A Case Study of Organizational Change fostered by the NAPE Program Improvement Process for Equity™

A thesis presented by

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In Partial Fulfillment of the Requirements for the degree of
Doctor of Education

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Northeastern University
Boston, Massachusetts

2017
Abstract

Gender inequality is a persistent issue in secondary and postsecondary career and technical education programs in the United States. According to section 113(b)(2)(A)(III)(vi) of the Carl D. Perkins act, schools receiving federal funds in support of career and technical education are required to report “student participation in, and completion of, career and technical education programs that lead to employment in non-traditional fields.” To assist districts in improving their non-traditional performance metrics, the Delaware Department of Education (DDOE) contracted with the National Alliance for Partnerships in Equity (NAPE) to implement the Program Improvement Process for Equity (PIPE™). PIPE™ is a five-step action research process with the specific goal of “increas[ing] the participation, persistence, and program completion of underrepresented students in career and technical education and STEM nontraditional career fields” (NAPE, 2015b, p. 1). Using the theoretical frameworks of organizational change and empowerment theory, this case study sought to answer the following questions. First, how do PIPE™ participants assess their implementation efforts one year after completing their work with face-to-face NAPE facilitators according to the Quality Implementation Self-Assessment Rating Scale (QISARS) survey? Second, what do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol? And third, what factors do PIPE™ participants perceive as having helped or hindered sustainability of organizational change aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context? Research participants self-reported being in a state of change, but they did not identify themselves as reaching a state of newfound equilibrium or sustainable transformation. Participants presented themselves as reflective change agents, able to identify both supports and challenges to their efforts, but overarching results indicate that sustained change had not yet been achieved.

Keywords: non-traditional, Carl D. Perkins, organizational change, empowerment theory, sustainability
ACKNOWLEDGEMENTS

There are no words to express the thanks in my heart for my family. The family of my youth that helped define who I am and the family that has now come to depend upon my husband and me as they grow and strive to build a future of their own. Both have supported my eagerness to learn and be “whatever’s next,” and both have my unbridled appreciation for loving me for “whatever is now.”

It is also important that I take a moment to appreciate those who have followed me through this particular journey. Dr. Kelly Conn, my advisor, who saw me through several life changes and struggles as I worked to identify an idea that would ultimately become this thesis. Dr. Chris Unger, who challenged my thinking throughout my coursework, and who was kind enough to be second reader for my defense. And, Dr. Bart Gill, a colleague willing to share his time and expertise as a committee member and support system as the process came to a close. Thank you all for your investment of time, effort and insight. I promise to pay it forward.
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Chapter 1: Introduction

Statement of the Problem

On June 23, 1972, President Richard Nixon signed Title IX of the Education Amendments into law “to avoid the use of federal money to support sex discrimination in education programs and to provide individual citizens effective protection against those practices” (Overview of Title IX, 2015). Before Title IX, multiple areas of public education were prone to gender segregation policies, and the arena of Career and Technical Education (CTE) was far from immune. Conventional career training programs were often dominated by gender segregation and discrimination practices that denied females entry into higher wage, traditionally male, industry and technical occupations (Wonacott, 2002). Females navigating such a biased field of training were left without access to the higher paying jobs afforded to males in the system and were thus denied the economic self-reliance earned by men.

In 2008, the National Coalition for Women and Girls in Education (NCWGE) completed an examination of enrollment trends in CTE and found that 98% of students enrolled in cosmetology were female, as were 87% of childcare students, and 86% of students in health-related courses. On the other hand, females made up only 4% of heating and A/C and refrigeration, 5% of welding; 6% of electrical; and 9% of automotive students (p. 22). Even with Title IX in place for over 36 years, and the Carl D. Perkins Act of 1984 (reauthorized in 1998 and 2006) passed with provisions for gender equity in CTE, there were few gains reported in the way of enrollment shifts. These numbers illustrated a continuation of limited access for women to well-paying technical careers that often provided strong benefits packages and unionization opportunities (Discrimination Research Center & Equal Rights Advocates, 2004). And, though it seems the loss has been predominantly on the side of female students, it actually has been
universal. Male students are also put in disadvantaged situations when they are limited to conventionally male career paths.

Traditionally male occupations such as plumbing, electrical, heating, and welding have generally higher wage potential than traditionally female careers in health care, childcare, cosmetology, and secretarial work (Toglia, 2013). Consequently, as the economy shifts and males find themselves searching for positions in high-demand, high-growth areas, they can at times find themselves disadvantaged by traditionally stereotyped and lower wage potential professions such as nursing and other health-related fields (ACTE, NAPE, NASDCTEc, & NLC, 2009). “Because around the world men are typically paid more than women (Hausmann et al. 2014), it is possible that wages will rise within female-dominated fields” (Shen-Miller & Smiler, 2015, p. 272) with the addition of males to the employment demographic. A bright future for our youth and our economy is dependent upon our investment in human resources and equity.

Access to career training and education begins at the earliest levels, with awareness and exploration of options beginning as children read books, go on field trips, and investigate the world around them. But, by the time teenagers reach high school, a deep investigation and learning of skills begins through increased course rigor and the introduction of CTE opportunities. Unfortunately, research has shown that, in the early 2000’s, girls made up only 15% (Eardley & Manvell, 2006) and boy’s made up only 9% (Lufkin et al., 2007) of the population in nontraditional CTE courses. Though policies such as Title IX require that students have the right to take nontraditional courses, it does not appear that they have been doing so in huge numbers. Accountability measures in policies such as those included in the Carl D. Perkins Act have been instituted to help address these issues.
Since 2006, section 113(b)(2)(A)(III)(vi) of the Carl D. Perkins act has required schools receiving federal funds in support of career and technical education to report “student participation in, and completion of, career and technical education programs that lead to employment in non-traditional fields.” For the purposes of this policy, nontraditional programs are defined as academic programs that lead to professions in which less than 25% of the labor force is made up of one gender. Approximately $4.5 million in Perkins funding is distributed among Delaware state education agencies; however, at the time of this study, of the 19 eligible non-charter public school districts in the state, eight had not met their participation target and three had not met their 90% completion target since 2011-12 (Delaware Dept. of Education, 2015). The Perkins Act of 2006 requires state education agencies (SEAs) to annually report progress on set performance measures to the United States Department of Education (USDOE). If at any point an SEA does not meet its negotiated targets, it is required to develop and implement an improvement plan outlining actions that will be taken to enhance performance in the future. Similar actions are taken between an SEA and local education agencies (LEAs) to ensure that averaged state-level targets meet reporting goals. Districts that do not meet their 90% participation and/or completion targets in nontraditional enrollment are expected to develop improvement plans that outline actions for future performance enhancement. Districts that have not met their targets for three years or more are considered high priority.

**The topic.** The Lake Forest School District, located in Felton, Delaware, has one high school. Enrollment for the 2016-17 school year was approximately 950 students with a 48.2% male and 51.8% female gender disaggregation (State of Delaware, 2017). At the time this study was conducted, the high school had multiple CTE programs in place and, therefore, was required to report data referencing Perkins IV performance measures annually. Since the 2011-12 school
year, Lake Forest High School had not met its non-traditional participation target, and, since 2013-2014 it had been failing to reach its completion target (Delaware Dept. of Education, 2015).

Delaware schools that do not meet their federal accountability requirements under Perkins IV are required to develop a plan outlining strategies for improvement in the area in which they failed to meet their targets. To assist schools struggling with nontraditional performance metrics, the Delaware Department of Education (DDOE) contracted with the National Alliance for Partnerships in Equity (NAPE) to implement the Program Improvement Process for Equity (PIPE™). The PIPE™ process is intended to assist education agencies in providing technical assistance and professional development to LEAs to improve their performance on accountability measures defined in the Perkins Act. It is a “data-driven, decision-making, institutional change process focused on increasing the participation, completion, and transition of females and other underrepresented groups in nontraditional CTE-related programs of study” (NAPE, 2015a).

Having struggled to meet their nontraditional performance metrics under Perkins for a number of years, Lake Forest was invited to participate with NAPE to develop an implementation plan intended to lead the school toward improvement over time. The purpose of this case study was to investigate the PIPE™ change initiative within a real-world context. Some questions of focus included:

- How do PIPE™ participants self-evaluate their implementation efforts one year after completing work with face-to-face NAPE facilitators, according to the Quality Implementation Self-Assessment Rating Scale (QISARS) survey?
• What do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol?
• What factors do PIPE™ participants perceive as having helped or hindered sustainability impacts in the Lake Forest High School context?

**Research problem.** Gender inequality exists in secondary and postsecondary career and technical education programs, which can lead to negative outcomes for both males and females (NCWGE, 2012). Section 113(b)(2)(A)(III)(vi) of the Carl D Perkins Act, requires schools receiving federal funds to report institutional progress toward “student participation in, and completion of, career and technical education programs that lead to employment in non-traditional fields.” Despite receiving $4.5 million in Perkins funding at the time this study was conducted, schools in the state of Delaware were in need of a comprehensive support model to assist them in the improvement of their nontraditional enrollment measures. In an effort to assist districts in improving their non-traditional performance metrics, the DDOE contracted with NAPE to implement PIPE™.

If organizational change is purposeful and adaptive, moving toward a specific goal or state of being (Burke, 2008) such as improving nontraditional enrollment in CTE programs, and if action research provides a framework for initiating and sustaining institutional change (NAPE, n.d., para.1), then evidence that predictive supports can be provided through facilitation structures in professional development settings would be beneficial. In this context, the purpose of this case study was to elicit participative self-evaluations from members of a school that was engaged with PIPE™ for three years and to investigate what PIPE™ participants perceived to be sustained impacts of their involvement. The research also investigated what factors participants
felt had helped or hindered sustainability of organizational change aligned with nontraditional student enrollment and completion in CTE courses in Lake Forest High School’s context.

**Justification for the research problem.** The mere availability of nontraditional CTE coursework has not generally resulted in large numbers of U.S. students gathering in guidance offices to register for classes; moreover, little has been documented to illustrate how to encourage them to do so. Recent research has indicated that a fundamental change is necessary to facilitate movement, and such shifts are not easily accomplished.

In a dissertation completed in 2012, Straight investigated the success of a career exploration strategy in increasing nontraditional enrollment in a community college. Results showed that the intervention had only limited and temporary positive effects, with students reverting to enrollment in traditional programs at previous rates by the end of the study. In a different study, researchers completed a qualitative analysis of eight schools that undertook a comprehensive CTE reform plan, including nontraditional participation, over the course of a year. The study, by Hubbard and McDonald (2014), reported that the change necessary to support a reform effort like the one that they had investigated required an examination of “school, district and state contexts—contexts that presented both structural and cultural challenges” (p. 16). The study showed that “constructing change for the vast number of high school students who have previously been disengaged in school required more than a technical fix” (p. 16).

A review of CTE reform literature completed by Castellano, Stringfield, and Stone (2003) did not identify a single study relevant to the improvement of nontraditional enrollment. However, in outlining implications for additional research, the paper revealed that “[w]hen reform is happening and appears to be succeeding, local and national funding should be directed
toward determining which aspects of the effort are succeeding, and why” (2003, p. 263). The reviewers further stated that comprehensive school reform designs and engagement with external partners should be explored, where appropriate, as an implication for practice derived from their work (2003, p. 263).

**Deficiencies in the evidence.** Though NAPE PIPE™ is offered as a research-based, data-driven approach to reform using action research protocols, there is no comprehensive research relevant to the sustainability of the work districts conduct post-consultation. Little information exists to illustrate the long-term success of schools engaging in these activities to indicate that the action research approach has a lasting impact on nontraditional participation or completion rates, and even fewer studies exist that investigate the sustainability structures implemented as part of the initial process.

The action research protocols utilized by PIPE™ follow the traditions handed down through the years as a methodology for developing a group definition of social norms and working democratically toward their achievement (Glassman, Erdem, & Bartholomew, 2012). Integrating a self-evaluative model throughout the process might be helpful to inform participants of inherent weaknesses in their planning and encourage ongoing adjustments in support of ongoing sustainability. However, the Lake Forest High School did not have a formalized evaluative process included as part of their process at the time that they went through the PIPE™ protocols.

When this study was conducted, schools in the state of Delaware were in need of comprehensive technical assistance to improve their nontraditional enrollment measures. As a first approach in assistance, schools had been offered PIPE™ as an alternative with consultation from NAPE to implement initial change efforts. In this context, this study aimed to collect and
analyze date to determine what, if any, sustainability structures were developed as an inherent product of participation in the original program to provide insights for other initiatives. In addition, information from this study can potentially be used to build an argument regarding whether technical assistance models can be refined to better serve districts working to improve nontraditional enrollment patterns in CTE by incorporating defined evaluative models as part of action research protocols.

**Relating the discussion to audiences.** A case study of the Lake Forest high school’s engagement with PIPE™ with the assistance of NAPE allowed the researcher to collect evidence through a convenience sample (Yin, 2014) that provided some insights into effective deployment of technical assistance to school districts and high schools in the state of Delaware. The case involved an action research protocol specifically tailored to facilitate organizational change intended to lead to the improvement of nontraditional participation and completion reporting outcomes under Perkins IV. To date, the PIPE™ process in general has been focused primarily on the action research protocol which contains reflective practice, but it does not involve detailed, ongoing evaluations of implementation innovations. Providing an example of the missing evaluative process could provide helpful information relevant to program sustainability in the context of school culture, which was the focus of this study. The information gleaned can be used additionally to assist facilitators in recognizing and addressing or incorporating frustrations, roadblocks, and encouragements that can hinder or strengthen ongoing consultation, thus increasing the chances of successful long-term organizational change. Identifying ongoing struggles and successes and documenting them for referential use in future professional settings can assist the DDOE in developing a model facilitation program that can be used with other
sagas across the state in years to come as they request training and technical assistance with the NAPE PIPE™.

**Significance of the Research Problem**

Research shows that, since Title IX of the Education Amendments of 1972 was passed to ban sexual discrimination in federally funded public school programs, there has been very little change in the enrollment of girls in nontraditional CTE programs across the nation (Boraas & Rodgers, 2003; Eardley & Manvell, 2006; NCGWE, 2011). Almost as an exclamation point, Eardley and Manvell (2006) compared statistics from Office of Civil Rights reports from 1977 that indicated that females then made up 79% of students enrolled in health occupations courses but only 14% of those enrolled in trade and industrial courses; 2001-2004 reports, meanwhile, indicated that girls “make up 87 percent of enrollment in traditionally female courses and only 15 percent of enrollment in nontraditional courses—strikingly similar to the pattern found nearly thirty years [prior]” (p. 398). According to NCWGE’s CTE Task Force analysis of Office of Vocational and Adult Education (OVAE) data from October 2011, this trend continued, with females constituting an average of 78% of enrollments in education, health science, and human services and an average of 13% of enrollment in STEM, manufacturing, architecture, and construction and transportation distribution and logistics. Traditionally male occupations pay an average of 20-30% more than traditionally female occupations (Boraas & Rodgers, 2003), leaving females in a precarious economic situation, if left to their own devices, to procure sustainable training and employment in the current educational environment.

However, sex stereotyping and gender segregation is not limited to females in nontraditional CTE programs. According to Lufkin et al. (2007), “Boys are enrolled in traditional and nontraditional programs at rates comparable to those of girls: 41% are enrolled in
traditionally male courses and 9% in courses nontraditional for males” (p. 428). The lack of access to educational opportunities for males in nontraditional fields has a minimal tread in research literature. Unlike the plight of females in CTE, where access to traditionally male-dominated programs often lead to higher wage potential, most female-dominated occupations have lower wage possibilities and have therefore not been considered an equalizing force in economic factors between gender roles. However, as the Global Gender Gap Report of 2014 shared, “the gender wage gap is still widespread and equality in the workplace will require overall redistribution, including equitable scattering of people of all genders across all occupations” (as cited by Shen-Miller & Smiler, 2015, p. 272).

