMA handbook of new product development* (2nd ed., pp. 455-465). Hoboken, NJ: Wiley.
- Nemarich, C. P., Whitesel, H. K., & Sarkady, A. (1989). *On-line wear particle monitoring based on ultrasonic detection and discrimination*. (DTRC Publication No. PAS-89-7). Bethesda, MD: David Taylor Research Center Retrieved from <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA212956>.
- Oslund, L. (1985). *Ultrasonic measurement of particles in a viscous fluid* (Master's thesis). Available from <https://calhoun.nps.edu/handle/10945/23453>
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Association for Psychological Science*, 9(3), 105-119. doi: 10.1111/j.1539-6053.2009.01038.x
- Phillips, J. J. (1998). Measuring the return on investment in organization development: Key issues and trends. *Organization Development Journal*, 16(4), 29. Retrieved from <http://www.odnetwork.org>
- Phillips, J. J., & Phillips, P. P. (2002). 11 reasons why training & development fails...and what you can do about it. *Training*, 39(9), 78-85. Retrieved from <http://www.roiinstitute.net/roi-articles/>
- Phillips, J. J., & Phillips, P. P. (2007). *Show me the money: How to determine ROI in people, projects, and programs* (1st ed.). San Francisco, CA: Berrett-Koehler Publishers.
- Phillips, P. P. (2002). *The bottomline on ROI: Basics, benefits, & barriers to measuring training & performance improvement*. Atlanta, GA: CEP Press.

- Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice, 41*(4), 219-225. doi:10.1207/s15430421tip4104\_3
- Pratt, D. D. (1988). Andragogy as a relational construct. *Adult Education Quarterly, 38*(3), 160-172. doi: 10.1177/0001848188038003004
- Raudenbush, S. W. (1984). Magnitude of teacher expectancy effects on pupil IQ as a function of the credibility of expectancy induction: A synthesis of findings from 18 experiments. *Journal of Educational Psychology, 76*(1), 85-97. doi: 10.1037/0022-0663.76.1.85
- Reder, L., Anderson, J. R., & Simon, H. A. (1996). Situated learning and education. *Educational Researcher, 25*(4), 5-11. doi:10.3102/0013189X025004005
- Rogers, C. R., & Freiberg, H. J. (1994). *Freedom to learn* (3rd ed.). New York, NY: Merrill
- Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature reviews. *Annual Reviews of Psychology, 2*(2001), 59-82. doi: 10.1146/annurev.psych.52.1.59
- Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom*. New York, NY: Holt, Reinhart, Winston.
- Russ, K. R., Hair, J. F., Erffmeyer, R. C., & Easterling, D. (1989). Usage and perceived effectiveness of high-tech Approaches to sales training. *The Journal of Personal Selling & Sales Management, 9*(1), 46-54. doi: 10.1080/08853134.1989.10754513
- Sadigh, D., Seshia, S. A., & Gupta, M. (2012). Automating exercise generation: A step towards meeting the MOOC challenge for embedded systems. *Association for Computing Machinery*. doi: 10.1145/2530544.2530546
- Sakakibara, S., Flynn, B. B., Schroeder, R. G., & Morris, W. T. (1997). The impact of just-in-time manufacturing and its infrastructure on manufacturing performance. *Management*



- Science*, 43(9), 1246-1257. doi: 10.1287/mnsc.43.9.1246
- Santoro, M. D. (2000). Success breeds success: The linkage between relationship intensity and tangible outcomes in industry–university collaborative ventures. *The Journal of High Technology Management Research*, 11(1), 255-273. doi: 10.1016/S1047-8310(00)00032-8
- Sharpe, D. (1997). Of apples and oranges, file drawers and garbage: Why validity issues in meta-analysis will not go away. *Clinical Psychology Review*, 17(8), 881-901. doi: 10.1016/S0272-7358(97)00056-1
- Stawarski, C. A. (2012). *What's the difference between return on expectations and return on investment?* Retrieved from: <https://www.td.org/Publications/Blogs/L-and-D-Blog/2012/10/Whats-the-Difference-Between-Return-on-Expectations-and-Return-on-Investment>
- Tough, A. (1978). Major learning efforts: Recent research and future directions. *Adult Education*, 28(4), 250-263. doi:10.1177/074171367802800403
- U.S. Department of Justice. (2015). Americans with Disabilities Act of 1990. Retrieved from <http://www.ada.gov/>
- Walker, J. R. (2006). *Introduction to hospitality* (4th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Walker, M. (2009). *Industry - higher education partnerships: A case study analysis of learning together* (Doctoral dissertation). Available from ProQuest Digital Dissertations. (AAT 3350089).
- Wiggins, G. P., & McTighe, J. (2006). *Understanding by design* (Expanded 2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

