2020

Status of Women's Leadership in the Instructional Technology Field, 2014-2018

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Status of Women's Leadership in the Instructional Technology Field, 2014-2018

by
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An Applied Dissertation Submitted to the
Abraham S. Fischler College of Education
and School of Criminal Justice in Partial
Fulfillment of the Requirements for the
Degree of Doctor of Education

Nova Southeastern University
2020

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Acknowledgments

Dr. Charles Schlosser, you are one of the best professors I ever had; you showed a genuine concern for my wellbeing. There were many times along this journey when I felt discouraged and overwhelmed. I want to thank you for all your guidance and words of encouragement over the years. I am confident I would not have completed this program and dissertation without your guidance and support. To my committee member, Dr. Anymir Orellana thank you for providing me with your support and feedback over the years. I also would like to thank the Dissertation Support Services group, especially Dr. Steven Hecht, for assisting me with my research design.

A special thank you to my family and friends who supported me and encouraged me as I completed my doctoral courses and the applied dissertation. I would also like to acknowledge my late mother, Pauline Gordon, whose life experiences have taught me to look beyond my circumstances and always pursue my dreams.

"…with God all things are possible" (Matthew 19:26, The King James Version).

Abstract

Status of Women's Leadership in the Instructional Technology Field, 2014-2018. Kerrian A. Gordon, 2020: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education and School of Criminal Justice. Keywords: instructional technology, gender, editorial board, leadership, scholarly productivity, professional conferences, content analysis, women

The purpose of this study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. Five areas of leadership were examined (a) faculty rank in instructional technology programs, (b) positions on editorial boards of leading instructional technology journals, (c) publications in leading instructional technology journals, (d) presentations at leading conferences in the instructional technology field, and (e) leadership of four leading professional organizations in the field.

The study utilized a quantitative content analysis research method. A code sheet was developed for the five areas of leadership. Research Question 1: What was the leadership status of women in the instructional technology field during the period 2014-2018? The data were analyzed using a One proportion Z test calculator to determine if there were statistically significant differences between the observed proportions. Research Question 2: Was there a significant change in the total percentage of females in each of the four areas addressed in subquestions 1B through 1E between the year 2014 and the year 2018? A Z-test calculator was used to compare the magnitudes of two proportions—the proportion at time point 1 with the proportion at the considered time period 2.

The instructional technology field has been historically dominated by male leaders. However, an analysis of the data revealed that there is a greater percentage of women faculty, editorial board members, authors, and conference presenters. There is also a growing trend of women leading professional organizations. The study provided an insight in to the present status of women's leadership in the field. As a result of the findings of the present study, the general conclusion was that the instructional technology field which was once dominated by male leaders is now dominated by female leaders.

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Chapter 1: Introduction

The instructional technology field was founded primarily by men, and men dominated the field for decades. This began to change in the 1980s-1990s when larger numbers of women became members of the field and began assuming leadership roles (Yoder, 2010). However, it is not fully known the extent to which women have broken the male-dominated barrier into the academic field of instructional technology in higher education. For instance, some studies have documented the prevalence of women's contributions in scholarly activity (e.g., Foley, Keener, & Branch, 1993; Foley, Keener, & Branch, 1994; Foley & Morgan, 2003; Kennedy, Liu, Dawson, & Cavanaugh, 2009; Scharber, Pazurek, & Ouyang, 2017; Yoder, 2010).

Previous studies about women's contribution to the field primarily focused on women's scholarly productivity. Yoder (2010) conducted a study that included four indicators of leadership in order to provide a snapshot of women's leadership status in the field. Since her study, no studies have examined multiple areas of leadership to determine the status of women's leadership in the field. Additionally, given the rapidity with which the field of instructional technology evolves, there is an ongoing need for research to fill gaps in the literature (Robinson, 2014).

The Research Problem

Increasing numbers of women have assumed positions of leadership in higher education and the instructional technology field, but they remain underrepresented in corporate and academic leadership positions. Little scholarly research has documented women's leadership roles and contributions to the instructional technology field.

Background and justification. Butler and Lockee (2016) pointed out that there is

a need for "more extensive explorations of the role of women in the development of educational technology as a discipline" (p. 168). Gender issue has existed in the field for more than 40 years, since Clegg and Simonson's (1975) study of what they termed "the sex variable" in authorship of articles in instructional technology journals. A considerable body of literature exists on the topic of leadership, and gender and leadership. However, Shaw (2012) found that there is insufficient current research in the field of leadership and higher education. Therefore, it is important to continue to investigate gender differences in higher education and the instructional technology field.

Chin (2011) noted that gender equality has improved; however, women are still significantly underrepresented in leadership positions in business and higher education in the United States. More recently, Lyness and Grotto (2018) reported that men still dominated leadership positions in the United States. Although women have made progress toward gaining leadership positions, their progress has been slow. Jones and Palmer (2011) similarly noted, "… the literature and national media continues to explore women's lack of parity in the top levels of corporate and academic management" (p. 189). Furthermore, women are still affected by gender issues in academia and the instructional technology field, which can lead to women deciding to choose careers outside of higher education institutions. Kennedy, Liu, Dawson, and Cavanaugh (2009) noted at the time of their study that fewer women were seeking academic careers at universities. The researchers suggested that male-dominated fields would benefit from women's contributions because this would provide a gender-balanced perspective. More recently, Scharber et al. (2017) noted, "Additional investigations into contributing factors of the gender disparities in publication rates as well as possible correlations between

journal publication rates and employment rates of females and males in ET academic positions are necessary" (p. 22). Yoder (2010) conducted a comprehensive study about women and leadership in the instructional technology field; however, no other comprehensive analysis to assess the current status of women's leadership in the field has been published as of 2018.

A study about gender and women's leadership in instructional technology would be a useful addition to the body of higher education and leadership literature. The study documented the current status of women's leadership, including areas of leadership that were not included in the Yoder (2010) study. Five areas of leadership were examined to document a comprehensive analysis of women's leadership status in the field: (a) faculty rank in instructional technology programs, (b) positions on editorial boards of leading instructional technology journals, (c) publications in leading instructional technology journals, (d) presentations at leading conferences in the instructional technology field, and (e) leadership of four leading professional organizations in the field.