As economic markets transition due to increasing global integration, adjustment and hardship will ensue for those whose jobs are at risk, those seeking employment, and students enrolled in education programs leading to limited workforce opportunities (van der Meulen Rodgers & Boyer, 2006). Training for high-wage, high-demand jobs is necessary for all genders and demographics if shifting markets, local to global, are to be sustained. To ensure equity, diversity, and national workforce sustainability, Perkins IV has incorporated accountability standards requiring reporting of nontraditional participation and completion enrollment. Districts and schools not meeting their targets have a responsibility to their students, and indeed to the economy, to improve performance.

Research Questions

The research questions for this study were:

- How do PIPE™ participants assess their implementation efforts one year after completing their work with face-to-face NAPE facilitators, according to the Quality Implementation Self-Assessment Rating Scale (QISARS) survey?
- What do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol?
- What factors do PIPE™ participants perceive as having helped or hindered sustainability of organizational change aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context?

**Positionality Statement**

As the researcher completing this doctoral thesis, it is important to note that I work for the DDOE and had been enlisted to serve as liaison between NAPE and the Lake Forest School District, one of several districts participating in PIPE™. In my role, I have assisted NAPE staff in the facilitation of professional development meetings, scheduled and managed technical assistance calls and webinars, and been on hand to travel to districts for on-site support when needed.

I strongly support the idea of gender equity for both males and females in nontraditional occupations and, therefore, in CTE courses and programs. I am a female, the youngest of five children, with the next two in line being males. I grew up in a rural setting with parents who never drew lines of distinction between what boys did and what girls could do, so I never considered the idea that I had limitations to my educational or career choices. My desired major in college was Environmental Science, and my career has been in secondary science education, with administrative STEM and CTE oversight duties. None of these roles has been “traditionally” female, except perhaps the teaching role, but at no time did I ever find myself questioning my “place” in the workplace or in conversations with peers. Research has indicated that this is not the case for many females, or males, whose choices are not traditionally focused, and I find that disheartening.
It is a challenge for me to set aside my passions and to simply listen and record the thoughts, beliefs, and actions of others, in this case, the staff at Lake Forest School High School. For this research to be productive, however, it was imperative to do so, as the process of action research rests on the democratic empowerment of those mired in the process itself. Interfering with the free-flowing responses of interview respondents would have introduced my own bias to their thoughts and responses, interfering with the internal action research protocol and threatening the validity of this study. As part of the perceived management structure, it was important for me not to interfere by inserting my own message and to provide the patience and time needed for participant self-discovery.

Capturing reflective notes throughout the data collection process was useful in allowing me to identify my personal thoughts and feelings while collecting verbatim interviews with staff via digital recorder. As I worked through data analysis and coding, I kept detailed memos and notes reflecting my own inferences and what spurred those thoughts, separate from direct observational notes. Though I was unable to avoid bias in this research, I was able to address its presence and limit its role in my analysis of the data.

**Theoretical Framework**

This case study focused on the investigation of what PIPE™ participants perceived to be sustained impacts of their participation in the program and what factors participants felt had helped or hindered sustainability of organizational change aligned with nontraditional student enrollment and completion in CTE courses in the Lake Forest High School context. Two theoretical frameworks were chosen to frame the investigation: Teleological organizational change theory with its focus on ongoing, planned organizational change, and empowerment theory, with its focus on critically understanding one’s social environment and gaining control.
These theories seemed particularly relevant and useful in both framing the investigatory methodology and in providing a relevant context through which to analyze resultant data.

**Teleological organizational change theory.** Teleological organizational change theory assumes that an organization is a purposeful and adaptive entity moving toward a specific goal or state of being (Burke, 2008). It is a model of planned change, reflecting intentionality, preparation, and analysis (Kezar, 2001). It therefore presents a salient framework for observing a school utilizing an action research process toward the goal of initiating and sustaining “... successful and lasting INSTITUTIONAL change” (NAPE, n.d., para.1).

According to March (1981), “Organizations are continually changing, routinely, easily and responsively, but change within them cannot be controlled arbitrarily. Organizations rarely do exactly what they are told to do” (p. 563). The thing about organizations is that they are made up of people, each having their own individual thoughts, interpretations, emotions, motivations, and conceptions related to change. In this way, we find that the planned organizational change model includes a sociological aspect that may have been best described by Kurt Lewin in his 1952 work, “Group Decisions and Social Change.” Lewin (1952) conducted several experiments over four years and reviewed observational trends to determine relations “of motivation to action and the effect of a group setting on the individual’s readiness to change or to keep certain standards” (p. 197). In his analysis, Lewin (1952) determined that sustained change required a three-step procedure involving unfreezing, moving, and freezing. In this model, unfreezing was described as a process necessary to “break open the shell of complacency and self-righteousness ... to bring about deliberately an emotional stir-up” (Lewin, 1952, p. 211). Moving may be best conceptualized as the change, defined by Quattrone and Hopper (2001) and Weber and Manning (2001) as the difference between the current state and the desired future (as cited by Bess, 2015).
And, finally, the freeze, sustainability, or the new state of being, is held in permanency by some level of security in the new social norms developed through the moving phase (Lewin, 1952). In this foundational work, Lewin (1952) described the relatively new (at the time) promising change strategy of action research as a way to “change group conduct so that it [will] not slide back to the old level within a short time” (Lewin, 1952, p. 197).

The use of action research as a strategy for institutional/organizational or community change has deep roots. Burns (2009) noted that Lewin’s (1952) initial work with action research emphasized improving one’s work environment and addressing social norms. Meanwhile, in his reflection of Lewin’s work, Adelman (1993) noted that the strategy was most appropriate as a driving force for democratic change within a community. Another prominent protagonist in the early use of action research was Stephen Corey. Corey utilized the process as a methodology for identifying, addressing and improving problems in schools during the 1950’s, during which time the London Tavistock Institute, a British non-profit concerned with studying human relations and organizational behavior, began using the strategy in an attempt to change existing industrial practice (Jefferson, 2014).

According to Glassman et al. (2012), “[Action Research] is a form of social inquiry through which members of social groups interact with one another, engage in open dialogue about their intergroup relationships, and collectively participate in a learning process to create social change within their communities” (p. 274). NAPE™, meanwhile, “is a data-driven, decision-making, institutional change process focused on increasing the participation, completion, and transition of females and other underrepresented groups in nontraditional CTE-related programs of study” (NAPE, 2015a). The process utilizes action research strategies to motivate group interaction, engagement, dialogue, and action toward cultural and programmatic
change within school environments. In developing a case study that investigates the sustainability of organizational change brought about by participation in such a process, it is important to recognize the foundational theory at play.

**Empowerment theory.** Accessing resources, learning to critically understand one’s social environment and gaining control; these are the tenets of empowerment theory. It describes an iterative process of problem solving and leadership, leading to the development of skills necessary for people to become self-reliant critical thinkers and decision makers (Fetterman, Kaftarian, & Wandersman, 2015). According to Zimmerman (2000),

Empowerment processes are ones in which attempts to gain control, obtain needed resources, and critically understand one’s social environment are fundamental. The process is empowering if it helps people develop skills so they can become independent problem solvers and decision makers. (p. 45)

Empowerment theory closely aligns with the organizational change theory and action research strategies employed by NAPE’s PIPE™ initiative. In fact, the language describing PIPE™ so closely parallels the description of empowerment theory as to warrant a very close inspection. The following citation, from www.napequity.org, includes specific terms indicating parallelism between the program description and the empowerment theory definition provided above:

[PIPE™] is a data-driven decision-making institutional change process focused on increasing the participation, completion, and transition of females and other underrepresented groups in [non-traditional] programs of study.
As participants learn, they are also transforming their communities to better prepare a diverse [non-traditional] workforce. By the end of [PIPE™], participants are able to:

- Explain the research concerning females’ and other groups’ underrepresentation in [non-traditional] fields.
- Implement and evaluate research-based activities and instruction that will improve females’ and other underrepresented groups’ achievement in, retention in, and completion of [non-traditional] courses.
- Enhance the achievement, participation and retention levels, and completion rates of diverse groups of students in [non-traditional] courses.

(NAPE, 2015a, para. 1-11)

The intervention process, with its empowerment language such as “data-driven decision-making,” “implement and evaluate,” “transform[ation] of communities,” “exploration,” “discovery,” “selection,” and “action” indicates that an empowerment evaluation, one guided by empowerment theory, would work best in eliciting responses aligned to the work completed by this team of change agents.

The expected outcome of participation in PIPE™ included the implementation of at least one action research-supported strategy with reported outcomes for the team’s selected nontraditional program(s) that showed leading indicators for increasing the numbers of
underrepresented gender students participating or completing nontraditional career and technical education programs. While the action research protocols and professional development were important aspects of the process, the implementation of a team-developed organizational strategy plan was the ultimate goal.

By reviewing the outcomes of PIPE™ by using the QISARS survey (see appendix A), an empowerment evaluation tool, the researcher hoped to reveal areas of discontinuity between intended implementation outcomes and actual, perceived outcomes. From these outcomes, patterns in the evidence were used to investigate perceptions of change sustainability and support or challenges to ongoing efforts at Lake Forest High School.
Chapter 2: Literature Review

Introduction

Gender role segregation is a sociocultural norm that has only recently been seriously challenged in the occupational strata of American life (Daily, 1993; Discrimination Research Center & Equal Rights Advocates, 2004; Hill, 2013; Kay, 2000). Global economic changes and shifting cultural expectations over the past two generations have slowly required that all genders have equal access to high-wage, high-demand work to support themselves and their families (Shen-Miller & Smiler, 2015; Wonacott, 2002). But traditional organizational frameworks require change mechanisms to challenge persistent norms. Action research has been illustrated as an effective change strategy for social change and can be utilized to assist schools in moving forward with gender equalization goals (Adelman, 1993; Burns, 2009; Glassman et al., 2012). This literature review outlines the history of occupational and educational gender roles; the culture and policy shifts that have led us, as a country, to this intersection between tradition and change; and the proposed strategy intended to assist school districts in Delaware in altering the status quo.

Occupational Gender Roles in Early America

Upon the opening of the 20th Century, it was unlikely to find a woman in the workplace unless she was widowed, divorced, or separated from her husband. White women, especially, were unlikely to work outside of the home after marriage when a woman was anticipated to be “devoting her life to the physical, intellectual and spiritual needs of her family. Only the tragedy of penniless widow-hood or a broken marriage could drive her . . . into the labor market” (Peterson, 1964, as cited by Kay, 2000, p. 2033). In 1880, less than 15% of the White female population worked outside of the home (Kay, 2000).
In an overview of family law in the United States from the 19th to today, Kay (2000) noted that “[b]y the mid-eighteenth century . . . marriage was an institution created by the state for the purpose of regulating and carrying on family life” (p. 2021). Within this contractual agreement, husbands and wives had specific functions, “one public, the other private, and in which wives were considered to be in charge of the moral and spiritual needs of the family” (Kay, 2000, p. 2021). Though a female may have worked outside of the home as long as she was single and living with her family, once she married, her responsibility was dedicated to the care and maintenance of the marital home (Daily, 1993).

**Men go to war: Traditional gender roles begin to bend.** Throughout early American history, as men waged war, women were traditionally left behind to manage the homes, farms, businesses, and children – all requiring attention until the return of the head of house or news of his demise. But just prior to the Civil War, industrialization swept the United States, and nearly 65% of the 100,000 textile workers in the country were women and girls (Kay, 2000). After the Civil War, women who had been forced or asked to take an active role in the country’s rivalry became starkly aware of their legal limitations on rights to property and earnings, especially in the absence of a husband (Moon, 2011). As the war came to an end, many women left domesticity behind to find outside employment as teachers and/or nurses (Kay, 2000). Female activists, recognizing the growing independence of females and the growing financial contributions of female citizens, began to resent exclusion from full participation in political life through the right to vote (Kay, 2000). The spark was lit, and the race for women’s suffrage was on. As racial norms had begun to destabilize as a result of the war’s conclusion, so then had the status quo of gender norms (Aiken. Salmon, & Hanges, 2013).
By the time the United States entered World War I in 1917, women were officially allowed to join the military in support positions. They were also able to fill emergency civilian roles such as those needed in munitions factories and vacancies left behind by males serving in the war (Aiken et al., 2013). But, similar to the Civil War period, upon the close of hostilities, most women returned to the household (Kay, 2000). The belief that women were an important reserve workforce was securely entrenched in American culture (Daily, 1993).

Regardless of their return to homes, women achieved the right to vote in 1920 with the passage of the Nineteenth Amendment to the United States Constitution. An important milestone had been reached for women’s rights and liberty. However, with the stock market crash of 1929 a severe cultural backlash emerged with a popular belief that the women’s movement had been subversive, unpatriotic, and communist (Kleinberg, 1999; Moon, 2011) and that “women were the cause of the crash by virtue of taking away men’s jobs” (Daily, 1993, p. 2).

When the Second World War hit between 1941 and 1945, thousands of husbands and working men were shipped overseas leaving a nearly empty workforce and a struggling domestic economy (Hill, 2013). The reserve force was once again called to duty and “an estimated 6.5 million women, more than half of them homemakers, took jobs” (Degler, 1994 as cited by Kay 2000, p. 2040). By the end of the war, women constituted up to 57% of the workforce. As expected, many of these women returned to the household, leaving the workplace when the hostilities ended, as had occurred after World War I. “But contrary to the expectations of some observers, other women took their place” (Degler, 1994 as cited by Kay 2000, p. 2040). What was once a workforce dominated by males became a workforce legitimately occupied by both
males and females, and it was not long before females began to expect fair and equitable treatment in this new setting.

**Gender equity in work.** Though very little in the way of policy changed in the early years of female encroachment upon the pillar of employment, one very important policy did change. As women’s suffrage took root and women across the United States were granted the right to vote, feminist groups turned to women’s employment abuses as their next targets (Aiken et al., 2013). Feminist movements were not cohesive in the early 1900’s, but concerns for safety, fertility, and familial duties became priorities across the board. It was very common for local protection laws to minimize the amount of time a woman could work and to restrict all work to daytime hours. Such “protections” severely restricted women’s access to employment to low-status, low-paying, highly-feminized positions (Kleinberg, 1999) that severely limited a woman’s ability to support herself alone, and even less with a family. On one hand, working conditions improved; on the other hand, equity was a far cry from realized.

In 1961, President John F. Kennedy appointed Eleanor Roosevelt as chair to the Presidential Commission on Women. As Herma Kay, the first female to lead the law faculty at the University of California, Berkeley, wrote, the Commission “had a somewhat mixed record: it opposed the perennial Equal Rights Amendment as unnecessary, but it recommended the adoption of a federal statute guaranteeing that working women would be paid the same as men for performing the same work” (2000, p. 2048). As a result, the U.S. Congress enacted the Equal Pay act in 1963.

In 1964, the Civil Rights Amendment was passed into law. This policy was rife with controversy as it passed from House to Senate, initially including language addressing racial equality alone. But by the time the bill was signed on July 2, 1964, it included Title VII, which
addressed the rights of women and racial minorities in the workplace (Aiken et al., 2013). Title VII prohibited employers from discriminating on the basis of “race, color, religion, sex, or national origin” (1964). The law additionally required employers to maintain workplaces free of sexual harassment. And, while harassment often went (and continues to go) unreported due to fears of retaliation (Discrimination Research Center & Equal Rights Advocates, 2004), legal mechanisms were put in place to continue forward momentum and protections for women working to achieve equity in the male-dominated workplace.

**Gender equity in school.** While many activists worked to provide legal protections and leverage for women in the workplace, others took a different tact, looking to the role of education and training as a route to change and occupational equity. According to Hill (2013), “developments within the US society, mainly increased divorce rates, women’s changing self-perceptions, and abandonment of families by men, truly launched new trends” (p. 30). Though challenges in achieving equal pay and equal status remain even today, Hill (2013) noted that women were savvy in taking advantage of the opportunities education offered to advance their possibilities for promotion and advancement in the white-collar workplace.