## APPENDIX A

## Coding Sheet - Study Descriptors

Author Last Name	First Author		
Source ID	Dissertation ProQuest No: Other Identification No:		
Year Published	80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 Not published		
Origination	Four-Year College	Two-Year College	Industry /Govt.
Respondents	Teachers      Trainers (Industry) / Govt.		
Search Method	ProQuest   Google Scholar   University   Other: Reference of:		
PALS	Total		7 Factors
Results	Xbar:	SD	N:
Comments			

## APPENDIX B

## Included Dissertations

Last Name	ID	Year	Last Name	ID	Year
Atkins	3605239	2013	Lucas	8802108	1987
Atkinson	9334047	1993	Mancuso	8810559	1988
Barrett	3160545	2004	McCann	8925489	1988
Brooks	8900464	1988	McKenzie	8808857	1987
Buchannon -Welborn	8605234	1985	Miglietti	9541520	1994
Chanchaem	3034369	2002	Moore , J	9709280	1996
Clancy	8614942	1986	Moore , L	3419234	2010
Clavon	3617721	2014	Morales Osegueda	9811748	1997
Clow	8701371	1986	Natale	3268315	2007
Curran	3566774	2013	O'Brien	3023943	2001
DeVito	3305569	2008	Peters	3349646	2009
Douglas	8303946	1982	Powell	3225281	2006
Dupin -Bryant	9993732	2000	Ringler	3161028	2004
Eberle	9413079	1993	Roberson	3088031	2002
Edwards	3590523	2013	Rogers	3359834	2009
Elliott	9710558	1996	Rothamer	3127686	2003
Ervin	Not Pub	2012	Scheuermann	3167555	2005
Floyd	3416046	2010	Seevers	9130552	1991
Forkum	3371719	2009	Siebrands , L	9517485	1994
Franklin	8915688	1988	Spoon	9726935	1996
Fromer	3568629	2013	Stover	3226213	2006
Gifford	9308176	1992	Taylor -King	3010733	2001
Gironi	9207859	1991	Totin -Meyer	3031775	2002
Hajduk	9965976	2000	Weitkamp	3183581	2005
Harris	3173486	2005	Werth	3344735	2009
Hosch	3614802	2014	Willson	3241987	2006
Hughes	9816315	1997	Woodcock	9520178	1994
Johnson	9950468	1999			

## APPENDIX C

## Non-Human Subjects Determination Notice

## PEPPERDINE UNIVERSITY

Graduate &amp; Professional Schools Institutional Review Board

July 22, 2014

Larry Oslund  


Protocol #: N0714D01

Project Title: Teaching Style Preferences of College Faculty: A Meta-Analysis

Dear Mr. Oslund,

Thank you for submitting the Non-Human Subjects Verification Form and supporting documents for your study entitled, *Teaching Style Preferences of College Faculty: A Meta-Analysis*. The IRB appreciates the work you and your faculty advisor, Dr. Ray Gen, have done on the proposal. As required by the Code of Federal Regulations for the Protect for Human Subjects (Title 45 Part 46) any activity that is research and involves human subjects requires review by the Graduate and Professional Schools IRB (GPS-IRB).

After review of the Non-Human Subjects Verification Form and supporting documents, GPS IRB has determined that your proposed research<sup>1</sup> activity does not involve human subjects. Human subject is defined as a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information. (45 CFR 46102(f)).

As such because you are not obtaining data through intervention or interaction with living individuals, or identifiable private information, then the research activity does not involve human subjects. Therefore, GPS IRB review and approval is not required of the above referenced study.

Should you have additional questions, please contact Kevin Collins, Manager of the Institutional Review Board (IRB) at [gpsirb@pepperdine.edu](mailto:gpsirb@pepperdine.edu). On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,



Dr. Thema Bryant-Davis  
Chair, Graduate and Professional Schools IRB  
Pepperdine University

<sup>1</sup> *Research* means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported un-der a program which is considered research for other purposes. (45 CFR 46.102(d)).