History of Leadership in the Instructional Technology Field

The modern field of instructional technology began in the 1950s, drawing from the fields of audiovisual instruction, programmed instruction, communications, psychology, and instructional design (Saettler, 2004). Scholars in the instructional technology field have noted that leadership of the field has been predominantly male, and a majority of the literature has been authored by males (Butler & Lockee, 2016; Foley et al., 1994; Yoder, 2010). Instructional technology doctoral programs began to admit more female students in the 1970s. By the 1980s, women began to explore leadership opportunities in roles that were typically reserved for men (Richey, 2016), and women

began to emerge as leaders in the field during the 1990s. Barbara Seels and Rita Richey (1994) worked collaboratively with the Association for Educational Communications and Technology (AECT) Definition and Terminology Committee to redefine the field. Their landmark *Instructional Technology: The Definition and Domains of the Field* (1994) was published by AECT, the leading professional organization in the instructional technology field. Seels and Richey's book influenced the direction of the field for more than two decades. During this time, more females than males were enrolled in instructional technology doctoral programs. However, women were underrepresented in leadership roles. As Foley et al. (1994) noted,

> While most instructional technology graduate courses were composed disproportionately of female students, the course instructors were all males. Instructional technology leaders mentioned in the course work were mostly males. The assigned readings in instructional technology were written almost exclusively by men. (p. 55)

The leadership role of women in the instructional technology field increasingly became a subject of interest in the 1990s, and scholars in the field conducted studies to measure the status of women's leadership (Yoder, 2010).

Deficiencies in the evidence. Few studies have examined the status of women's leadership in the field of instructional technology. Previous researchers have conducted content analyses to determine the gender differences between men and women publishing in scholarly journals in the field. For example, Foley, Keener, and Branch (1993) examined women's scholarly contributions to the instructional technology field, calculating the percentage of articles that were written by women and published in

instructional technology journals over a 5-year period from 1988 to 1992. Foley et al. (1993) noted that the purpose of their study was to provide a basis for research on gender issues in the instructional technology field. Foley and Morgan (2003) conducted a study to determine women's contributions to leading journals in the field from 1995 to 2000, and Kennedy et al. (2009) examined seven journals published by the Association for the Advancement of Computing in Education (AACE) to determine the number of publications that were written by women. Yoder (2010) examined four areas of leadership to provide the status of women's leadership in the field at that time. In her comprehensive study, Yoder found that men still dominated leadership roles in the instructional technology field. Robinson (2014) identified a need for more content analyses of educational technology publications to examine the role of women authors in the field.

Audience. The target audience for the study was instructional technology professionals, young scholars, and leaders in the field. The findings of this study provided insight about the leadership status of women in the field of instructional technology. The information gathered from the study may be beneficial to female graduate students who aspire to attain leadership positions in the field, especially in higher education institutions. Additionally, an accurate assessment of the status of women's leadership would be beneficial to leaders in the field who are in charge of recruiting, hiring, and promoting instructional technology professionals.

Purpose of the Study

The purpose of this study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. The study measured gender

differences related to five areas of leadership in the instructional technology field to provide a comprehensive overview of the current leadership status of women in the field. The study documented the prevalence of woman who have contributed in the instructional technology field during the 2014 to 2018 time period based on the following five key areas: faculty rank, editorial board membership, publications in leading journals, leading conference presentations, leaders in the four leading professional organizations.

Definition of Terms

An editorial review board is "A group comprised of scholars and/or professionals in a specific field whose role is to determine the articles that will be selected for publication in a scholarly journal. The presence of an editorial review board designates a journal as a peer reviewed journal" (Yoder, 2010, p. 7).
Include as many terms or variables as needed.

An executive board member for the purpose of this study is defined as a person serving in a leadership role in a professional organization (e.g., Executive Director, President, Treasurer, and Board Members).

"**Instructional technology** is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning" (Seels & Richey, 1994, p. 1). Note that members of the field use the terms "*instructional technology*" and "*educational technology*" interchangeably.

"**Leadership** is a process whereby an individual influences a group of individuals to achieve a common goal" (Northouse, 2015, p. 6).

A professional conference is "A series of presentations, meetings and professional development workshops held on a regular basis, usually annually, sponsored by an organization" (Yoder, 2010, p. 7).

A scholarly journal is "A publication publishing articles that are reviewed and approved by experts in the author's field prior to publication" (Yoder, 2010, p. 8).

Summary

Research studies on gender and the status of women's leadership in the instructional technology field is limited. Although studies have examined gender differences in scholarly productivity and the use of technology, few studies have focused on the status of women's leadership. Kennedy et al. (2009) pointed out that it is important that researchers examine the instructional technology literature published by other professional organizations in the educational technology field to determine how women are represented in the field. Kennedy et al. (2009) also noted that in order to investigate how gender is represented in a discipline, the literature published by its professional community must be examined. Five areas of leadership were examined to provide a comprehensive overview of the current status of women's leadership in the instructional technology field: (a) faculty rank in instructional technology programs, (b) positions on editorial boards of leading instructional technology journals, (c) publications in leading instructional technology journals, (d) presentations at leading conferences in the instructional technology field, and (e) leadership of four leading professional organizations in the field.

Chapter 1 provided an overview of the study related to the status of women's leadership in the instructional technology field. It included the research problem,

background and justification, audience, definitions of key terms, and the purpose for the present study. Chapter 2 presents the literature relating to the study's theoretical framework, the nature of leadership, and gender and leadership issues in instructional technology and related fields.

Chapter 2: Literature Review

Introduction

The purpose of this study was to assess the leadership status of women in the instructional technology field and determine the degree to which it conforms to a discernible trend represented in multiple categories of leadership. The literature review begins with a discussion of social role theory. Chapter 2 summarizes the existing literature regarding leadership and gender leadership as it relates to education and the areas of leadership in the instructional technology field.