According to Hill (2013), “Obtaining advanced education is a reliable prediction of work force participation” (p. 30). But in the area of blue-collar employment, the opportunities for vocational education often came with the same biases and limitations as the employment itself. Prior to the passing of Title IX as part of the Education Amendments of 1972, vocational education was an intentionally gender segregated system that allowed “education institutions [to] legally deny girls and women entry into training deemed ‘inappropriate’ for females, and visa versa [sic] for males” (Lufkin et al., 2007, p. 423). With the passing of Title IX, no federally funded school program was permitted to exist without offering equal opportunities for women
and girls, and vocational education, in all areas and all programs, became equal access. By 1976, amendments to the Vocational Education Act mandated the elimination of sex discrimination, sex bias, and sex-role stereotyping, and each state was to appoint a sex equity coordinator (Friedel, 2011) to work in the area of CTE to ensure professional development, data production, and support for districts needing help enforcing Title IX expectations (ED 3 C.F.R §104.73, as described in NAPE, 2004).

In 1984, the Carl D. Perkins Vocational Act was passed replacing the Vocational Education Act of 1963 and all of its subsequent amendments (Gordon, 2008). Funding provisions for gender equity under the 1984 Act was greater than $100 million, and the provisions continued the requirement for a sex equity coordinator, with 3.5% set-aside for sex equity programs and services and a 8.5% set-aside for single parent and displaced homemaker programs and services (Friedel, 2011, Gordon, 2008; Lufkin et al., 2007). These expectations, and the corresponding funding level, continued from 1984 through the 1990 reauthorization and up to the 1998 (Perkins III) reauthorization proceedings, when nearly all of the funding associated with gender equity was no longer earmarked and could subsequently be used by states as discretionary vocational education funding (Lufkin et al., 2007).

What gains were made during the 14 years of strong funding and accountability measures under Perkins I and II were quickly lost under Perkins III. States that had once utilized the mandated funding for gender equity programs quickly reallocated their funds, and, by the fall of 2000 (one year after the implementation of Perkins III), a survey from the National Coalition for Women and Girls in Education (NCWGE) found that, of 1,500 programs that had previously received funds under the gender equity set-asides in Perkins, greater than 50% reported severe funding decreases, and 71% reported having to decrease services for students (NCWGE, 2001).
Without adding funds, but in an attempt to add a mechanism for accountability, the reauthorization of the Carl D. Perkins Act in 2006 (Perkins IV) included ramifications for failure to address nontraditional participation and completion rates in local and state education associations. From that point on, not only were schools and states required to report their enrollment numbers, they were required to meet at least 90% of each locally adjusted performance measure (including nontraditional performance) or they must write an improvement plan to address the issue (Lufkin et al., 2007). If, after implementing their plans in year two, education associations continue to fail to meet their targets, funding can be withheld in the third year and until accountability reports indicate an improvement (Mahler & Mauppin, 2007).

**Balance?** Recorded history has indicated that females have had limited access to the workforce with lower wage capacity. And, with increasing familial and economic responsibilities, it makes sense to provide female students with all of the tools available to them to reach financial independence. But what about males? Is there a reason to concern ourselves with male nontraditional enrollment?

Females have traditionally been seen as the stand-in workforce when men have been called away to military duty during large scale wars or when jobs were “undesirable, because of low pay or status” (Daily, 1993, p. 1). However, when the United States economy dips into recession, the modern narrative seems different. In the five recessions between 1969 and 1992, “men lost at least 9 times as many jobs as women did” (Goodman et al., 1993, p. 26). According to Goodman et al. (1993), this trend has mostly to do with the disparity in jobs held by men and women, where men tend to be employed heavily in areas of construction, manufacturing, maintenance, and goods-production, while women tend to be employed primarily in service areas such as retail, government, education, finance, and nursing. Recessions since 1969 have had a
greater effect on goods-production than service-production, thus affecting the unemployment rate of males at a greater level than females.

During the Great Recession of 2008, the effects were no different. In January of 2010, the male unemployment rate was up to 10%, while the female unemployment rate was only 7.9% (Bureau of Labor Statistics, n.d.). According to H. Boushey (cited by Davis, Jacobsen, & Anderson, 2012), “[i]n the early stages of the recent recession, men were disproportionately among the ranks of the unemployed” (p. 602). Manufacturing and construction jobs were lost at exceptionally high rates (Davis et. al., 2012). Women, who had begun to outnumber men with regard to college graduation rates in many fields in 1985 (Schulte, 2013), were now the primary wage earners in many households.

Since before the Industrial Revolution, American social and employment policy has been based on a two-parent, male-headed household, never taking into account the effect that the economy might play on the family or that changing families may have on the economy (Weir, 1992). However, the rapid development and spread of computers, advances in internet technology, and globalization have greatly altered the landscape of the American production process, changing the “education, skills, and competencies needed to compete in the “new” twenty-first-century economy” (Rodgers, 2013, p. 817). After the recession of 2008, job losses in manufacturing and production remained lost. The market shifted, seemingly overnight, from a manufacturing to an information-services economy. It had been a gradual change, developing since the early 1980’s, but the drastic losses, lack of employment recovery, and slow economic rebound from the Great Recession of 2008 emphasized the final blow. In this world, “physical strength and stamina were [less] economically desirable than social intelligence and open communication (that is, soft skills)” (Rodgers, 2013, p. 826). As of May 2013, a Pew Research
report indicated that “40% of all households with children under the age of 18 include[d] mothers who are either the sole or primary source of income for the family . . . [compared with] just 11% in 1960” (p. 1). Of these mothers, 37% were married with higher incomes than their husbands, and 63% were single mothers (Pew Research Center, 2013).

Rosin (2012) posited that men are no longer the dominant power in the American workforce in her book *The End of Men: And the Rise of Women.* Rodgers (2013), meanwhile, investigated four labor market claims made by Rosin (2012), the latter who had stated that women had become the majority of the labor force as of 2012. Rodgers (2013) provided evidence from the Bureau of Labor statistics (BLS) Current Employment Statistics revealing that women reached 50% of the labor force during the Great Recession of 2008, a percentage that is neither majority, nor minority, but evenly half of the labor market. A second claim made by Rosin (2012) was that females made up the majority of managers in the employment realm, a claim that has been refuted by BLS data cited by Rodgers (2013) showing that managerial positions remain as gender segregated as the occupations in which they are embedded (2013). The third claim, already recognized to be true, was is that the Great Recession of 2008 resulted in greater net job losses for men than for women.

The final claim made by Rosin was that the occupations projected to grow the most over the next ten years are predominately female dominated positions. The Bureau of Labor Statistics labor predictions indicate that the fastest growing occupations lean toward female advantage (personal care and home health aides), but in terms of earning potential growth rates are highest in career and technical occupations such as carpenters and brick masons, which lean toward male advantage (Rodgers, 2013).
Both male and female populations can benefit from access to nontraditional career exposure and opportunities. As the American economic system changes, males will find a shifting job market with increased opportunities related to soft-skills and diverse experiences. Females, especially those without the means or access to obtain college degrees, will find improved wage potential in career and technical settings traditionally reserved for their male counterparts.

Modern families are very different from those in the 1960’s. According to U.S. Census data, in 2011, 65% of all married mothers with children worked compared to 37% in 1960 (Pew, 2013). A full 40% of all births in the United States in 2011 were to single mothers (Schulte, 2013). Never-married single mothers are generally disproportionally non-White, and nearly half have a high school education or less (Pew, 2013). Families are changing, and in response, the demand on the labor market is changing. At the same time, economic shifts have occurred, and the demand on prospective employees has shifted. To be financially viable and occupationally stable in an economy shifting from labor to technology, traditional male cohorts may consider opportunities in high-potential, possibly lower wage, nontraditional roles. By that same token, females working to sustain families may consider higher wage potential jobs in traditionally male-dominated career and technical sectors requiring manual labor. Opportunities for all require diversity in education and shifting sociologic norms, all of which begin in the K-12 domain.

The Role of Schools

According to Brint (2006), “Schools specialize in the creation of people who can adapt to impersonal work environments and who can pursue their interests with people who are neither kin nor close friends” (p. 133). Schools accomplish this by attempting to: (a) shape behavior, (b)
shape moral values, and/or (c) shape cultural styles (p. 133). Two ways of affecting the social growth of students include the prescription of direct formal curriculum and managing the “... embedded practices and school routines that play a role in socialization . . .” (Brint, 2006), also known as the hidden curriculum. The interaction between school structures, social interactions, and formal curriculum shape the core behavioral, moral, and cultural styles of a school, thereby shaping the behavioral, moral and cultural styles of its students. It is the role and the responsibility of schools to present opportunities for growth and assimilation into the social order. The framework, structure, and interplay between each of the dimensions of socialization provide a “practice session” for the members of each generation as they prepare to fully integrate into their proximal society.

Curricular influence. There is an inextricable connection between societal norms and the information conveyed as “worth knowing.” Dominant attitudes and behaviors that are deemed important in a specific society are reflected in the curriculum and are often used as measures of learning (Nieto, 1999). Formal curriculum and course-work represent an “authority” of things to know; and students who, almost by definition, lack the relevant social and political knowledge to question that authority structure often view what is written in textbooks as the “... sole, and trusted, source of information . . .” (Kalmus 2004, p. 471).

As society changes and adapts over time, so then do the concepts, behaviors, and key pieces of knowledge deemed important. In American history, this shift in political and social structure has been illustrated in the shift of texts and foci in classroom curricula. One of the first standardized texts in American schooling was The New England Primer, which was used to teach reading and the Protestant catechism (Mondale & Patton, 2001, p. 21). This text illustrates the dominant social structure of the pre-Revolutionary War period, when a majority of American
settlers were Reformation Protestants from England. The role of schooling at the time was to maintain the status quo and to prepare children to take over the roles of their parents in adulthood (Mondale & Patton, 2001). Boys would grow to be fathers, working to provide for their families, and girls would grow to be mothers, caring for their husbands, children, and homes.

Over time, settlers from the eastern United States began to migrate westward, and schools were established in their wake. A majority of teachers in these schools were young, unmarried, colonial women who were expected to reinforce familial support and moral teachings while also providing literacy lessons. McGuffey readers were used in these schools to reinforce societal morality—“...you should work hard and acquire wealth, then you are blessed by God” (Joel Spring as quoted in Mondale & Patton, 2001, p. 57).

By the early 1900’s, as vocational education was introduced to the high school curriculum, prescribed segregation of girls’ and boys’ programming was the norm. Girls were offered homemaking education programs while boys were offered experience with agriculture and trades (Friedel, 2011; Lufkin et al., 2007). The Smith Hughes Act of 1917 provided funding for states and districts to offer vocational programs that:

1. met the individual needs of students for a meaningful curriculum,
2. provided opportunity for all students to prepare for life and work,
3. helped foster a better teaching-learning process—learning by doing,
4. introduced the idea of utility into education.” (Scott & Sarkees-Wirecenski, 2004, p. 151)

At the same time, the curriculum was to be offered based on societal norms, in a “gender appropriate” manner, where girls learned homemaking and boys learned to work (Lufkin et al., 2007).
Non-curricular influence. The role of formal curricula, while important, is not a lone variable in the socialization of students. “Minds do not function in purely theoretical spheres; on the contrary, they work in contexts that are characterized by individual, cultural, economic, social and political realities” (Nieto, 1999, p. 9). Regardless of the words on a page, or the lessons in a book, students gain knowledge from the combined experiences of daily living. Brint (2006) described the contextual nature of schooling or the hidden curriculum as the “. . . embedded practices and school routines that play a role in socialization . . .” (p. 146).

Schneeweis and Zweimuller (2012) cited multiple studies indicating that teachers tend to stereotype boys as being good at mathematics and science; therefore, educators overemphasize their attention in the direction of male students during the teaching of those subjects in mixed-gender classrooms. At the same time, females, given the opportunity to study in single-gendered schools, often excel at rates equal to or greater than their male counterparts in traditionally male subjects and programs when gender is removed from the teaching and learning environment. The authors were quick to note that this difference is not directly attributable to teacher behavior, but, rather, it may be the result of a number of factors including alterations in teacher and student social interactions (Schneeweis & Zweimuller, 2012)

While the role of the hidden curriculum in learning is well established, it is difficult to study. Since each student witnesses the experiences of a day through their individual eyes of interpretation, there is no standardized practice for recognizing its effects (Nieto, 1999); however, the implication for transmission of cultural norms and values is inescapable. Because teachers and school communities relay messages of instruction to students, the tone, behaviors, and context used to express the messages reveals the norms and values of society as well, if not more loudly, than the words and texts of the formal curriculum.
Changing Minds—Social and Organizational Change

When challenging entrenched social norms, action research is a process that works as a powerful tool centered on “humans’ ability to break free from deleterious social habits through autonomous, democratic participation” (Glassman et al., 2012, p. 272). In the case of gender role assignment in schools, habits are patterned after societal norms: “Members of a community engaged in goal-driven activities interact with each other based on patterns or habits learned over time. They follow rules and develop power relationships because they believe them to be ‘correct’ for the circumstance” (Glassman et al., 2012, p. 273). Schools are an investment in the economic and social stability of developed nations. Countries invest billions of dollars annually on education initiatives focused on the as yet “undeveloped” citizenry that will one day rule its government and power its workforce (Brint, 2006). In the United States, tradition – habit if you will – has set the stage for a male-dominated math, science, and technical career field with females filling the role of technical assistant, and child and medical nurturer. Action research is an organizational and community change strategy that “attempts to break through historical strangleholds on proper roles to develop new action agendas based on processes of community and individual self-discovery” (Glassman et al., 2012, p. 273).

With the acceptance of a social problem, that is, a problem with recognized “habits of power” that can lead to “ultimately destructive actions such as marginalization, scapegoating, prejudice, and tension between groups” (Glassman et al., 2012, p. 274), action research members begin collecting data on the process of change. This focus primarily on the process of change instead of on process outcomes places all action group members squarely in the realm of being learners, providing opportunities for open thought, discussion, and changing perspectives
According to the multicultural and social reconstructionist approach, critical consciousness can be nurtured through the examination of systemic inequities in school (Grant & Sleeter, 2006). Action research can provide the resources to deconstruct teachers’ professional identity when it emerges as a racist and exclusionary construction, and favours empowerment of teachers and the school community (Kailin, 2002; Magos, 2007). It takes the school as a learning unit (Elliott, 1993); it encourages collaboration between teachers (Dooner, Mandzuk, & Clifton, 2008; Hiebert, Gallimore, & Stigler, 202; Zwart, Wubbels, Bergen, & Bolhuis, 2007) to create inclusive learning communities in schools as part of a planned process (Busher, 2005; Perrett, 2003). (p. 912)

**Program Improvement Process for Equity™ (PIPE)** National Alliance for Partnerships in Equity (NAPE) has developed a professional development/institutional change model “to assist state education agencies as they provid[e] technical assistance and professional development to Local Educational Agencies (LEAs) to improve their performance on the accountability measures defined in the Perkins Act” (Lufkin, 2015, pp. 1-2). The process engages collaborative teams including administrators, teachers, and counselors as they work through five action steps (graphic representation below).
The first professional development module and action step is to organize. Participants are expected to “create a team that includes all stakeholder groups impacted by the nontraditional performance measures” and the group is then brought together to “conduct an orientation session and collect baseline data” (Lufkin, 2015, p. 2). The second professional development module involves exploration. In this module, participants “complete an analysis of state and school gendered performance in CTE by comparing performance levels between schools, student populations, and programs over time” (Lufkin, 2015, p. 2). As a result of this work, teams begin to identify areas of need, and through democratic processes, they begin to outline improvement priorities. Upon completing the work of module two, groups move on to the discovery phase, where specific research methodologies are encouraged for teams to investigate possible root causes in their specific schools and cultures. Teams are encouraged to develop and employ surveys, hold focus group sessions, or develop another action research plan that will validate existing root cause theories (Lufkin, 2015).

When the action teams have completed their initial research, they return with their results to complete a fourth module focused on strategy selection. In this module, groups review the empirical evidence of their discovery research to determine whether their initially identified root
causes are in alignment with results. When teams are confident in the root cause analysis, associated strategies are selected based on their potential to “eliminate the barriers students are facing in the identified CTE programs” (Lufkin, 2015, p. 2). The final step is for teams to “develop a plan to implement research-based strategies for program improvement that include practical yet rigorous methods and tools for evaluating solutions” (Lufkin, 2015, p. 2).

The Organize, Explore, Discover, Select and Act protocol for NAPE’s PIPE initiative is in direct alignment with the theory and application of action research in an organizational setting. As evidence, Jefferson (2014) summarized three recent renditions of action research (Somerville and Brown-Sica, 2011; Peters, 1997 and Moroni, 2011) compared with Lewin’s (1952) original approach and noted the consistencies as each involving practitioner engrossed in research, an action or intervention with practical or theoretical application, completion with assessment, evaluation, and/or reflection, and, finally determined that the process “benefits the action researcher[s] as well as the organization” (p. 100).

Summary of Literature

Throughout history, gender has played a significant role in the rights, privileges, and subsequent activities (private and professional) undertaken by American citizens. American culture has shaped gender role definitions as much as shifting gender roles have defined a changing culture. With the American family changing to the extent that 40% of all births are to single females, the expectation that males can or will support the family unit financially while women nurture the home and children is unconscionable.

Modern economics have made it more difficult for men to obtain long term blue-collar positions focused on physical strength and stamina. Increasing opportunities related to soft-skills and diverse experiences once considered limited to the female sector may provide males high-
potential opportunities in nontraditional roles. At the same time, females, especially those with limited means or access to college degrees, will find improved wage potential in career and technical settings traditionally reserved for their male counterparts.

Schools that fail to meet nontraditional enrollment targets are not meeting the needs of students who will be entering the shifting workforce. NAPE’s PIPE™ initiative provides participating school teams with the guidance needed to complete an action research protocol that sets the stage for customized organizational change. In providing this guidance, participatory teams are forced to confront current organizational practices and structures with eyes opened through research, before embarking on any change strategies.

Nontraditional enrollment targets can be a difficult challenge for many schools, so understanding best practices in support of change efforts can be an important tool in preparing to scale a project beyond a few school districts. While research and implementation plans may be significantly different between schools, the sociological interactions between team members and school faculty as the process proceeds is likely to follow a predictable pattern. Investigating the reactions and interactions of groups as they go through the action research process, which was the focus of this study, can provide professional development providers with valuable insights that can be used to evaluate progress or potential rough patches in the process for work with future groups.
Chapter 3: Research Design

Gender inequality exists in secondary and postsecondary career and technical education programs, leading to negative outcomes for both males and females. The Perkins Act was passed to improve secondary and postsecondary career and technical education programs. Schools receiving Perkins funds are required to report institutional progress toward “student participation in, and completion of, career and technical education programs that lead to employment in non-traditional fields” (Carl D. Perkins Act of 2006, section 113(b)(2)(A)(III)(vi)).

The mean average non-traditional participation rate reported for Perkins IV state accountability in the United States for the 2013-14 school year was 30% while the mean non-traditional completion rate was 29%. In Delaware, state reported participation was 37% while completion was 25% (United States Department of Education, 2016). Ideally, accountability for non-traditional participation and enrollment would be as close to 50% as possible, indicating an enrollment trend where courses that lead to employment in traditionally male dominated or female dominated fields would be attended by students of both genders. While some schools in the state of Delaware do fairly well with meeting the state identified target of at least 33% nontraditional enrollment in both their 6S1 (participation) and 6S2 (completion) measures, many continue to struggle. Despite receiving $4.5 million in Perkins annually for schools to use at will to improve Career and Technical Education program quality and enrollment, several schools in the state of Delaware are in need of a comprehensive support model to assist them in the improvement of their nontraditional enrollment measures. In an effort to assist districts in improving their non-traditional performance metrics, the Delaware Department of Education (DDOE) contracted with the National Alliance for Partnerships in Equity (NAPE), to implement the Program Improvement Process for Equity (PIPE™), a data-driven decision-making
institutional change process focused on increasing the participation, completion, and transition of females and other underrepresented groups in career and technical programs (CTE) of study (NAPE, 2015a).

Utilizing an empowerment evaluation model to facilitate self-evaluation among a school team that has participated in the PIPE™ program can assist NAPE and the DDOE in identifying relevant strategies for enhancing future professional development and technical supports. In addition, using the frameworks of organizational change and empowerment theories, this case study sought to answer the following specific questions relevant to the bounded case:

- How do PIPE™ participants assess their implementation efforts one year after completing their work with face-to-face NAPE facilitators according to the Quality Implementation Self-Assessment Rating Scale (QISARS) survey?
- What do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol?
- What factors do PIPE™ participants perceive as having helped or hindered sustainability of organizational change aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context?

**Purpose Statement**

The PIPE™ process, at the time this study was conducted, had been focused primarily on an action research protocol which contained reflective practice but did not involve detailed evaluations of implemented innovations. The purpose of this case study was to elicit self-evaluations from members of a school team that had been engaged with PIPE™ for three years and to investigate what the PIPE™ program participants perceived to be sustained impacts of their involvement. The research also investigated which factors PIPE™ participants felt had
helped or hindered the sustainability of organizational changes aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context.

By including the missing evaluative process, this study has the potential to provide helpful information relevant to sustaining organizational change in the context of school culture. The information can then be used to assist facilitators in recognizing frustrations, roadblocks, and encouragements that might inhibit or strengthen ongoing consultation and thus help increase the chances of successful long-term organizational change. By identifying ongoing struggles and successes, and documenting them for referential use in future professional settings, this study has the potential to assist the DDOE and NAPE in developing a model facilitation program that can be used with other schools across the state and throughout the country in years to come as they request training and technical assistance with the NAPE PIPE™ protocol.

**Research Design**

This study followed an embedded case study design which, according to Sholz and Tietje (2002), “allows for both qualitative and quantitative data and strategies of synthesis or knowledge integration” (p. 9). In this investigation, Lake Forest High School participants had been involved in an organizational change process, and that process outlined the “case.” However, the questions related to this case involved specific units of interest including participant evaluation of the change implementation, whether participants perceived the change implementation as sustainable, and why they felt that might have been. The involvement of multiple units of analysis within a case is definitional of an embedded case study and outlines the reasoning behind the use of multiple methodologies in the collection of data (Sholz & Tietje, 2002). “Embedded case studies may rely on holistic data collection strategies for studying the
main case and then call upon surveys or other quantitative techniques to collect data about the embedded unit(s) of analysis” (Yin, 2014, p. 66).

**Research Tradition**

This case study included semi-structured interviews along with a self-assessment survey of implementation quality with PIPE™ participants from the Lake Forest School District. In 2009, Creswell wrote that a case study is a strategy of inquiry “in which the researcher explores in-depth a program, event, activity, process, or one or more individuals . . . cases are bounded by time and activity, and the researchers collect detailed information using a variety of data collection procedures” (p. 13). Sholz and Tietje (2002) explained that case studies provide an empirical inquiry approach to a contemporary problem in a real-world context. A case “provides information about the situational context [that] is necessary to structure the case and propose solutions” (Sholz & Tietje, 2002, p. 12).

Case study research involves the study of an issue or problem through one or more cases within a given context or setting, also described as a bounded system (Creswell, 2009). This case was bound to the context of the Lake Forest high school and the participants from Lake Forest that had participated in the PIPE™ process since 2014. The research for this case study was specific to participants’ self-evaluation of the PIPE™ process and participants’ perceptions of organizational change sustainability as a result of that process.

This study used a qualitative approach to data collection to answer the research questions. Participant self-evaluations were collected using the Quality Implementation Self-Assessment Rating Scale (QISARS) survey (Fetterman et al., 2015); perceptions of organizational change sustainability and issues helping or hindering the effort, meanwhile, were gathered through semi-structured interviews with program participants. While a draft of interview protocols is available
in Appendix A, the interview style was conversational in nature. Additional questions arose as a result of comments or responses provided by respondents during each interview session.

**Participants**

The Lake Forest School District, located in Felton, Delaware, has one high school. Enrollment for the 2015-16 school year was just over 950 students with a 51.5% male and 48.5% female gender disaggregation (State of Delaware, 2017). The high school, at the time the study was conducted, had multiple CTE programs in place and, therefore, school officials were required to report data referencing Perkins IV performance measures annually. Since the 2011-12 school year, Lake Forest High School had not met its non-traditional participation target and had failed to reach their completion target since 2013-14 (Delaware Dept. of Education, 2015).

In an effort to assist the district in improving nontraditional performance metrics, the DDOE contracted with NAPE to implement PIPE™. The PIPE™ process is intended to assist education agencies in providing technical assistance and professional development to local education associations (LEAs) to improve their performance on accountability measures defined in the Perkins Act. It is a “data-driven, decision-making, institutional change process focused on increasing the participation, completion, and transition of females and other underrepresented groups in nontraditional CTE-related programs of study” (NAPE, 2015a). The school began work with the facilitative assistance of NAPE and DDOE in the fall of 2014 and, at the time of the study, was in its third year of PIPE™ implementation.

The number of participants in this study was small, limited to those who had been working with PIPE™ within the small district over the three-year period. While it was important for the group involved with this study to be comprised of those who were directly involved with the work of implementation, the size of the sample limits the transferability of investigatory
results. According to Creswell (2009), the inability to draw correct inferences from the sample data to other settings is the direct definition of external validity threat. External validity beyond this case is limited. This case was specific and localized. However, the information gained from this specific case can offer insights to future Delaware sites and methodologies for evaluations of similar change initiatives. Lessons learned from this site can be utilized to enhance ongoing local professional development and technical assistance, as appropriate.

**Recruitment and Access**

The Lake Forest High School PIPE™ implementation team members were recruited directly by the researcher through communication with the district Career and Technical Education Specialist and the high school principal; the district superintendent provided final approval/consent. As noted previously, the researcher is an employee of the DDOE and was an active board member of NAPE when she conducted this study. Lake Forest High School had already partnered with NAPE and the DDOE to improve performance on their Perkins nontraditional enrollment (6S1) and completion (6S2) indicators in CTE programs. Data collection for this research went above and beyond the data that the work teams had been engaged in collecting regarding nontraditional enrollment and completion in their schools. For this reason, written documentation of study considerations was provided to the participants, and standard informed consent forms were utilized to ensure open communication with all involved. A $10.00 gift card to Wawa (a local deli/convenience store and gasoline station) was offered to each recruit who completed both the survey and the interview portion of this research, in gratitude for their time commitment. Otherwise, no incentive was offered external to benefits garnered through participation in the NAPE PIPE™ program itself, for those involved with the study. All forms associated with recruitment and access can be found in Appendix B.
Protection of Human Subjects

To ensure the protection of human subjects, the identities of all participating individuals were kept confidential by using pseudonyms throughout the data collection and reporting process. Fair practice was employed for all interactions and interviews, and all individuals and groups were made aware that the information collected was in no way evaluative of the school, the district, or the individuals involved with the process. As an employee of the DDOE, the researcher was aware that district employees would be sensitive to evaluative situations, and it was exceptionally important to provide written documentation ensuring that the research completed for this thesis would not be utilized for DDOE purposes. Having participants sign an informed consent form “alerting them to the nature of [this] case study and formally soliciting their volunteerism in participating in the study” (Yin, 2014, p. 78) was particularly helpful in alleviating concerns and asserting confidentiality between researcher and participants.

Data Collection

PIPE™ participant self-evaluations were conducted using the QISARS survey (Fetterman et al., 2015), and perceptions of organizational change sustainability and issues helping or hindering the effort were gathered through semi-structured interviews with program participants. Additional data was gathered as supporting or counter-indicative evidence of participant self-evaluations and interview responses. Such additional information included school reporting data of student enrollment in non-traditional programs from the 2014-15 school year through the 2016-17 school year, information provided in the form of implementation plans and protocols presented by the district team throughout the PIPE™ process, and NAPE reports presented as part of the PIPE™ process, completed during the 2014-15 and 2015-16 school years.
Survey. The QISARS survey was presented to all Lake Forest High School PIPE™ participants who were continuing to work for the Lake Forest School District. This included the principal, the CTE coordinator, and four CTE teachers. The surveys were voluntary, and to elicit the most honest responses possible, no identifying information was asked of survey respondents. Five of the seven PIPE™ team members completed the survey.

The QISARS survey is provided as Appendix A. The survey was given to participants in an online format to provide ease of use and delivery, but the content of the survey was the same as what is presented in Appendix A. The survey was presented to participants to investigate major aspects of implementation, using one of three descriptors: early-stage, middle-stage, or advanced-stage. Fetterman et al. (2015) provided the following definitions for each descriptor:

- **Early stage.** You may have considered this as part of your plan to implement but have not yet taken specific steps to put it into place.

- **Middle stage.** You have begun taking steps to incorporate this into your overall implementation process.

- **Advanced stage.** You have taken steps to make this an integral and ongoing part of your implementation. (p. 289)

The survey asked participants to reflect upon six facets of strategy implementation including: (a) preparation, (b) team development, (c) climate and organizational support, (d) monitoring, (e) reception and professional development, and (f) collaboration.

By asking participants to reflectively self-evaluate their internal implementation processes through the use of the QISARS survey, the researcher anticipated identifying patterns of perceived strengths and weaknesses. Informed by these patterns, interview questions were
adjusted to more deeply investigate areas of disagreement among responders and to extensively examine issues pertaining to program sustainability.

**Interviews.** Qualitative data is made up of “direct quotations from people about their experiences, opinions, feelings, and knowledge. . . detailed descriptions of people’s activities, behaviors actions . . . [and] excerpts, quotations, or entire passages” from primary or secondary source documents associated with the researched phenomenon (Patton, 2002, p. 4). All of these data types were gathered in the process of completing the research project. To collect information related to people’s experiences, opinions, feelings, and knowledge, individual interviews were conducted with members of the NAPE PIPE™ leadership team from Lake Forest High School. This included the district CTE coordinator, the school principal, the school guidance counselor, the agricultural power and mechanics teacher, and the agriscience teacher. The early childhood education teacher, the processes of engineering and design teacher, and the computer aided drafting and design teacher declined participation.

As suggested by Creswell (2009), a standard outline protocol was utilized for each interview, using open-ended questions. The goal of this research was to determine what PIPE™ participants perceived to be sustained impacts of their participation in the action research protocol. To do this, a responsive interview model was used as described by Rubin and Rubin (2012). Instead of focusing on detachment from the interviewee, the model “encourages the researcher to adapt to new information and change directions if necessary to get greater depth on unanticipated insights” (Rubin & Rubin, 2012, p. 10). Preliminary data was used to elicit responses from interviewees relative to the PIPE™ process and the connection between the process and ongoing activities within the school and/or district. Upon receiving results of the QISARS survey, some questions were added to deepen the understanding of participant
responses to the survey and to provide further insights for the researcher relevant to the subject of sustainability.

Interviews were held in a comfortable meeting room setting with access to materials that had been available to workgroups throughout the PIPE™ process. Interview protocols were developed to gain insight into individual and group perceptions of intervention sustainability. Interviews were recorded by the researcher using a Sony digital voice recorder, product code ICD-UX533.

While interviews were recorded verbatim with a digital recorder, the researcher collected field notes using a two column note-taking methodology to collect information and to control for bias. One column was used to record terms that seemed to be topical key words that were repeated during the interview, or that summarized a shared thought. The other column was used to collect inferences, assumptions, or connections that were developed by the researcher as the interview progressed. Reflective memos were added after the interview to summarize internalized thoughts or ideas that were in the mind of the researcher during and after the interview to provide an opportunity to acknowledge any bias or personal meaning being placed upon the discussion. Between interviews, the researcher also used these notes to identify areas for improvement in interview queries and responses to try to assure objectivity in conversation as well as in note-taking.

**Additional documentation.** While the primary data sources for this research were the QISARS survey and the face-to-face interviews, additional resources were used as supporting evidence and cross-reference materials. School reporting data of student enrollment in nontraditional programs from the 2014-15 school year through the 2016-17 school year was used to determine overall trends in nontraditional performance and completion outcome performance.
for the school. This data was important to the study because it provided cross-referencing evidence for claims made by interview participants. It also provided information that assisted with the development of inferences on the part of the researcher.