Theoretical Perspective

Eagly's (1987) social role theory provides a theoretical perspective to examine the status of women's leadership in the instructional technology field. Eagly (1987) stated that, "gender roles are defined as those shared expectations… that apply to individuals on the basis of their socially identified gender" (p. 12). In addition, Eagly (1987) pointed out that gender stereotypes impact women's social status and causes division of labor between men and women. Historically, women are portrayed as homemakers, and men are typically expected to be the breadwinner in the home. In the work environment, men often occupy positions of higher authority and power, and women occupy positions of lower status (Eagly & Johannesen-Schmidt, 2001; Eagly, Wood, & Diekman, 2000). Eagly and Wood (2012) explained that gender stereotypes also affect how men and women perceive themselves, and how self-perception controls women's behavior, such as seeking positions of leadership. Shared gender stereotypes about women leaders may also create psychological barriers for women who want to become leaders in society (Jackson,

Engstrom, & Emmers-Sommer, 2007). Historically, the instructional technology field has been dominated by male leaders (Yoder, 2010). One explanation is that sex differences impact the leadership status of women in the field. Social role theory includes four important areas— "gender-role expectations, sex differences in social behavior, sex-typed skills and beliefs, and division of labor between sexes" (Eagly, 1987, p. 32)—that should be considered when examining the status of women in the field. Social role theory suggests that women would not be expected to have the same positions as men. In fields such as instructional technology, women are less visible in leadership roles such as, leading professional organizations, publishing in leading journals, and holding tenured faculty ranks.

Leadership

Leadership is complex and has been defined in various ways. Indeed, as Stogdill (1974) noted, "there are almost as many different definitions of leadership as there are persons who have attempted to define the concept" (p. 7). Burns (1978) defined "leadership as inducing followers to act for certain goals that represent the values and the motivations--the wants and needs, the aspiration and expectations of both leaders and followers" (p. 19). Rost (1991) analyzed 221 scholarly definitions of leadership from multiple academic disciplines. Rost (1991) noted that leadership should not be viewed from the perspective of a single academic discipline. Instead, leadership should be an interdisciplinary area of study that permits graduate and undergraduate students the opportunity to practice leadership in a global society. He pointed out that female authors did not become prevalent in the literature on leadership until the 1980s. Rost (1991) defined leadership as a relationship where leaders inspire their followers, both leaders

and followers aim toward the same purpose, and they work toward observable organizational changes that reflect their "mutual purposes" (p. 102).

Northouse (2015) offered a similar definition of leadership: "leadership is a process whereby an individual influence a group of individuals to achieve a common goal" (p. 6). Research on leadership provides insight on ideal leadership for organizations, including higher education institutions. Leadership ideals include moving toward collaborative or team-oriented leadership, building relationships, and providing a shared vision, goal, or purpose. Leadership in organizations and higher education institutions is moving away from the traditional style of hierarchical leadership and moving toward building shared leadership and partnerships with their employees. Building trust and enabling employees to feel competent to make decisions are important aspects of ideal leadership (Astin & Astin, 2000; Bennis, Spreitzer, & Cummings, 2001; Kezar, 1998; Kezar & Kinzle, 2006; Kouzes & Posner, 2003, 2012; Northouse, 2010; Senge, 1990; Shaw, 2012). Effective leadership is required if organizations, including higher education institutions, are to be successful. Leadership is also a critical topic of research in the human sciences (Hogan & Kaiser, 2005).

Gender and leadership. The relationship between gender differences and leadership effectiveness is an important topic in leadership research. Numerous studies have found that the number of women attaining leadership positions has increased (Carli & Eagly, 2001; Drury, 2011; Eagly & Karau, 2002; Eagly, Karau & Makhijani, 1995; Schuh, Hernandez Bark, Van Quaquebeke, Hossiep, Frieg, & Van Dick 2014). However, in comparison to men, women are inadequately represented in high-ranking positions of leadership. Factors such as prejudice, cultural biases, social roles, and gender stereotypes

affect how men and women are perceived in positions of leadership. Ideal leadership characteristics stereotypically are associated with men, even though some scholars have noted that there are very few differences between men's and women's leadership styles (Carli & Eagly, 2001; Eagly & Karau, 2002; Drury, 2011; Kolb, 1999; Ridgeway, 2001; Yukl, 2002). Researchers who published about gender and leadership frequently classified the leadership style of women as collaborative and democratic, while men's leadership style is classified as agentic and autocratic (Duehr & Bono, 2006; Eagly & Johnson, 1990; Kolb, 1999; Northouse, 2010).

Rosser (2003) studied faculty and staff perceptions of leadership effectiveness of 22 deans at a research university. The purpose of the study was to determine how the staff perceived men and women as leaders in the university. A survey was sent to 1950 university employees, and the response rate was 54%. The result showed that female deans were rated more effective than male deans. The female deans were rated more effective because of their ability to set goals and vision, build interpersonal relations with staff, and communicate effectively. The literature on gender and leadership behavior provides conflicting viewpoints about men's and women's leadership. Some scholars have found few or no significant differences between men's and women's leadership, yet it is documented in the literature that men and women are categorized with different leadership behaviors (Altintas, 2010; Rosser 2003).

A point to note about the under-representation of women in leadership positions is that some women have less motivation than men to occupy positions of power (Schuh et al. 2014). Another reason for the lack of women in top leadership positions is known as the "pipeline problem," which refers to the lack of women in the field qualified to obtain

leadership positions (Northouse, 2010). White (2005) suggested that if the number of female undergraduate and graduate students increased, there would be more qualified female applicants to be recruited for leadership positions within the academic ranks. However, Schweitzer, Ng, Lyons, and Kuron (2011) argued that the pipeline hypothesis is not adequate to explain the career gender gap. Schweitzer et al. (2011) explored the career pipeline to identify the gender differences and pre-career expectations between men and women entering the workforce. The researchers found that some women, particularly those in male-dominated fields, had lower initial pre-career expectations for salary and promotions. Among the factors that impact gender differences relating to pre-career expectations are self-confidence, self-perceptions, and gender stereotypes. In addition, women often chose careers that make them feel more valued as they seek work/life balance. If women continue to have lower career expectations, the gender gap will continue to persist (Schweitzer et al., 2011).