The implementation plans that were required of PIPE™ participants were also reviewed and used as cross-reference material in analyzing interview transcripts and survey responses. Since QISARS surveys were specifically referencing the implementation processes outlined in these plans, it was of great importance to reference the plans throughout the data analysis and discussion stage. And, NAPE reports presented as part of the PIPE™ process completed during the 2014-15 and 2015-16 school years were used to further analyze interview responses in context of the attendance pattern of the respondent(s) and the overall participation and outcome analysis of the initial PIPE™ professional learning experience.

**Disclaimer.** While data that is used for this research includes information that will be reported to the Department of Education (DOE) and NAPE as part of the partnership agreement, no information that is inferred through this research will be reported as part of the professional development partnership without the express written agreement of the participating school district superintendent and each participating research volunteer. All data collection protocols are available for review in appendices A-C.

**Data Storage**

Digital data for this research was stored in four secure locations for the duration of the analysis period. One digital copy was maintained on a private external hard-drive with password protection; another was maintained on Google Drive cloud service. A third digital copy was housed on the researcher’s personal home computer, and a final copy was kept on an encrypted 16GB flash drive. Retaining multiple copies of digital data, including one on a cloud service,
provided a layer of security should a computer malfunction affect any one of the saved files or formats. Upon completion of the study, a hard copy of the thesis, all interview recordings, raw data, transcriptions, and any extraneously related documentation were filed in a fire safe lockbox where they will be kept for a minimum of five years.

Data Analysis

QISARS survey data was analyzed and evaluated to measure participant agreement relevant to early, transitional, or advanced implementation of the PIPE™ initiative. Stake (1995) stated that “two strategic ways that researchers reach new meanings about cases are through direct interpretation . . . and through aggregation of instances until something can be said about them as a class” (p. 74). By reviewing patterns in responses to the QISARS survey, the researcher identified first cycle provisional coding categories. Miles and Huberman (1994) described provisional coding as a predetermined set of codes established prior to fieldwork (Cited by Saldaña, 2013, p.144). They are generated in a sense to provide a framework of what to look for in data analysis, but they are not static in nature. Provisional codes are intended to be “revised, modified, deleted, or expanded to include new codes” (Saldaña, 2013, p. 144) as data is collected and analyzed. Provisional codes and their evolution are discussed in the following chapter.

According to Merriam (2009), data analysis is the process of “making sense out of data [by] consolidating, reducing, and interpreting what people have said, and what the researcher has seen and read” (pp. 175-176). The qualitative data collection involved with this research study included document collection and responsive interviews. Analysis of the data was ongoing throughout the collection process and after. Merriam (2009) suggested that knowledge of the problem is not a predictor of the information a researcher will encounter throughout his/her
study. Therefore, it is important that data undergo preliminary analysis throughout the collection process to avoid repetition, lack of focus, and voluminous disorder (Merriam, 2009).

Recorded interviews were transcribed by Weloty Academic Transcription Services using a verbatim transcription process. The transcription included formatting that was appropriate for use with NVivo software. Once all transcription documents were complete, field notes were cross-referenced with interviews, and informational documents were sorted by type. Many documents were related to specific CTE programs and were sorted by program title.

Interview data were initially sorted into themes identified from each of the initiating QISARS survey questions. Provisional coding themes included: preparation/planning, collaboration, climate, monitoring, and training. These provisional categories served as a first cycle coding method which allowed the researcher to organize data in an ongoing manner. During live interviews, preliminary field notes identified when respondents shared ideas that were aligned or somewhat aligned with these categories and when they seemed to clearly identify new ideas. Also, as the researcher completed initial data review, ideas that fell into these categories were highlighted and revisited for further analysis and collective meaning.

There were potential cautions to be aware of using this coding method. Saldaña (2013) rightly warned that provisional coding can create a preconceived bias on the part of the researcher, creating a schema into which data is to be fit versus identifying patterns and observations that are truly there. It was of the greatest import that each provisional category was refined, and even renamed or completely changed, based on the data and its connection with the research itself. As Saldaña stated so eloquently, “[a] willingness to tolerate ambiguity, flexibility, and the ability to remain honest with one’s self are necessary personal attributes for researchers and Provisional Coding” (Saldana, 2013, p. 146).
Second cycle coding was completed after the data was organized into initial categories. The researcher further delineated data by identifying descriptive patterns that highlighted significant subtexts and foundational themes found deeper in the data. Such pattern coding was appropriate for the “search for rules, causes, and explanations in the data,” or for “examining social networks and patterns of human relationships” (Saldaña, 2013, citing Miles and Huberman, 2013, p. 210).

**Trustworthiness**

Several strategies were employed to address the trustworthiness and validity of this research. Throughout the study, multiple sources of data (supporting evidence documents, surveys, and responsive interviews) were collected to allow comparisons and cross-checks across data points. By using multiple sources of data collection, what is said during an interview can be checked against what is observed “on site or what [is] read about in documents relevant to the phenomenon of interest” (Merriam, 2009, p. 216). At the same time, by collecting both survey and interview data from participants, the ability to generalize conclusions was enhanced.

Reflective field notes were utilized throughout the collection of qualitative data. Ongoing reflection throughout the project allowed the researcher to consider varied angles of the research experience and data collection process, providing opportunities for considered adaptation or a course of adjustment. Critical reflection, as described by Fook and Gardner (2007) provided a deeper level of contemplation of beliefs, values, and ideas associated with the research process and how these assumptions were or might become entwined in the data analysis.

This study was intended to provide a descriptive outlook on how NAPE PIPE™ participants at the Lake Forest High School self-evaluated their implementation efforts one year
after completing work with face-to-face NAPE facilitators, what those participants perceived to be sustained impacts of the participation in the action research protocol, and what participants perceived as having helped or hindered sustainability impacts in the Lake Forest High School context. To investigate the specific context of Lake Forest High School, it was important for the group involved with this study to be comprised of those individuals directly involved with the work of implementation; unfortunately, the size of this study sample limits the transferability of investigatory results. This case was specific and localized. Results from this study cannot be generalized to a larger group of teachers or school districts in varied settings.

**Limitations**

Limitations of this study include those matters and occurrences that are out of the researcher’s control (Simon & Goes, 2013). The nature of the NAPE PIPE™ work undertaken by each school district that participates involves each team preparing an action research project to investigate root causes for the school’s difficulty to meet nontraditional enrollment targets. This implies that each setting is unique, and as such, it limits the ability to replicate identical outcomes in any other setting. In addition, since case studies involve the behavior of a limited number of people or organizations, causal inferences are inappropriate. Case studies may be suggestive of what may happen in similar settings, but additional research would be necessary to validate the generalizability of findings (Simon & Goes, 2013).

**Summary**

This chapter has provided an overview of the research design of the study. The research design and tradition, description of participants, recruitment of and access to participants, protection of human subjects, data collection strategies, data storage, data analysis,
trustworthiness, and limitations have all been addressed. Each section of this chapter has been developed toward the goal of exploring the following questions:

- How do PIPE™ participants self-evaluate their implementation efforts one year after completing work with face-to-face NAPE facilitators according to the Quality Implementation Self-Assessment Rating Scale (QISARS) survey?
- What do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol?
- What factors do PIPE™ participants perceive as having helped or hindered sustainability of organizational change aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context?
Chapter 4: Research Findings

The objective of this chapter is to present data gathered during this research project and to identify dominant themes that arose during the analysis of survey and interview data. The chapter is organized into several sections beginning with the context of the school and a description of participants. A report of the survey data and description of themes that emerged from participant interviews are presented for review. The chapter concludes with a short summary.

Context of the School

The Lake Forest School District, located in Felton, Delaware, has one high school. Enrollment for the 2016-17 school year was approximately 950 students with a 48.2% male and 51.8% female gender disaggregation (State of Delaware, 2017). The high school, at the time the study was conducted, had multiple career and technical education (CTE) programs in place; therefore, the school was required to report data referencing Perkins IV performance measures annually. Since the 2011-12 school year, Lake Forest High School had not met its nontraditional participation target and had failed to reach its completion target since 2013-14 (Delaware Dept. of Education, 2015).

In summer 2013, Lake Forest High School was invited by the Delaware Department of Education (DDOE) to participate in the Program Improvement Process for Equity™ (PIPE) project to help address Local Educational Agencies (LEA) performance on state targets for nontraditional participation (6S1) and completion (6S2) under federal Perkins regulation. Up to that point, the average nontraditional participation rate for the district was 30.5% with a state target of 35%. Similarly, the district average for nontraditional completion was approximately
32% with a state target of 35%. Nontraditional data for the district since 2013-14, at the time the study was conducted, were as follows:

Table 1

*Perkins Data for Nontraditional Indicators 2013-2016*

<table>
<thead>
<tr>
<th>Perkins Measure</th>
<th>2013-14</th>
<th>2014-15</th>
<th>2015-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nontraditional Participation 6S1</td>
<td>31.19%</td>
<td>31.48%</td>
<td>31.23%</td>
</tr>
<tr>
<td>Nontraditional Completion 6S2</td>
<td>23.01%</td>
<td>30.43%</td>
<td>31.10%</td>
</tr>
</tbody>
</table>

While overall school percentage increases may not seem remarkable, data specific to the programs targeted by the implementation team for improvement in the area of nontraditional enrollment and completion reveal noticeable change over three years.

During early work with NAPE PIPE™, the school chose to focus on four programs within career and technical education. Targeted programs included Agricultural Power and Mechanical Systems, Early Childhood Education, Drafting and Design (CAD), and Process of Design and Engineering. Nontraditional participation and completion numbers for these programs over three years are presented in Table 2.

Table 2

*Nontraditional Participation and Completion Percentages for Target CTE Programs of Study*

<table>
<thead>
<tr>
<th>Program of Study</th>
<th>Program considered Nontraditional for...</th>
<th>2013-14 % Nontrad</th>
<th>2014-15 % Nontrad</th>
<th>2015-16 % Nontrad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag. Power &amp; Mechanics</td>
<td>Females</td>
<td>17.86%</td>
<td>16.98%</td>
<td>18.18%</td>
</tr>
<tr>
<td>Nontrad. Participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ag. Power &amp; Mechanics</td>
<td>Females</td>
<td>0%</td>
<td>7%</td>
<td>12%</td>
</tr>
<tr>
<td>Nontrad. Completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Childhood Educ.</td>
<td>Males</td>
<td>11.11%</td>
<td>16.25%</td>
<td>18.42%</td>
</tr>
<tr>
<td>Nontrad. Participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program</td>
<td>Males</td>
<td>Females</td>
<td>Females</td>
<td>Females</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Early Childhood Educ. Nontrad. Completion</td>
<td>7.69%</td>
<td>5.26%</td>
<td>6.06%</td>
<td></td>
</tr>
<tr>
<td>Computer Aided Drafting Nontrad. Participation</td>
<td></td>
<td>14.29%</td>
<td>21.31%</td>
<td>32%</td>
</tr>
<tr>
<td>Computer Aided Drafting Nontrad. Completion</td>
<td></td>
<td>0%</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Proc. Of Design &amp; Engineering Nontrad. Participation</td>
<td></td>
<td>24%</td>
<td>23%</td>
<td>16.36%</td>
</tr>
<tr>
<td>Proc. Of Design &amp; Engineering Nontrad. Completion</td>
<td></td>
<td>7.7%</td>
<td>0%</td>
<td>6.25%</td>
</tr>
</tbody>
</table>

Three of the four targeted programs illustrated significant improvement in nontraditional (nontrad) enrollment from 2013-2016. Of the three improved programs, Agricultural Power and Mechanics and Computer Aided Drafting also showed improvements in completion percentages while Early Childhood Education increased in enrollment but dropped in completion. Process of Design and Engineering dropped in both enrollment and completion. These performance metrics provide a context through which the qualitative responses of NAPE PIPE™ participants can be filtered.

**Participants**

For this research, surveys and one-on-one interviews were requested from all seven participating PIPE™ team members including the principal, the CTE coordinator, and four CTE teachers. The surveys and the interviews were both voluntary. To elicit the most honest responses possible, no identifying information was asked of survey respondents. Five of the seven PIPE™ team members completed the survey. Interviews were conducted in individual face-to-face sessions with the school principal, the district CTE coordinator, a school guidance counselor and two CTE teachers, all who were participants in the PIPE™ initiative.
The high school principal began her career as a business education teacher in 1998 and continued in that role for eight years. In 2014, she was placed in the role of interim principal at the high school, and, by winter of that year, she was placed in the official capacity of high school principal. As principal, she oversaw all school programs but explained that, “. . . CTE, where my background is, that is my passion.” The principal was introduced to the NAPE project when “. . . a superintendent who didn’t even last, I don’t want to say six months if that long. . . I don’t want to say he volunteered, he pretty much put us in I’m going to call it a pilot and said, ‘this is what you’re going to do.’”

The district CTE coordinator was responsible for programs offered in the district and for working with the principals and staff to ensure that they are following state and federal guidelines. This individual’s role in relation to the NAPE project was made apparent in the following statement:

I actually write the [district] Perkin’s grant. I’m in charge of ensuring that we are doing well on the indicators. Again really everything from my district level, just making sure the we are doing what we need to do when it comes to career technical, or CTE pathways.

The CTE coordinator remembered being “. . . ‘voluntold’ to gather a group, and go to the first meeting at Polytech . . . I think it had to do with the Superintendent.”

The lead high school guidance counselor also participated in this study. This individual had worked in the same district since 1998, serving most of that time in the role of school counselor. When asked how he became involved with the NAPE project, he stated that “[from] what I understand, the state asked districts [to] participate with NAPE in this project, and try to
hone that down a little bit, all these discrepancies, and someone signed on and tasked me to be a part of that.”

The two CTE teachers who were involved with this research project had differing characteristics and entry points to the project. One was a 17-year veteran to the teaching profession who was originally recruited to the project by the school principal. This teacher stated during his interview that,

[the superintendent] made a directive that the district participates in this NAPE workshop. Because I guess somebody from DOE had approached him is my guess . . .

Then he put it down to the administration, administration put it down to the teachers . . .

that’s how they got everybody.

Meanwhile, the other teacher participant, a 6-year veteran teacher, was asked to join the team a year and a half after the project began. Her perspective was that “. . . the state asked districts to participate with NAPE in this project, and try to hone that down a little bit, all these discrepancies, and someone signed on and later tasked me to be a part of that.”

It is salient that all interview participants indicated that the initial introduction to the NAPE PIPE™ project was involuntary. This theme is revisited in subsequent analysis of survey and interview data.

The Quality Implementation Self-Assessment Rating Scale (QISARS)

QISARS is a point-in-time assessment of the quality of a given implementation process and can be used to inform next steps for implementation support. It can also be used to assist with organizational awareness into strategic areas of strength and areas that may need additional support (Fetterman et al., 2015).
In Section 1, “Preparing for Implementation,” raters were asked to identify their status as being early stage (considered but not yet put into place), middle stage (begun taking steps but not integral), or advanced stage (steps taken and integral and ongoing part of implementation process). Responses to this section are presented in Table 3.

Table 3

**QISARS Section 1 Responses: Preparing for Implementation**

<table>
<thead>
<tr>
<th>HEADING</th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our organization has conducted a needs and resource assessment to identify the underlying needs we are trying to address.</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>2. Our organization has a set of identified goals and desired outcomes to meet needs.</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3. Our organization has considered best practice ways to meet goals and objectives.</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4. We have considered how evidence-based strategies fit with our organization</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>5. We have assessed our organization’s capacity to implement best practices in our organization (e.g., support personnel, costs for professional development, staff skills).</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>6. Based on the above items, we have selected an innovation and developed a concrete plan for implementing this innovation in our organization.</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

The survey showed that 100% of respondents felt that the school was in the advanced stages for all steps related to planning a quality implementation. This included conducting a needs and resource assessment, setting identified goals and outcomes, considering best practices and evidence-based strategies, assessing organizational capacity, and developing a concrete plan for implementation. Choosing “advanced stages” means that every respondent felt that the organization had “taken steps to make [each of the above] an integral and ongoing part of implementation” (Fetterman et al., 2015, p. 289).
Section 2 of the Survey examined oversight and input from implementation team members. Responses in this section were variable (see Table 4).

Table 4

_QISARS Section 2 Responses: Develop and Implementation Team_

<table>
<thead>
<tr>
<th>HEADING</th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our organization has a team responsible for overseeing the transition to this innovation.</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2. There is a team leader for the implementation team.</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>3. The team leader has a clear role and responsibilities.</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>4. Our team includes staff from different departments or content areas who work collaboratively.</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>5. Considerations have been made to ensure that the team leader has sufficient time and resources to effectively oversee the transition to this innovation.</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>6. We have considered inviting community members of other external persons (e.g., business leaders, other agencies) as team members.</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7. Members of our transition team know their roles and responsibilities.</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. We have collaborations with persons (internal and/or external) with extensive knowledge and/or expertise relevant to the specific content of this innovation.</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>9. We have an agreed upon structures(s) for our team overseeing transition (e.g., steering committees, advisory committees, workgroups).</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The respondents were split in their responses to whether they had an agreed upon structure for their team overseeing the transition, with half stating that this was in the advanced stages, and half stating that this was a middle-stage process. In all, responses for the quality of oversight and input from the implementation team were mixed, with evidence that at least some respondents felt that more effort could be made to ensure diversity of team members and clarity of roles within the team.
Survey section 3, “Fostering a Supportive Climate and Conditions for Your Innovation In Your Organization,” related to whether respondents felt that their process included a supportive climate and conditions to facilitate a quality implementation. As shown in Table 5, responses were again mixed.

Table 5

<table>
<thead>
<tr>
<th>Heading</th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This innovation has at least one “champion” who is excited about it and shows leadership for the project.</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. We have communicated the need for this innovation throughout the organization.</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. We have communicated the benefits of this innovation throughout the organization.</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4. We regularly assess resistance to this innovation in our organization.</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5. We have created policies and procedures/practices for dealing with resistance to this innovation.</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>6. We have created policies and procedures/practices that enhance staff accountability to implementing the innovation.</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7. We use a shared decision-making approach to planning and implementing the transition to this innovation. We use a collaborative approach and consider input from many levels before making decisions.</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. We have adequate support from our organization’s administration for this implementation.</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Section four of the survey asked participants to reflect on how strongly their implementation plan supported the monitoring of organizational transition over time. Responses are shared in table 6.
Table 6

QISARS Section 4 Responses: Monitor Implementation

<table>
<thead>
<tr>
<th>Heading</th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our plan for implementation includes specific, actionable tasks.</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Each task on our implementation plan includes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• a person responsible for overseeing completion</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>• an expected timeline for completion</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. We regularly revisit plans and make midcourse corrections, as needed.</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

In this survey section, respondents revealed that their plan had specific and actionable tasks, that there was at least one person responsible for overseeing completion, and that there was an expected timeline associated with completion. Participants also indicated that they regularly revisited plans and made midcourse corrections as needed. Survey participants consistently reported two middle-stage and three advanced-stage responses for each item related to planning for monitoring of implementation.

When it came to receiving training and technical assistance supporting change, the five survey participants were less consistent. Survey results for section 7 (see Table 7) are listed below.

Table 7

QISARS Section 5 Responses: Receive and Provide Technical Assistance

<table>
<thead>
<tr>
<th>Heading</th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. We have assessed and prioritized support needs specifically related to this innovation.</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
2. We have a designated person(s) responsible for providing training/technical assistance to organization members.  
3. We have fostered a relationship with external persons and resources to support training/technical assistance.  
4. The person(s) providing training/technical assistance understands our organization’s needs/resources.  
5. The person(s) providing training/technical assistance understands our organization’s goals/objectives.  
6. The person(s) providing professional development/training has a sufficient level of content knowledge specifically related to this innovation to adequately train members of our organization.  
7. Our transition team works collaboratively with the person(s) responsible for professional development/training.  

Responses in this section seemed to indicate that the team did not share the same perception(s) related to having a specific person or group responsible for technical assistance or training or that the team worked collaboratively with the person or group responsible for technical assistance or training. This raises a deeper question as to whether the issue had to do with a lack of support, or if the issue was related to a lack of clarity as to the roles of participants in the process which is noted to have been an issue of incongruence for respondents in section two.

When asked about collaboration between program experts (see Table 8) and community organizations, one of the five survey participants chose not to respond to the questions. Of the remaining four, three noted that the organization had begun taking steps to incorporate regular collaboration between PIPE™ program experts and school change agents, with one participant finding this was an integral part of implementation. When asked about engagement in regular problem solving activities with PIPE™ program experts, a 50/50 split emerged, with two
respondents finding this to be a middle stage implementation and two rating it as integral to their current processes.

Table 8

QISARS Section 6 Responses: Collaboration with Program Developers

<table>
<thead>
<tr>
<th>Heading</th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. We regularly collaborate with the developers of this innovation.</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2. We regularly engage in problem solving related to implementation with program developers.</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The QISARS survey data was analyzed to directly investigate how PIPE™ participants self-evaluated their implementation efforts one year after completing work with face-to-face NAPE facilitators. The survey provided raw data for analysis, but also provided information that was used to modify the original interview script. Participant responses were reviewed and used to adjust interview questions slightly. The original and adapted scripts are located in appendices B and C.

Participant Interviews and Developing Themes

There were five respondents to the QISARS survey for this research, and there were five interview participants associated with this research. It is not known whether these five individuals were the same for both aspects of the research, since identifications were not requested from survey participants; however, since the pool of individuals invited to participate totaled seven, the overlap would have been significant if not complete. Interviews were conducted during individual face-to-face sessions with the school principal, the district CTE coordinator, a school guidance counselor and two CTE teachers, one an agriscience teacher and
the other an agricultural mechanics teacher. All participants were active members of the district PIPE™ initiative.

A direct question. One interview question asked of every research participant attempted to gain direct input relevant to the research query, “What do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol?” The interview question was:

Do you feel that the work you have done with NAPE PIPE™ has produced any lasting change for Lake Forest High School? If yes, can you share examples of changes you have observed and how you think they will be incorporated into school norms? If no, can you describe why you feel this way and what you think it would take to create change that would be incorporated into school norms?

Responses to the question did not result in the naming of specific impacts or outcomes; however, several respondents shared reflections about their experiences and identified challenges or thoughts about what they perceived were best practices moving forward.

Two interviewees provided generally positive reflections. The animal science teacher shared that there was lasting change in the making, but that it was slow. Her comment was:

I think it’s slow growth, but I think if we continue on that it will continue to grow, and spread, and impact others. But I think because again it was such small group of people that were aware of what’s going on, I think it’s hard to incorporate it in the whole school’s norms.

Meanwhile, the school principal shared a direct example of change, stating,
I do know there’s definitely lasting changes over all of our programs. An example once again will be, where we even came from, we look at the business department I can say [it was] predominately females, now I see more males in that program . . .

The remaining three respondents had mixed responses, again sharing reflections and thoughts for next steps more than direct examples or perceptions of sustained impact. The agricultural mechanics teacher shared that he felt that the school was

…at a critical juncture right now, when it comes to this the NAPE the non-trad and PIPE plan. I think the critical juncture is that if you lose the momentum and we don’t move forward and keep pushing the initiative, then we are going to lose that.

In a similar vein, the guidance counselor stated that he hoped they had made lasting changes, but “Do I feel like we’ve talked about it this year as much as previous years? No. You know from that experience I want to say no.” And the district CTE Director said,

Yeah, I’m going to say no. I think what needs to change is to get more of the buy in from the administrators at the school level, and having them be more of the captain of the team, and maybe broadening our team. Because right now it is really a CTE focus, and those who aren’t in CTE don’t understand it, don’t care, or don’t think it applies to them, or don’t see the value in it.

While this interview question was reviewed as a standalone item to identify specific responses related to one of the research questions, it was part of a larger protocol intended to draw greater amounts of data from respondents. The interview results, including this question, were transcribed and qualitatively coded to identify themes for further investigation.
**Developing themes.** Interview data were provisionally sorted into topics identified from each of the QISARS survey questions. Provisional topics that were highlighted included: preparation/planning, collaboration, climate, monitoring, and training. During live interviews, preliminary field notes were used to identify when respondents shared thoughts that were aligned or somewhat aligned with these topics and when they seemed to articulate new thinking. As the researcher completed early reviews of the transcripts, ideas that fell into these classifications were highlighted and were later revisited for further analysis.

While first cycle topic codes were helpful in organizing large amounts of incoming data and initial reads of the interview transcripts, it was soon apparent that further clarification of themes would be necessary. Figure 1 illustrates the evolution from first cycle topic coding to second cycle pattern coding.

*Figure 2.* First round topic codes evolving to second round pattern codes.

Figure 2 represents the shift from topic codes in first-round provisional coding to pattern coding during second-round processes. Continued analysis of interview transcripts revealed that broad topics such as preparation and planning seemed to have a more patterned response from interviewees that consistently referenced time as a factor. Similarly, when referring to issues of collaboration or organizational climate, responses seemed to persistently reference a cultural divide between teachers who taught CTE and teachers who did not, or students who might be integrated in a CTE pathway versus those who may be enrolled in an academic pathway. Ideas referring to climate were divided between cultural differences between populations in the school and a concept of mindset, while ideas of monitoring and training seemed to always reference data. Three additional pattern codes emerged in second-round coding, including capacity,
guidance and directive. All second-round pattern codes are listed in Table 9 with an accompanying description.

Table 9

*Second Round Pattern Codes and Summary Descriptions*

<table>
<thead>
<tr>
<th>Pattern Code</th>
<th>Thematic Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Time is a limiting factor in achieving goals.</td>
</tr>
<tr>
<td>Data</td>
<td>Data is useful for making change, opening eyes, and motivating change agents.</td>
</tr>
<tr>
<td>CTE vs Non-CTE</td>
<td>There is a cultural divide between CTE teachers and non-CTE teachers and expectations are different for students in CTE programs vs non-CTE programs.</td>
</tr>
<tr>
<td>Mindset/Mindfulness</td>
<td>Mindset involves the awareness of culture and organizational environment to support change (buy-in).</td>
</tr>
<tr>
<td>Guidance</td>
<td>The specific role of the guidance counselor in scheduling and “guiding” student choices is pivotal.</td>
</tr>
<tr>
<td>Directive</td>
<td>Initial participation in the PIPE™ program was unanimously identified as a non-negotiable directive.</td>
</tr>
<tr>
<td>Capacity</td>
<td>Staff turnover or stability among personnel has an effect on success or failure of a change initiative.</td>
</tr>
</tbody>
</table>

The purpose of this case study was to investigate what PIPE™ participants perceived to be sustained impacts of their participation in the program. The research also investigated what factors participants felt had helped or hindered sustainability of organizational change aligned with nontraditional student enrollment and completion in CTE courses in Lake Forest High School’s context. The interview questions led to seven primary themes shared in Table 9 above and summarized in light of the study’s purpose below.

**Time as a limiting factor.** In interviews, all five participants described time as a limiting factor in achieving their goals relative to the PIPE™ program – specifically, time for planning. One teacher noted that, “. . . the biggest complaint . . . was missing a lot of class time”
while the CTE Director stated separately that, “. . . the major challenges we face . . . is the lack of time. . . anytime we need to get together nobody on our team has the same common planning so I have to get them a substitute.” While planning and sharing ideas was described as difficult due to limited time, several interviewees also noted that it would take time for change to occur, with one teacher saying, “[I]t’s going to take time. It takes time, and perseverance and resolve.”

Data as a useful tool. Data was described by participants as a tool for initializing discussion relevant to nontraditional enrollment and completion. Two of the five interview participants spent a great deal of time discussing data as an important factor in identifying problems, making decisions, recognizing project status, and motivating educators to change. The school guidance counselor stated that data played an important role in helping people shift their assumptions and in allowing them to move forward with new ideas. He also lamented the lack of data so far that year and shared that he hoped it [the change effort] would continue to last.

A cultural divide between CTE and non-CTE. Throughout the interview process, a majority of participants described a discrepancy between CTE teachers and non-CTE teachers, especially in relation to the change initiative. The district CTE director specifically noted that “right now, it is really a CTE focus, and those who aren’t in CTE don’t understand it, don’t care, or don’t think it applies to them, or don’t see the value in it.” Similarly, one of the CTE teachers noted:

Our core teachers in science classes and engineering and chemistry and all those things, are just as affected as non-CTE areas, but I don’t think they have a clue. So if everybody is not aware, you can’t have much of an impact on, you know, the students and the parents.
This idea went beyond the specific change effort to a feeling that CTE was culturally separated from the rest of the school, and, in that way, it was limited in its ability to facilitate change. Again, from the CTE coordinator: “In some ways the CTE [sic] can be your red-headed stepchild in some people’s views.” And when asked if CTE and non-CTE teachers interacted during the workday, one of the teacher respondents stated that “. . . I don’t go in there [the main school building] if I don’t have to. And when I go in I usually keep to myself and stay out of the drama.”

**Mindset, a multifaceted topic.** Mindset was a multifaceted topic with several caveats. Participants described participation in the PIPE™ process as including several aspects of mindfulness, such as initial awareness and buy-in, requiring a value interpretation. Soon after describing these initial phases, interview conversations led into a description of shifting mindsets, or a change of culture, with a focus on relationships. A deeper description of each of these subcategories is shared below:

**Awareness/buy-in.** Awareness and buy-in were identified as important to the change process. It wasn’t implicitly stated in any interview how this should be accomplished, or what was done to bring about awareness; however, there were several comments made that impressed upon the researcher that participants felt there may have been a lack of awareness or buy-in on the part of some school officials and/or teachers. Comments such as, “I mean you have to have buy in from everybody, which is. . . always more work for teacher, it’s harder to get that. . .” and, “I think what needs to change is to get more of the buy-in from the administrators at the school level, and having them be the captain of the team. . .” Another comment described the initiative as:
[a]nother unfunded mandate coming down the pike, and there [are] more meaningful things which we should be putting our time and efforts toward. I have heard that from staff members, but I don’t think, I mean it hasn’t gone beyond a conversation somewhere. While there were some comments indicating a possible lack of buy-in on the part of some of the staff, other comments indicated that the initiative had garnered both buy-in and a value status over time, at least from the leadership team. One person said, “. . . I think by doing it for multiple years in a row, they might have seen a little more value in it,” while another shared, “. . . because it’s been lasting, I think it’s magnified some of the importance of it. . . it comes down to you know do you value what we’re trying to do here?”

**Culture.** Leadership team members shared that mindset shifts were about changing the culture of the school. Some noted that the data opened their eyes and allowed for a shift in opinion, specifically that “. . . some of our initial assumptions, you know, shifted over time as we got some survey information back” Others, meanwhile, shared that changing one person’s mind had an effect on many and that, “well, with [a prominent person] buying in, someone who in a sense, was somewhat negative, that then changed the mindset of the CTE teachers, and also the core subject teachers.” The CTE coordinator stated plainly that the major opportunity was “to affect the school culture. I think, I mean the focus in on non-trad [sic] participation, but I think it goes deeper than that, because it’s about diversity and inclusion across the board, and not just for CTE.”

**The role of guidance.** The role of guidance as an organizational factor affecting nontraditional enrollment was clear. All interview participants referenced the guidance department as having a pivotal role in student decision making and course scheduling. Some described frustration that the guidance department dissuaded students from participating in
nontraditional programs or CTE in general, while others noted that this may have once been true but that it was changing since the school had a specific and ongoing focus on diversity and gender equity in CTE programs. Several individuals on the leadership team shared that change efforts were facilitated by including members from the guidance department in the planning of implementation strategies to increase participation of nontraditional students in CTE programs.

The guidance counselor provided support for this perception by describing shifts to internal scheduling practices. According to the guidance counselor who participated in interviews, the guidance department had begun manually reviewing student requests against computer generated course assignments. She observed:

[We] don’t want [nontraditional students] getting bumped out, because the class fills up and traditional students have taken their places. . . I want to be able to manually go in and see why kids aren’t getting certain classes so I can manually fix that for that child.