The number of female graduates has increased significantly; however, women are still under-represented in senior-professor ranks. For the past 30 years, females have earned more than 50% of the bachelor's degrees and, since 1991, they have also earned more than 50% of master's degrees. As of 2016, female doctoral students earned more than 50% of all doctoral degrees awarded at higher education institutions in the United States (Johnson, 2016). This suggests that there are qualified women to fill leadership positions within higher education institutions. Despite the academic achievements of women, there is still job segregation, and women are noticeably over-represented in part-time and adjunct positions.

Gender stereotypes and their impact on women's leadership. Powell and Greenhaus (2010) noted that "gender roles and stereotypes are instilled during childhood by gender socialization processes and reinforced during adulthood by expectancy confirmation processes" (p. 1012). Therefore, gender socialization influences men's and women's career path (Schweitzer et al., 2011). Additionally, women's performance in the work environment is linked to previous life experiences and stereotypical gender expectations (Jones & Palmer, 2011).

In the 1970s, Schein examined the relationship between sex role stereotypes and required management skills. She found that successful management characteristics were often associated with men. In addition, both male and female managers had negative attitudes about women in leadership positions. Sex role stereotypes affect women's ability to obtain promotions and positions of leadership within organizations. The inadequate number of women represented in leadership can be attributed to gender stereotype and the perception that women are less qualified than men for positions of leadership (Schein 1973, 1975). Consequently, ideal leadership characteristics are typically defined by agentic behaviors. These leadership traits are generally associated with men. Stereotypically, women are expected to display communal behaviors in the workplace and are sometimes evaluated negatively if they display agentic behaviors that are outside of the expected social norm for women (Eagly, 1987; Eagly & Johannesen-Schmidt, 2001).

Gender inequality in society still affects women's ability to obtain leadership positions. Dobele, Rundle-Thiele, and Kopandis (2014) found that gender inequality continues to exist globally and is an important issue in higher education. Although the

number of women obtaining higher education degrees and employment has increased, women are under-represented in senior executive leadership positions. Women are also expected to behave according to their gender role, such as being collaborative and relationship oriented, and men are supposed to be direct and task-oriented. Gender stereotypes affect women's performance evaluations in the workplace. Men are often promoted for top executive leadership positions over women because leadership traits are associated with masculine characteristics (Carli & Eagly, 2001; Eagly & Johannesen-Schmidt, 2001; Heilman, 2001; Hymowitz & Schellhardt, 1986; Jones & Palmer, 2011; Kolb, 1999; Paustian-Underdahl, Walker & Woehr, 2014; Prime, Carter & Welbourne, 2009; Yukl, 2002).

Kanter (1977) conducted a seminal study about men and women in the corporation. She noted that the general perception in corporations was that males are better leaders than females. It was observed that men and women did not prefer to work for a female boss, which was attributed to the stereotypic cultural belief that "…women are too rigid and controlling to make good bosses anyway" (p. 197). Denmark (1993) found that there are still gender stereotype beliefs that males are better leaders than women. The result from the study showed that stereotypical beliefs about women's leadership were often the perception of other women in the same organization. Jackson et al. (2007) found that gender stereotypes influenced women's ability to attain leadership positions. The number of women in leadership has increased; however, women do not always have the same level of leadership responsibilities as men in their organizations because women are perceived to have less leadership ability than do men (Johnson, Murphy, Zewdie, & Reichard, 2008). Gender role stereotypes affect women in the

workplace regarding how they are evaluated and perceived by colleagues. Women are in an awkward position in the workplace because if they want to become leaders, they must demonstrate their ability to lead without seeming too aggressive. Displaying agentic behaviors in the workplace can have a negative impact on a woman's performance evaluation by her colleagues and supervisor (Eagly & Johannesen-Schmidt, 2001; Heilman, 2001; Johnson et al., 2008).

Glass ceiling. There are no significant differences between men and women in terms of leadership effectiveness (Eagly & Karau, 2002; Prime et al., 2009). However, some barriers prevent women from accessing high-level leadership positions. One such barrier is known as the glass ceiling. The glass ceiling represents prejudice and discrimination against women; women can gain access to lower and middle management positions but it is difficult for them to access top executive management positions in corporations (Carli & Eagly, 2001; Eagly et al., 1995; Northouse, 2010; Yukl, 2002). The glass ceiling is also present within higher education institutions. Female faculty are disproportionately classified at the lower ranks, and they are compensated at lower rates than are male faculty (Dobele et al., 2014; Monroe & Chiu, 2010; Winslow & Davis, 2016). In 2014, 31% of women faculty held full-time professor positions at postsecondary institutions (Johnson, 2016).

Labyrinth. The number of women in leadership positions in the workplace has increased, yet they are still under-represented (Eagly & Johannesen-Schmidt, 2001; Eagly & Karau, 2002; Hymowitz & Schellhardt, 1986; Schuh et al. 2014). Gender stereotypes, differences, and prejudices continue to impact women in the workplace (Northouse, 2010). Eagly and Carli (2007) identified the current obstacles facing women in the

workplace as the labyrinth, a complex path that females go through to gain access to leadership positions. Some of the difficulties that women encounter in the labyrinth include prejudice toward female leadership and resistance toward female leaders because they are perceived to be less competent than males. Women are often burdened by family responsibilities that can impact their career.

Gender, Leadership, and Instructional Technology

Leaders who made significant contributions to the educational technology field are highlighted in the *Education Media and Technology Yearbook.* According to Dousay (2017a), the individuals who are profiled as leaders in the field are chosen based on the following criteria: they "held prominent offices, composed seminal works, and made significant contributions that influence the contemporary vision of the field," (p. 171). As of 2017, the list of leaders who made significant contributions to the field was dominated by men; of the 53 leaders profiled in the yearbook, only 7 are women (See Appendix A).