Further probing this did not mean replacing traditional students with nontraditional students, but it did warrant checking automatic placements to ensure that students were getting their primary requests as often as possible, especially if the students were nontraditional participants with a desire to participate in a specific CTE program of study. As the guidance counselor observed, “Of course it causes more manual work, but that’s okay. . .”

Dealing with capacity. There were two issues dealing with capacity highlighted through interview communications. On the one hand, many participants noted that the initiative required a great deal of knowledge and institutional memory to be successful. On the other hand, significant staff turnover seemed to be both helpful and detrimental to the idea of change.

New job roles. The year that Lake Forest High School began working with NAPE and the Department of Education (DOE) to address nontraditional participation and completion was
one of great change. The superintendent that enrolled the school in the initiative left the district within a month of beginning the school year. The CTE director was new to the district, and to the role, not having worked in the area of CTE or Perkins indicators in the past, and the high school principal at the time had recently left the district. The current principal was placed in the role of interim principal during that time, and an interim superintendent was named as well. Because many of the leadership positions in the district were held by new staff, and because that staff was part of the PIPE™ leadership team, a unique learning paradigm was created. In this context, the CTE coordinator shared that:

[The project] forced me to learn a lot about CTE indicators in Perkins. But just kind of jumping and then figuring it out, and learn a lot about our current pathways that we offer. And it helped me kind of, from this way, develop at least a short term vision of where we really thought we wanted to go.”

**Turnover.** Changes in leadership within the district constituted a contextual factor for three of the five interview participants. The guidance counselor described concerns about leadership consistency and the need to communicate the importance of this initiative in order to maintain change momentum. The district CTE director made similar comments, as did the high school principal. Teachers were less likely to focus on the effect of leadership turnover and were more prone to emphasize a need for community adoption/acceptance of the change focus to sustain efforts.

**It began as a directive.** Initial participation in the PIPE™ initiative was unanimously identified as a non-negotiable directive from a position of authority, some citing the superintendent, others identifying the CTE coordinator or the principal. Descriptions of original introductions to the program varied. For example, one participated described:
I believe there was an email that somehow I was a part of, I don’t remember who it came from, I know it went to the superintendents, and I think I was included or forwarded. . . in reference to this non-trad project thing that I didn’t know anything about. . . I didn’t understand what it meant.

Another, meanwhile, stated that “the state asked districts to participate with NAPE in this project, and try to hone that [gender discrepancy] down a little bit . . . and someone signed on and tasked me to be a part of that.” One of the teachers remarked:

I guess somebody from DOE had approached [the superintendent] is my guess, but I don’t know . . . then he put it down to administration, administration put it down to teachers. That’s how they designed the cohort, that’s how they got everybody there.

**Summary**

This chapter provided descriptions of the school context, participants, survey data, and the themes that emerged from interviews with five members of the PIPE™ leadership team at Lake Forest High School. Over the course of the school’s participation in the PIPE™ process, school-wide measures of nontraditional enrollment and completion did not show significant change. However, specific programs targeted as part of the school based implementation program, including Agricultural Power and Mechanics, Early Childhood Education, Computer Aided Drafting and Engineering numbers did reveal considerable growth. Survey data and interviews indicate that the school has planned for and begun to implement some positive change strategies, but that ongoing efforts will be necessary to support the initiative if lasting change is to occur.
Chapter 5: Discussion of Research Findings

The Carl D. Perkins Career and Technical Education Act of 2006, often referred to simply as “Perkins,” requires State Education Agencies (SEAs) to set negotiated targets for specific performance measures, including two measures focused on gender equity in CTE. Programs that prepare students for occupations where less than 25% of the employed population is of a particular gender are known as nontraditional programs. Schools in Delaware that have had difficulty meeting their negotiated nontraditional program enrollment, and completion targets had been invited for the three years before this study was conducted to participate in the National Alliance for Partnerships in Equity (NAPE) Program Improvement Process for Equity (PIPE™). Participation with PIPE™ is intended to assist districts with the implementation of data-driven, research-based processes for the improvement of performance on Perkins nontraditional core indicators.

Lake Forest School High School had participated in the PIPE™ initiative for three years at the time of this study. Over the course of their involvement, the school participated in all four process modules and developed and implemented parts of a research-based implementation plan for program improvement (See Appendices A-C). The purpose of this study was to investigate what Lake Forest High School participants who had been engaged with PIPE™ for three years perceived to be sustained impacts of their involvement through the examination of the following three questions:

- How do PIPE™ participants assess their implementation efforts one year after completing their work with face-to-face NAPE facilitators according to the Quality Implementation Self-Assessment Rating Scale (QISARS) survey?
• What do PIPE™ participants perceive to be sustained impacts of their participation in the action research protocol?
• What factors do PIPE™ participants perceive as having helped or hindered sustainability of organizational change aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context?

Discussion of Findings in Relationship to the Literature and the Theoretical Framework

Survey results. The Quality Implementation Self-Assessment Rating Scale (QISARS) survey was chosen to investigate how PIPE™ participants self-assessed their implementation efforts one year after completing their work with face-to-face NAPE facilitators because of the survey’s reflective nature and its alignment with empowerment theory. According to Fetterman (2015), “Empowerment theory is about gaining control, obtaining resources, and understanding one’s social environment. It is also about problem solving, leadership, and decision making” (p. 21). The survey is classified as an empowerment evaluation and is intended to be used by self-evaluators:

The more that people are engaged in conducting their own evaluations, the more likely they are to believe in them . . . they learn to think evaluatively. This makes them more likely to make decisions and take actions based on their evaluation data.” (Fetterman et. al., 2015, p. 24)

Though the survey was not embedded directly into the implementation phase of the PIPE™ process as would be ideal, the evaluation was situated within the context of external requirements and credible results or outcomes (Fetterman, 2005).

Results from the QISARS survey indicated that PIPE™ participants felt that the school had taken steps to make planning an integral and ongoing part of their implementation processes,
but when it came to oversight and input from the team, some of the respondents expressed that more effort could have been made to ensure diversity and clarity of roles. With regard to school climate and conditions for success of their implementation, survey participants were mostly confident that they had begun to facilitate a supportive organizational climate. However, responses illustrated that participants found policies, practices, and assessments of staff resistance or accountability to be a weakness of their implementation practice.

Participants were consistent in their responses to planning and monitoring for implementation, noting again that their implementation plans included specifics for actionable tasks, responsible parties, timelines, and opportunities for midcourse correction. There was less agreement on whether the team felt there was coordination and organization in terms of technical assistance and training throughout the organization.

An overarching pattern seemed to arise when reviewing the results of QISARS responses provided by Lake Forest PIPE™ participants. Questions associated with preparation, written planning, and routine record keeping resulted in more consistent responses, most of which leaned toward the middle to advanced stages of implementation. Questions associated with action processes and actual implementation, including fostering a supportive climate and receiving and providing training and technical assistance, indicated less agreement among the responses, which leaned more toward middle to early stages of implementation.

This trend indicates that participants in the PIPE™ process were comfortable in the context of written work and planning for change; however, this was less so with the action steps associated with implementation. According to Glassman et. al. (2012), a focus on the process of change instead of on process outcomes places all action members squarely in the realm of learner, a position that breaks down the traditional power roles in community action groups. The
specific evaluation questions that seemed to create the most discord among responders were related to “clarity of roles within the team” and the development of accountability policies that may have been associated with power structures, which appears to indicate that the PIPE™ participants at Lake Forest were indeed in the early stages of change, and they may benefit in the future from continued external support. Referencing Lewin’s (1952) unfreezing, moving, and refreezing model, it seems that, based upon this self-reflection survey, Lake Forest staff had deliberately brought about an emotional stir-up; however, the organization was still in the throes of moving or changing and was not ready to re-freeze.

**Sustained impacts.** In addition to investigating the self-assessment of PIPE™ implementation efforts, the investigator researched what PIPE™ participants perceived to be sustained impacts of their participation in the action research protocol. This query was examined both through direct questioning as well as through the review of interview transcripts to identify patterns or overlaps highlighting impacts not blatantly discussed. The researcher also compared qualitative results with performance data for each program of study that was included or targeted as part of the PIPE™ process.

There were no themes, definitive terms, or phrases describing specific or ongoing school processes, protocols, projects, or outcomes identified during data analysis. Interviewees were explicitly asked whether they felt that the work they had done with NAPE PIPE™ had produced any lasting change; however, results did not reveal explicit impacts or implementation outcomes that would suggest new practices had taken hold in the school.

Lake Forest High School, with the assistance of the NAPE and the Delaware Department of Education (DDOE), chose to participate in an action research protocol as a strategy to elicit change. Using the Lewinian model aligned with teleological change and action research, the
researcher looked for clues in the data to suggest that Lake Forest participants had gone through any of the three distinct phases of unfreezing, moving, and refreezing that are anticipated to achieve sustained change (Lewin, 1952).

According to participants, initial participation in the project was presented as a directive from “administration.” In reviewing transcripts, it was notable that response language shifted from the use of phrases such as “they wanted us to,” “that’s how they designed the co-hort,” and “that’s how they got everybody here” to “we can justify it through the plan, they’re more apt to let us do it,” “some of our assumptions shifted over time as we got some survey information back,” and “if … we don’t move forward and keep pushing the initiative, then we are going to lose [momentum].” In identifying commitment to change or “moving” behaviors, Bakari, Hunjra, and Niazi (2017) stated that evidence of a mindset change reflecting affective, continuous, and/or normative commitment to change is useful. The shifts in language illustrated in these quotations move from “they” to “we” and from a description of being told to do something to the describing of group interactions and dynamics. These shifts are indicative of normative movement from participants being “frozen,” defensive, and reticent organizational peers, to reflect them becoming “moving,” organizational change agents. However, when looking for sustainable impact, the use of Lewin’s model would indicate that evidence of refreezing is required.

Lake Forest High School chose to focus on four target programs of study to increase nontraditional enrollment and eventual completion rates. Since beginning the program in 2013-14, the Agricultural Mechanics, Early Childhood Education, and Computer Aided Drafting programs revealed small but significant improvement in enrollment consistent with qualitative results, indicating that participants showed signs of movement away from the organizational
status quo. However, in addressing sustained impacts of participation in the action research protocol, the current answer is that there were not any.

Helped or hindered? Question three of this research study probed which factors of PIPE™ participants perceived as having helped or hindered sustainability of organizational change aligned with nontraditional enrollment and completion efforts in the Lake Forest High School context. Thematic statements resulting from interview transcript analysis provided the most direct answers for this query (see table 10).

Table 10

<table>
<thead>
<tr>
<th>Thematic Statements Resulting from Qualitative Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thematic Statement</td>
</tr>
<tr>
<td>Time is a limiting factor in achieving goals.</td>
</tr>
<tr>
<td>Data is useful for making change, opening eyes, and motivating change agents.</td>
</tr>
<tr>
<td>There is a cultural divide between CTE teachers and non-CTE teachers and expectations are different for students in CTE programs vs non-CTE programs.</td>
</tr>
<tr>
<td>Mindset involves the awareness of culture and organizational environment to support change (buy-in).</td>
</tr>
<tr>
<td>The specific role of the guidance counselor in scheduling and “guiding” student choices is pivotal.</td>
</tr>
<tr>
<td>Initial participation in PIPE™ was unanimously identified as a non-negotiable directive.</td>
</tr>
<tr>
<td>Staff turnover or stability among personnel influences success or failure of a change initiative.</td>
</tr>
</tbody>
</table>

Many identified factors were associated with infrastructural aspects of the organization itself. For instance, in diagnosing time as a limiting factor, participants, in a very literal way, were recognizing a physical constraint to the change process. Similarly, the identification of staff turnover and scheduling roles and requirements emerged as tangible management issues for the organization. Without a structurally supportive foundation, no initiative, change-oriented or not, is likely to be successful.
In addition to structural elements, participants described a cultural dissonance between CTE teachers and non-CTE teachers and departments in the school, and in the mindset of parents, students, and guidance staff. This specific environmental condition, described by nearly every interview participant, indicated a systematic transmittal of cultural norms and values that went beyond the written curriculum. This contextual nature of schooling, or “hidden curriculum,” provides an education in socialization (Brint, 2006), and, according to many of the interview participants, the message was that CTE teachers and students were in some way “less” than teachers and students participating in traditional academic pathways.

Participants expressed confidence in their descriptions of PIPE™ initiatives or implementation plans, and in the priority need to shift organizational mindset. No respondents described their school or their colleagues as unwilling or unable to change, and most insisted that a continued emphasis on the program would make a difference over time.

In identifying things that were either helpful to or were hindering the sustainability of organizational change relevant to PIPE™, it is first important to remember that the data did not indicate that Lake Forest High School’s change effort had reached a phase of sustainability at the time this study was conducted. Participants had identified multiple factors that had supported nontraditional enrollment initiatives or that had created challenges, but sustainability was not a measurable quality of the project.

**Summary of findings.** The findings from this research showed that Lake Forest High School PIPE™ participants self-reported being in a state of change, but not yet reaching a state of newfound equilibrium or sustainable of change. The QISARS survey results indicated that participants felt particularly confident in their planning for implementation, but less confident in their actual implementation efforts. Participant language identified through interviews revealed
that change was ongoing but that the identification of specific impact, sustained or not, was elusive. Finally, qualitative results indicated that participants were reflective change agents, able to identify both supports for and challenges to their efforts, but overarching results indicated that sustained change has not yet been achieved.

**Implications for Practice**

Since 2006, CTE programs receiving funding from the Carl D. Perkins Act (Perkins IV) have been required to report institutional progress toward “student participation in, and completion of, career and technical education programs that lead to employment in non-traditional fields” (Carl D. Perkins Act, 2006, p. S. 250-15). This case study investigated the sustainability of changes brought about through participation in the PIPE™ change initiatives within a real-world context and found that, after a three year period, there was no evidence of sustained change at Lake Forest High School. Evidence does indicate that the team illustrated readiness for change (unfreezing), and that a reflective practice allowing participants to identify challenges and opportunities aligned with the change effort was in place.

Results of this research would indicate that three years of NAPE PIPE™ interaction with two years of face-to-face support in developing an implementation plan is not sufficient to effect sustainable change relevant to nontraditional enrollment and completion efforts in a district. Ongoing technical assistance and accountability efforts that assist organizational change leadership teams in implementing planned efforts are critically important to moving groups from recognizing and achieving readiness for change to moving toward an ethos of “refreezing” or commitment to change.

The PIPE™ process does not currently integrate the QISARS empowerment survey as an ongoing reflective tool for gauging and evaluating implementation strategies. This study has
revealed that the evaluative survey process could provide helpful scaffolding relevant to implementation strategies and sustainability in the context of school culture. The collected information could also be used to assist PIPE™ facilitators in recognizing frustrations and roadblocks inhibiting, and encouragements strengthening, strengthen ongoing consultative processes, thus increasing the chances of successful long-term organizational change. The identification of ongoing struggles and successes and the documentation of them for referential use in future professional settings, which was part of the focus of this study, can potentially assist the DDOE in developing a model facilitation program that could be used with other schools across the state as they request training and technical assistance with the NAPE PIPE™ protocol, in years to come.

A Cautionary Tale and Implications for Further Research

Robert Burns’ (1786) often paraphrased quote, “The best laid schemes o’ Mice and Men [oft’ go awry]” may be the most apropos thought upon which to close this thesis. The proverbial expression is most often used to suggest that creating detailed plans is an act of futility when the ability to implement them is unpredictable. In the case of Lake Forest High School, a great deal of effort was dedicated to the research and development of an implementation plan to improve nontraditional enrollment and completion performance across career and technical programs of study, but very little effort seems to have been directed towards the implementation itself.

In supporting change efforts in schools or other organizations, it is important to recognize the need for implementation scaffolding and leadership support. Beyond providing structures for planning, it is important for change leadership teams to understand specific strategies and action steps that will move organizations forward on the continuum of Lewin’s unfreeze, move, and refreeze paradigm. As change begins to occur within an organization, confusion, discomfort,
and a search for the “new normal” ensue. Without actively replacing old norms with new norms, an organization in flux will return to comfortable habits of mind (Sarayreh, Khudair, & Barakat, 2013).