Gender Gap and Technology

Concern about a gender gap in the use of technology has been a topic of study for decades. Canada and Brusca (1991) reported a technological gender gap between male and female students in educational technology. The study investigated the technological gap among students at multiple education levels: elementary, middle, high, and college. The study indicated that male students dominated in their attitudes, skills, and behavior toward using technology in schools. One reason for the technological gender gap among the students is that resources were not equally distributed among male and female students from different economic backgrounds. Canada and Brusca (1991) also noted schools should address gender inequities and the technological gap in order to prepare

female students to manage difficulties with technology in the future. Schools in the United States have been promoting STEM (science, technology, engineering, and mathematics) education in their curriculum to prepare students for careers in STEM-related fields (Brown, Brown, Reardon, & Merrill, 2011).

Drury (2016) noted that, for decades, efforts have been made to promote career interest in STEM fields. Special efforts have been made such as creating websites and organizations geared toward promoting girls' and women's interest in STEM careers. However, several factors impact a girl's career decision, including gender role socialization, socioeconomic status, parents' level of education, and job expectations from her parents, and these factors have a significant impact on career choices (Togila, 2013).

Frehill and McGrath Cohoon (2015) noted that job sex segregation and "gendered patterning of access to education" impacts the representation and status of women in information technology (p. 237). The Title IX Educational Amendment of 1972 was passed in the United States to end sex-based discrimination in education. More than 40 years later, "the gender divide in career and technical education (CTE) has narrowed barely at all" (Toglia, 2013, p. 14). Fewer female students are majoring in STEM programs than are male students (Monroe & Chiu, 2010; Toglia, 2013; Winslow & Davis, 2016). The technology gender gap is not only present in schools, it is also prevalent in the workplace. Women are under-represented in STEM fields in the United States. Technology fields such as information technology are dominated by men. It has also been observed that the path to leadership in technology fields is more complicated for women than men who want to become leaders. Individuals aspiring to be leaders in STEM must define their own path to leadership (Adams & Weiss, 2011; Drury 2011). In

higher education STEM departments in the United States, there is a low representation of female faculty in leadership and upper faculty ranks, even though women are awarded over 50% of doctoral degrees in STEM-related fields (McClelland & Holland, 2014). Closing the gender gap and changing the culture in academic STEM departments begins with the academic leadership such as the department chair or college dean. It is vital that academic STEM department leadership examine their current gender diversity status and commit to improving the experience of female faculty by focusing on issues and implementing strategies and policies to provide opportunities for female faculty (Su, Johnson, & Bozeman 2015). Organizations committed to improving gender diversity and closing the gender gap in information technology can implement several strategies, such as by recruiting diverse staff, providing mentorship and sponsorship programs for women, and educating staff about diversity. This will create work environments that support gender equity. Additionally, information technology organizations should promote professional development, professional networking opportunities, flexible work schedules, and promote qualified females into positions that are traditionally male dominated (Drury, 2016).

Women in Higher Education

Women began participating in higher education in the 1800s. In 1837, Oberlin College in Ohio became the first co-educational college in the United States. The first women's college in the United States was Georgia Female College at Macon. Inspired by female seminaries of the 1820s, it was chartered in 1836 and opened in its doors in 1839. Other institutions began to offer co-education; in 1855 the University of Iowa began admitting female students (Rudolph, 1990). However, there was resistance to admitting

female students (Eisenmann, 2016; Rudolph, 1990). One rationale for resisting coeducation is that it was believed that female students would have a negative impact on male students, robbing men of their masculinity, Additionally, some argued that women did not need to become academics because their place was in the home (Rudolph, 1990). Despite the resistance, women gradually enrolled in co-educational institutions, which began the change in the demography of higher education institutions in the United States. By the 1980s, more than half of college students were female (Allan, 2011; Eisenmann, 2016). Policies such as the Equal Pay Act and the Title IX amendment have also contributed to women's access to higher education (Allan, 2011).

Current status of women in universities in the United States. For women to gain access to top academic leadership positions such as president of the university, administrator, and senior faculty rank, gender biases and negative perceptions of women's ability to lead must be eliminated (Bornstein, 2008). The percentage of women leading higher education institutions has increased over several decades. However, there should be more growth in the number of women obtaining positions of leadership (Drury, 2011). According to a Catalyst (2017) report, the percentage of female college presidents increased from 10% in 1986 to 30% in 2016. Women are most likely to be presidents of 2-year institutions; as of 2015 approximately 33% of 2-year college presidents are females. In 2015, women were presidents of approximately 23% of institutions offering bachelor's and master's degrees. During the 2013-2014 academic year, 48% of newly selected provosts were women, and 42% of newly selected deans were women (Catalyst, 2015).

Areas of Leadership

In order to examine the current status of women's leadership in the field of instructional technology, it is important to determine how leaders are identified in the field. Charan (2008) noted that traits of a potential leader include the ability to determine procedures, analyze data, make informed decisions, and the desire to learn and grow. Therefore, faculty who participate in leadership activities, such as publishing in scholarly journals, authoring textbooks, presenting at leading professional conferences, and serving as officers in professional organizations, have the opportunity to become potential leaders in the field. Hyatt and Williams (2011) identified core competencies for doctoral leadership faculty in the 21st century. A research role competency for doctoral faculty includes contribution to publications and presentations. The researcher for the study is interested in examining doctoral faculty contributions to instructional technology scholarly journals and presentations. Therefore, the present study measured five areas of instructional technology leadership. They are discussed in the following subsections.

Faculty rank. Faculty rank can be divided into four major categories: (full) professor, associate professor, assistant professor, and other. The "other" categories include faculty titles such as instructor and lecturer (Perna, 2005). Several studies have indicated that female faculty are under-represented at the top academic ranks, although there is a higher percentage of females at the lower academic ranks (Allan, 2011; Dobele et al., 2014; Hult, Callister, & Sullivan, 2005; Jacobs, 1996; Kulis, 1997; Monroe & Chiu, 2010; Perna, 2005). A recent report found that men outranked women in U. S. faculty positions. Women trend in the lower ranks of faculty positions: approximately 22.1% of women were in nontenure-track positions. Men represented 16.8% of faculty in non-tenure track positions. Women represented 51.5% of assistant professors; at the

associate professor rank, they represent 44.9%. At the professor rank, women represented 32.4% (Catalyst, 2017).

Gender discrimination is still present in academia, and it affects the status of women's leadership. Monroe and Chiu (2010) pointed out that fewer female graduate students are choosing to work in academia compared to the number of qualified females in the job market. One reason is that women earn less than men, and they are employed at the lower faculty ranks. The findings from the Yoder (2010) study indicated that, in the programs she examined, 72% of full professors are men, and 82% of women professors were ranked as instructors. Additionally, men outnumbered women at the assistant and associate professor ranks as well. Yoder's (2010) study indicated that approximately 55% of assistant professors were men, and approximately 57% of associate professors were men. Though there are more female students earning degrees and preparing for leadership positions, they are still facing barriers in obtaining upper level faculty positions. Women are still under-represented in top academic ranks. As of 2014, men faculty held a majority of tenured positions (Johnson, 2016; Monroe & Chiu, 2010). The number of women in faculty positions in the United States has increased over the decades, but progress has been slow (Allan, 2011).

Editorial board membership of women. The opportunity to serve on journal editorial boards is often reserved for scholars who are leaders in their field. Editorial board members serve an essential role, because they are responsible for selecting articles that will be published in the scholarly and peer-reviewed journals. In addition, editorial board member's decision to publish or reject articles could impact the careers advancement of other scholars in the field (Bedeian, VanFleet, & Hyman, 2007). Yoder

(2010) examined the editorial boards of five of the leading instructional technology journals. She found that *Educational Technology Research & Development* (*ETR&D*) and *Educational Researcher* (*ER*) each had equal numbers of men and women serving on the editorial board, while approximately 79% of the *Performance Improvement Quarterly* (*PIQ*) editorial board members were men, and 71% of the *Journal of Educational Multimedia & Hypermedia* (*JEMH*) editorial board were men. However, Yoder (2010) found that a majority—just over 53%--of the editorial board members of the *Journal of Research in Technology Education* (*JRTE*) were women. This study investigated the number of women serving on the editorial boards for six leading journals, *ETR&D JEMH, JRTE, PIQ, Quarterly Review of Distance Education* (*QRDE*), and *TechTrends*.

Scholarly productivity. Scholarly productivity is important for professional advancement in academia. Publishing in research journals is used as a standard to evaluate faculty (Helsi & Lee, 2011; Holcomb, Bray & Dorr, 2003; Rama, Raghunandan, Logan, & Barkman, 1997; Wilson, 2012). Additionally, scholarly publication records are used to determine faculty promotions, salaries, and eligibility for research grants (Helsi & Lee, 2011). The impact that gender has on scholarly productivity has been well documented in the literature, and it is evident that women are producing less scholarly research than are men (Bruer, 1984; Cole & Zuckerman, 1984; Creamer & Engstrom, 1996; Gonzalez Ramos, Fernandez Palacin & Munoz Marquez, 2015; Keith, Layne, Babchuck & Johnson, 2002; Padilla-Gonzalez, Metcalfe, Galaz-Fontes, Fisher & Snee, 2011; Wilson, 2012).

Researchers have identified several causes of for the productivity gap. These include personal characteristics, differences in workload, nontenured faculty rank, access

to resources and research assistants, childbirth, and marriage and family responsibilities. Another consideration is that women spend more time on their research than men, which results in higher quality research papers instead of a larger quantity of research publications (Fox, 2005; Fox, Fonseca, & Bao, 2011; Helsi & Lee, 2011; Kyvik & Teigen, 1996; Schneider, 1998; Stack, 2004; Symonds, Gemmell, Braisher, Gorringe, & Elgar, 2006; Wilson, 2012; Xie & Shauman, 1998). Cole and Zuckerman (1984) used the term "productivity puzzle" to refer to the various patterns that cause the gender productivity gap. Breuning and Sanders (2007) found that one reason for the under-representation of women's authorship in political science journals is that women are less likely to publish their work in the leading journals in the field.

Yoder (2010) examined four leading instructional technology journals to determine the percentage of men and women publishing scholarly articles in the field: *ETR&D*, *PIQ*, *ET*, and *QRDE*. In 2007, men authored approximately 66% of the journal articles in *ETR&D* and *PIQ*, 56% in ET, and 50% in *QRDE*. Yoder (2010) noted statistically significant differences between the number of male and female authors that published in *ETR&D* and *PIQ*.

Scharber et al. (2017) conducted a study to determine the female publishing rate in six educational technology peer-reviewed journals from 2004 to 2015. The study found that women published less than 50% of the articles written during that time. Women published more than men in two of the journals, on topics related to P-12 and secondary education. Table 1 lists Scharber et al.'s six peer-reviewed journals, the percentage of articles written individually by men, and women, and the percentage of articles written collaboratively led by men and women.

Table 1
Women's Publication Patterns in Six Leading Journals

Peer Reviewed Journals	% Female	% Male	% Multi-author (female lead)	% Multi-author (male lead)
British Journal of Educational Technology (BJET)	10	13	36	41
Computers & Education(C&E)	7	11	34	48
Educational Technology Research & Development (ETR&D)	8	15	34	43
Journal of Learning Sciences (JLS)	18	18	30	35
Journal of Research on Technology in Education (JRTE)	12	9	54	26
Journal of Technology and Teacher Education (JTATE)	14	10	54	22

Data adapted from "Illuminating the (in)visibility of female scholars: A gendered analysis of publishing rates within educational technology journals from 2004 to 2015," by Scharber, C., Pazurek, A., & Ouyang, F. (2017), Gender and Education, 1-29.