Results of this research would indicate that three years of work with the NAPE PIPE™ initiative is not sufficient to effect sustainable change relevant to nontraditional enrollment and completion efforts in a district. It seems warranted to investigate the usefulness of incorporating a structured implementation process, including monitored technical assistance, to support leadership teams in following through with planned change initiatives, a process that would require reflexive discourse to enhance ongoing efforts.

Future research could investigate the value of using the QISARS survey to provide reflective support for ongoing implementation efforts beyond year three. With a basis in empowerment theory, the QISARS survey could assist change implementation teams with organizing problem-solving, leadership, and decision-making processes over time (Fetterman et al., 2015). Further research will be necessary to determine whether such scaffolds would be sufficient to drive teams toward meaningful and/or lasting change.

Limitations

This case study was limited to data compiled from survey and interview data collected from a very small population of teachers in a rural school district in central Delaware. The number of participants in this study was small, limited to those who had been working with PIPE™ within the small district, over the three-year period. While it was important for the group involved with this study to be those individuals directly involved with the work of implementation, the size of the sample limits the transferability of investigatory results. According to Creswell (2009), the inability to draw correct inferences from the sample data to
other settings is the direct definition of external validity threat. External validity beyond this case is limited. This case was specific and localized. Results from this study cannot be generalized to a larger group of teachers or school districts in varied settings.

**Conclusion**

In an effort to assist the district in improving nontraditional performance metrics, the DDOE contracted with NAPE to implement the PIPE™ initiative. The PIPE™ process is intended to assist education agencies in providing technical assistance and professional development to local education associations (LEAs) to improve their performance on accountability measures defined in the Perkins Act. It is a “data-driven, decision-making, institutional change process focused on increasing the participation, completion, and transition of females and other underrepresented groups in nontraditional CTE-related programs of study” (NAPE, 2015a).

The purpose of this case study was to elicit participative self-evaluations from members of a school that had been engaged with PIPE™ for three years and to investigate what PIPE™ participants perceived to be sustained impacts of their participation. The research also investigated what factors participants felt had helped or hindered sustainability of organizational change aligned with nontraditional student enrollment and completion in CTE courses in Lake Forest High School’s context.

Lake Forest High School PIPE™ participants self-reported as being in a state of change, but were not yet identifying themselves as reaching a state of newfound equilibrium or sustainability of change. The QISARS survey results indicated that participants felt particularly confident in their implementation planning procedures, but less confident in their implementation efforts. Further research through interviews indicated that participant language supported that
change was ongoing, while identification of specific impacts, sustained or not, was elusive.

Finally, qualitative results indicated that participants were reflective change agents, able to identify both supports for and challenges to their efforts; however, overarching results indicated that sustained change had not been achieved.
References


Hill, K. (2013). We’ve come a long way, baby, or have we? *Journal of Organizational Culture, Communications and Conflict, 17*(2), 29-36.


Retrieved from URL.


Co-Design: A User-Centric Approach for Advancement of Organizational Learning.”


Appendix A
The Quality Implementation Self-Assessment Rating Scale

The Quality Implementation Self-Assessment Rating Scale (QISARS) provides a point-in-time assessment of the quality of implementation of an innovation in an organization. It can be used to inform next steps for implementation support. It is intended to provide insight into areas of strength and areas in which your organization may need additional support and may point to the direction of undertaking a quality implementation process.

For each item, rate the current or recalled status of your organization as in “early stage,” “transitional stage,” or “advanced stage” based on the following descriptions:

- Early Stage: You may have considered this as part of your plan to implement but have not yet taken (or did not take) specific steps to put it into place.
- Middle Stage: You have begun taking steps (or you had begun) to incorporate this into your overall implementation process.
- Advanced Stage: You have (or had) taken steps to make this an integral and ongoing part of your implementation.

SECTION 1: PREPARING FOR IMPLEMENTATION
Before implementing a new innovation, it is important that your organization has a clear vision and plan for implementation. Quality implementation is part of a larger process of planning, monitoring, and evaluating an innovation. Jumping to implementation without first developing a concrete plan for implementation may prevent quality implementation in the long term.

Where do you think your organization is (was) on each of the following?

<table>
<thead>
<tr>
<th></th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our organization has conducted a needs and resource assessment to identify the underlying needs we are trying to address.</td>
<td></td>
<td></td>
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<tr>
<td>2. Our organization has a set of identified goals and desired outcomes to meet needs.</td>
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<tr>
<td>3. Our organization has considered best practice ways to meet goals and objectives.</td>
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<tr>
<td>4. We have considered how evidence-based strategies fit with our organization</td>
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<td></td>
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<tr>
<td>5. We have assessed our organization’s capacity to implement best practices in our organization (e.g.,</td>
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<td></td>
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</table>
support personnel, costs for professional development, staff skills).

6. Based on the above items, we have selected an innovation and developed a concrete plan for implementing this innovation in our organization.

Briefly describe the innovation or transition you and your organization have begun implementing.

**SECTION 2: DEVELOP AN IMPLEMENTATION TEAM**

The quality of any implementation is improved when there is oversight and input from a team of organization members, rather than the responsibility of a single person. An implementation team that utilizes many different people and skills in the organization will be helpful for quality implementation of your chosen innovation.

*Where is (was) your organization in each of the following items?*

<table>
<thead>
<tr>
<th></th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Our organization has a team responsible for overseeing the transition to this innovation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>There is a team leader for the implementation team.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The team leader has a clear role and responsibilities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Our team includes staff from different departments or content areas who work collaboratively.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Considerations have been made to ensure that the team leader has sufficient time and resources to effectively oversee the transition to this innovation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>We have considered inviting community members of other external persons (e.g., business leaders, other agencies) as team members.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. Members of our transition team know their roles and responsibilities.

8. We have collaborations with persons (internal and/or external) with extensive knowledge and/or expertise relevant to the specific content of this innovation.

9. We have an agreed upon structures(s) for our team overseeing transition (e.g., steering committees, advisory committees, workgroups).

### SECTION 3: FOSTER SUPPORTIVE CLIMATE AND CONDITIONS FOR YOUR INNOVATION IN YOUR ORGANIZATION

Having an organizational climate that is supportive of change will greatly facilitate quality implementation of innovations. When the organizational climate is favorable to the innovation, quality implementation is more likely.

*What steps has (did) your organization taken to create supportive climate and conditions?*

<table>
<thead>
<tr>
<th></th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>This innovation has at least one “champion” who is excited about it and shows leadership for the project.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>We have communicated the need for this innovation throughout the organization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>We have communicated the benefits of this innovation throughout the organization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>We regularly assess resistance to this innovation in our organization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>We have created policies and procedures/practices for dealing with resistance to this innovation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>We have created policies and procedures/practices that enhance staff accountability to implementing the innovation.</td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>We use a shared decision-making approach to planning and implementing the transition to this innovation.</td>
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</table>
use a collaborative approach and consider input from many levels before making decisions.

8. We have adequate support from our organization’s administration for this implementation.

SECTION 4: MONITOR IMPLEMENTATION
The plan your organization has for the transition to your chosen implementation will act as a road map. Quality plans include a clear strategy for monitoring how the transition is progressing over time.

What does your transition plan include?

<table>
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<tr>
<th></th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Our plan for implementation includes specific, actionable tasks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Each task on our implementation plan includes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• a person responsible for overseeing completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• an expected timeline for completion</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>We regularly revisit plans and make mid-course corrections, as needed.</td>
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</table>

SECTION 5: RECEIVE AND PROVIDE TECHNICAL ASSISTANCE
Training and technical assistance is a critical component to supporting quality implementation.

Rate your organization on the following aspects of training and technical assistance.

<table>
<thead>
<tr>
<th></th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>We have assessed and prioritized support needs specifically related to this innovation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. We have a designated person(s) responsible for providing training/technical assistance to organization members.

3. We have fostered a relationship with external persons and resources to support training/technical assistance.

4. The person(s) providing training/technical assistance understands our organization’s needs/resources.

5. The person(s) providing training/technical assistance understands our organization’s goals/objectives.

6. The person(s) providing professional development/training has a sufficient level of content knowledge specifically related to this innovation to adequately train members of our organization.

7. Our transition team works collaboratively with the person(s) responsible for professional development/training.

**SECTION 6: COLLABORATION WITH PROGRAM DEVELOPERS**

Direct communication between program experts and community organizations can help improve the quality of implementation.

*Rate your organization on the following dimensions:*

<table>
<thead>
<tr>
<th></th>
<th>Early Stage</th>
<th>Middle Stage</th>
<th>Advanced Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. We regularly collaborate with the developers of this innovation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. We regularly engage in problem solving related to implementation with program developers.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Fetterman et al. (2015).
Appendix B

Lake Forest Case Study Interview Protocol

(introductory protocol)

Date:  
Start Time:  
End Time:  

Interviewee (Title and Name):  
Interviewer:  
Documents or Artifacts Obtained:  
Extraneous Notes:  

Introductory Protocol

This interview is scheduled to last no longer than 90 minutes. To ensure that we are able to complete the interview in that time frame, if we begin to run long, I may interrupt you to push us forward and complete a line of questioning.

I would like to use a digital recorder to tape our conversation today. This will help expedite note-taking after our session. The only people who will have access to the information on these recordings will be researchers on this project. All recordings will be destroyed after they are transcribed and all written documents will be locked in secure locations. To continue, I will need you to sign a release form devised to meet our human subject requirements. This form states that: 1) all information will be held confidential, 2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and 3) no part of this research is intended to inflict any harm.

Thank you for agreeing to participate.

Introduction

You’ve been selected as an interview participant because of your experience with the National Alliance for Partnerships in Equity’s Program Improvement Process for Equity™. This research project is focused on participant self-evaluations and perceptions of organizational (school) change relevant to nontraditional enrollment and completion in Career and Technical Education courses. The data and information collected from this research is expected to help local and national technical assistance agents adapt and improve future support efforts to improve nontraditional participation in CTE programs.
Interview

A. Participant Background

How long have you been working in the field of career and technical education in Delaware?

How long have you been employed with Lake Forest High School?

Please tell me your title/position with the Lake Forest School District and provide a brief description of your role as it relates to career and technical education.

Can you tell me how you became involved with the NAPE PIPE™ project at Lake Forest High School?
Lake Forest has been involved with the NAPE PIPE™ project since the fall of 2014. Can you give me any examples of changes in the way the school team (specific to NAPE) has interacted with one another over the three years?

Can you describe any teaching, learning, guidance, or administration differences in your school/district that may be a result of Lake Forest High School’s participation in the NAPE PIPE™ process? (You may add other stories of relevant change if you’d like).

What thoughts do you have about what might be different (if anything) about Lake Forest High School today if the NAPE PIPE™ team only had one year of technical assistance instead of three relative to the nontraditional enrollment in CTE courses?

Can you describe a time when you or your colleagues encountered resistance to any of your efforts to increase diversity in CTE courses from teachers in the school? With parents?
What are some of the major challenges the PIPE™ leadership team faces in attempting to change school culture with regard to nontraditional enrollment in CTE? What are the major opportunities?

Do you feel that the work you have done with NAPE PIPE™ has produced any lasting change for Lake Forest High School? If yes, can you share examples of changes you have observed and how you think they will be incorporated into school norms? If no, can you describe why you feel this way and what you think it would take to create change that would be incorporated into school norms?

**Conclusion:**

Thank you so much for taking the time to speak with me. The answers you have provided will be transcribed for coding purposes and as noted in the beginning of the interview, the recordings will eventually be destroyed. All aspects of this interview are confidential, and your name will not be used at any time. All efforts will be made to ensure confidentiality to the highest degree.
Appendix C

Lake Forest Case Study Interview Protocol
(Modified)

Date:  
Start Time:  
End Time:  
Interviewee (Title and Name):  
Interviewer:  
Documents or Artifacts Obtained:  
Extraneous Notes:  

Introductory Protocol

This interview is scheduled to last no longer than 90 minutes. To ensure that we are able to complete the interview in that time frame, if we begin to run long, I may interrupt you to push us forward and complete a line of questioning.

I would like to use a digital recorder to tape our conversation today. This will help expedite note-taking after our session. The only people who will have access to the information on these recordings will be researchers on this project. All recordings will be destroyed after they are transcribed and all written documents will be locked in secure locations. To continue, I will need you to sign a release form devised to meet our human subject requirements. This form states that: 1) all information will be held confidential, 2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and 3) no part of this research is intended to inflict any harm.

Thank you for agreeing to participate.

Introduction

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Interview

A. Participant Background

How long have you been working in the field of career and technical education in Delaware?

How long have you been employed with Lake Forest High School?

Please tell me your title/position with the Lake Forest School District and provide a brief description of your role as it relates to career and technical education.

Can you tell me how you became involved with the NAPE PIPE™ project at Lake Forest High School?
Lake Forest has been involved with the NAPE PIPE™ project since the fall of 2014. Can you give me any examples of changes in the way the school team (specific to NAPE) has collaborated with one another over the three years?

Can you describe any differences in the way your school or district approaches guidance, teaching or administrative practices that may be a result of Lake Forest High School’s participation in the NAPE PIPE™ process? (You may add other stories of relevant change if you’d like).

The Lake Forest PIPE™ team had three years of technical assistance relative to nontraditional enrollment from NAPE and DDOE. How do you feel the additional time, beyond year one, affected your school’s implementation efforts?

Can you describe a time when you or your colleagues encountered resistance to any of your efforts to increase diversity in CTE courses from teachers in the school? With parents?
What are some of the major challenges the PIPE™ leadership team faces in attempting to change school culture with regard to nontraditional enrollment in CTE? What are the major opportunities?

Do you feel that the work you have done with NAPE PIPE™ has produced any lasting change for Lake Forest High School? If yes, can you share examples of changes you have observed and how you think they will be incorporated into school norms? If no, can you describe why you feel this way and what you think it would take to create change that would be incorporated into school norms?

Conclusion:

Thank you so much for taking the time to speak with me. The answers you have provided will be transcribed for coding purposes and as noted in the beginning of the interview, the recordings will eventually be destroyed. All aspects of this interview are confidential, and your name will not be used at any time. All efforts will be made to ensure confidentiality to the highest degree.
Appendix D

Recruitment Email and Ethical Commitments for Interactions with Human Subjects

Dear Colleague,

My name is April McCrae. I am a Doctoral candidate with Northeastern University of Boston, MA and I am currently conducting a case study relevant to your work with the National Alliance for Partnerships in Equity Program Improvement Process for Equity™ program. The study is focused on identifying sustained impacts of the school’s participation in the program and ways to improve technical support for future schools. A more nuanced understanding of the experiences of PIPE™ participants and leadership team members will help to uncover lasting social impacts.

As a participant in the PIPE™ program or as a member of the leadership team, you are being asked to take part in a short online survey and a face-to-face interview. You can decline to participate in any aspect of this research, or request to be omitted from the data collected during the research study.

I am hopeful that you are willing to support and contribute to this case study research and the goal of better understanding you and your colleague’s perceptions of your experiences, reflections and sustained impacts relevant to the PIPE™ process.

In conducting this study, I make the following commitments:

- To respect your professionalism and privacy by conducting the study in a confidential and ethical manner
- To use your time wisely and well, and to minimize the “response burden” on any one individual.
- To report findings anonymously to external audiences, for example in dissertations or evaluation reports.
- To share findings with you and your colleagues in ways informative to your learning process. I will not report findings in ways that would reveal the experience of any one individual (for example based on his or her race, ethnicity, gender, or position). Instead, we will draw on findings from multiple participants or aggregated to communicate themes or issues that are pertinent to your setting.

Please reply to this email by _____________ to let me know if you would be interested in learning more about participation in this research. At that time, a short meeting will be scheduled to discuss the study and to request your final decision for commitment.

Should you have any questions or concerns, or should any issues arise as this study is conducted, please contact me by phone or email: 302-739-4093, mccrae.a@husky.neu.edu.

Thank you for your consideration.

Yours,

April M. McCrae