Women's contribution to the Handbook of Distance Education. There is scant research that addresses the contribution women have made to textbooks in instructional technology and related fields such as distance education. A study conducted by Scharber et al. (2017) examined the third and fourth editions of the *Handbook of Research on Educational Communications and Technology* (HRECT*)* to determine gender differences in publishing in the field. They found that both handbooks had four editors, of whom the first three were men. Women authored fewer single-author chapters, in the third edition of HRECT. The third edition of the handbook had 56 chapters, 16 of the chapters were single-authored. Fourteen of the chapters were authored by men, and two chapters were authored by women. Twenty-three of the multiple-authored chapters were first-authored by men, and 17 were first-authored by women. The fourth edition of HRECT had 74 chapters. Of the 16 single-author chapters, 12 were written by men, and four were written

by women. There were 58 multi-author chapters; 33 were first-authored by men, and 25 were first-authored by women.

Leaders in professional organizations. One pathway to academic leadership, participation in professional organizations, provides members the opportunity to collaborate with other professionals in their field. Successful networking is important for career advancement. Alumni associations, previous jobs, and professional organizations are great places to seek information about job opportunities (Johnson & Spizman 2007). To serve as leaders in a professional organization, women must first choose to become active members of the organization. Twale and Shannon (1996) conducted a study to determine how gender impacted positions of leadership in professional associations. The difference between the satisfaction level of men and women regarding professional activities was also examined. Twale and Shannon (1996) observed that, although women were new to the educational leadership profession, there were no significant differences between the number of men and women in professional association leadership, and that women reported a slightly higher satisfaction level when participating in professional associations activities.

Walsh and Borkoski (2006) examined factors that affected women's decisions to participate in professional associations. They found that professional schedule obligations such as work meetings and schedule restrictions prevented some women from participating in a professional association. However, the most significant factor that influenced women's decision to participate in a professional association was the costly membership dues. Bhattacharjee, Herriges, and King (2007) found that the status of women in environmental economics was determined based on three areas of leadership:

the number of women in academia in the United States and Canada, the number of publications by females in the top journal in the field (*Journal of Environment Economics and Management*), and the number of women participating in professional organizations in the field, such as the Association of Environmental and Resource Economists (AERE). The study found an "upward trend" in the representation of women in leadership positions on the AERE professional association board.

Raskin, Haar, and Robicheau (2010) noted that professional networking is very important for school leaders. Men tended to be more successful than women at building and maintaining professional relationships. This is a disadvantage for female leaders because professional networks provide resources, mentors, social support, friendships, and career advancement. Raskin et al. (2010) also noted that, "gender bias also plays a role in women's limited access or exclusion from professional networking" (p. 159). Scharber et al. (2017) found that the education technology field is in need of diverse viewpoints, and there is not enough visibility of women's scholarly contribution in the field. They argued that female doctoral candidates would benefit if they had women faculty as mentors and role models while they developed their scholarly identity. Scharber et al. (2017) noted that academic journals should recruit more women to serve in leadership positions such as editors, because this would increase the presence of women authorship of scholarly articles and provide more diverse perspectives in the field.

Professional conference proceedings. Participation in professional organizations provides members opportunities to discuss their research at professional conferences. The opportunity to present research at professional conferences and annual meetings is the

main benefit of being a member of a professional organization (Young & Boling, 2004). Wiest, Abernathy, Obenchain, and Major (2006) investigated speaking times of men and women who presented at the 2000 annual American Educational Research Association (AERA) conference. Results from the study indicated males had longer speaking times than did females. One reason is that some chairs did not closely monitor the speaking times. It was observed that women spoke less when the sessions were less structured. Wiest et al. (2006) noted that an established guideline for participants conduct would assist in promoting gender equity and provide structure for the annual meetings. Wiest et al. (2006) further noted that the increased participation of women at the AERA conference could be credited to special interest groups that encouraged diversity at the annual meetings. Some of the sessions were reserved for women presenters in order to promote diversity. They noted that female conference speakers are appreciated, which encourages women to present more at academic conferences. Yoder (2010) examined the percentage of men and women who presented at the annual conferences of five leading associations: Association for Educational Communications and Technology (AECT), American Educational Research Association (AERA), International Society for Performance Improvement (ISPI), International Society for Technology in Education (ISTE), and Association of Computing in Education (AACE).

Yoder (2010) found that women presented more than men at four of the leading professional conferences. In 2007, 51.15% of the conference presenters at AECT were women, AERA had 52.04% women presenters, ISTE had 58.76%, and AACE had 55.76%. The ISPI conference had 47.15% women presenters. Yoder (2010) reported there were statistically significant differences between the number of women and men

presenting at ISTE and AACE conferences. Gruberg (2008) documented women's participation in the annual American Political Science Association (APSA) annual meeting for over 35 years. The female participants were categorized into three groups: chairperson, papergivers, and discussants. From 1971 to 2007 there was increased participation by women at the APSA annual meetings. In 1971, 7.8% of women chaired sessions; 40 years later, it was 29.7%. The percentage of women who were papergivers increased from 7.8% in 1971 to 33.9% in 2007. The percentage of women discussants increased from 7.1% in 1971 to 29.8% in 2007.

One explanation for the increase in representation of women at the APSA annual meeting is that, when women are in charge of their divisions and panels, more women are likely to be selected to be papergivers and discussants. Breuning and Sanders (2007) investigated the participation of women in the APSA and the International Studies Association (ISA). The findings from the study indicate female participation in their association annual meetings is more likely to increase when other women are active and in charge of their divisions. The presence of women leading and organizing conference divisions provides more opportunities for women to be selected to contribute to their association annual meetings. The study found that the percentage of women who participated in the ISA annual meeting was higher than the percentage of women who took part in the ASPA annual meeting.

Casadevall and Handelsman (2014) conducted research to examine the hypothesis "that the gender of conveners at scientific meetings influenced the gender distribution of invited speakers" (p. 1). Data for the study were gathered from the American Society for Microbiology general meeting and the Interscience Conference on Antimicrobial Agents

and Chemotherapy. Casadevall and Handelsman (2014) found there was a significant increase in the number of females speaking at the conferences when females were in charge of the planning committees. One explanation for the growing number of invited speakers is that female conveners also spoke at the conference. Female conveners may also consider gender as a factor when inviting speakers to the conference and may make an effort to invite other females to speak. In addition, it was observed that women are willing to accept invitations to speak from other women. It was noted that men may not readily accept invitation from women.

More recently, Sardelis and Drew (2016) examined whether there was a relationship between the number of women organizing conferences and the number of female participants at the annual symposia. The data were collected from the Society of Conservation Biology (SCB) and the American Society of Ichthyologists and Herpetologists (ASIH). Sardelis and Drew (2016) reviewed the number of female conference organizers at SCB from 1999 to 2015, and ASIH from 2005 to 2015. Results from the study supported the Gruberg (2008) and Casadevall and Handelsman (2014) findings that there is a correlation between the presence of female conveners at annual meetings and the increased number of invited female speakers. During the period from 1999 to 2015, 36.4% of the SCB symposia organizers were women, and 31.7% of the speakers were women. At the ASIH symposia from 2005 to 2015, 19.1% of the symposia organizers where female and 28% of the speakers were female.

Areas of Leadership in Instructional Technology

The literature on gender and leadership within the instructional technology field is limited. A few content analyses have assessed women's contributions to journals in the

instructional technology field. Hannafin (1991) focused on the scholarly productivity of instructional technology faculty at 38 universities granting doctoral degrees in the United States. Findings from the study indicated instructional technology professors at the full rank published more articles than professors at the lower ranks. In addition, program affiliation influenced faculty productivity level. Some academic programs had different publication requirements for faculty, which affected the number of articles published by professors at different ranks. The 22 instructional technology faculty who participated in the study also ranked the five leading research journals and the five leading applied journals in the field.

Foley et al. (1993) examined the number of women in the field of instructional technology, the number of publications, and the topic of the articles in the publications. The content analysis of the 11 leading journals was limited to a 5-year period from 1988 to 1992. Sixteen colleges and universities participated in the study to provide data on the percentage of women in graduate programs in the United States. At the time of the study, the average percentage of female graduate students enrolled in instructional technology programs was 60.1% (Foley et al., 1993).

As noted by Foley et al. (1993), the top three topics women in the field wrote about were computer use, design and development, and training. The percentages of articles published by women within each instructional technology journal varied yearly. Foley et al. (1993) did not identify a consistent pattern within each journal; therefore, no conclusions were drawn about women's publication status in the leading journals at the time of their study. Foley et al. (1993) literature suggested that men have a more technical orientation than do women, however, the results from the study indicated

women primarily wrote about technical topics in the field. Foley et al. (1993) noted a "disappointing number of articles being written by women in the instructional technology journals with no sign of a pattern of change or improvement" (p. 9). Further research would be necessary to provide more insight about women's contribution to the field. Foley et al. (1994) examined women's contributions to instructional technology journals over a 5-year period from 1988 to 1992. The purpose of the study was to determine if research on gender issues was necessary in the instructional technology field, as suggested by other researchers. Similar to the findings of Foley et al. (1993), the results indicated no distinct pattern for the percentage of articles published by women. Therefore, no conclusions were drawn to determine women's publication status in the leading journals. Foley et al. (1994) recommended future research should investigate gender issues in the instructional technology field.

Foley and Morgan (2003) conducted a content analysis of journal articles published from 1995 to 2000. The purpose of the study was to respond to Molenda's call to "determine where knowledge gaps are" in the instructional technology field (p. 21). Foley and Morgan (2003) examined how societal forces such as gender influenced the instructional technology field. In addition, they examined how women's perspectives are integrated in the instructional technology field. Foley and Morgan (2003) noted that males in the field wrote the majority of the literature used by instructional design students. The study results indicated women continued to focus on technical topics such as computers and technology. Topics included the Internet, networking, telecommunications, hypermedia, professional development, and training. "The women in this study rarely cited instructional systems design, or research paradigms,

methodology, or theory" (Foley et al., 2003, p. 26). In addition, Foley et al. (2003) noted that gender issues should be a concern for women in the instructional technology field; however, few women researchers focus on gender.

Kim and Lee (2006) examined the professional organizations recommended to new faculty and graduate students in the instructional design and technology field. The 105 faculty participants rated the publications in order of importance to new members in the field. The study classified the journals into four main groups: "distance education, human performance, instructional design and development and instructional technology" (p. 11). Kim and Lee (2006) identified current leading professional organizations at the time of the study.

Table 2
Five Most Recommended Instructional Technology Organizations

Professional organizations	%
Association for Educational Communications & Technology	82
American Educational Research Association	63
Association for the Advancement of Computing in Education	35
International Society for Performance Improvement	23
International Society for Technology in Education	16

Note. Adapted from "Professional Organizations and Publications in ISD&T Recommended to New Professionals by Faculty Members," by M. Kim and Y. Lee, 2006, *Tech Trends*, *50*(4), 11-15.

Yoder (2010) conducted a comprehensive study to determine the status of women and leadership in the instructional technology field. Her study included four areas of leadership in the instructional technology field: faculty rank in instructional technology programs, positions on editorial boards of leading instructional technology journals, publications in leading instructional technology journals, and presentations at leading conferences in the instructional technology field. Yoder (2010) recommended that a replication of her study be done after several years to determine the potential changes in the status of women's leadership in instructional technology.

Kennedy et al. (2009) examined 702 articles published in seven AACE journals from 2004 to 2007. They reported that male first authors were, to a statistically significant degree, more numerous than were women first authors. More recently, Scharber et al. (2017) analyzed the publication rates of females in six leading peer-reviewed educational technology journals in the years 2004 to 2015. Scharber et al. (2017) noted that women authored fewer peer-reviewed articles than did men.

Research Questions

The purpose of this study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. The primary research question for the study was "What is the status of women's leadership in the instructional technology field during the period 2014-2018?" The study examined five areas of leadership in the instructional technology field in order to draw conclusions about the current status of women in the field. The study was guided by the following questions and subquestions:

1. What was the leadership status of women in the instructional technology field during the period 2014-2018?

A. What was the total percentage of female faculty who were assistant, associate, full professor, instructor/lecturer, or some other designation in doctoral instructional technology programs in the United States during the period 2014-2018?

B. What was the total percentage of female members who served on journal editorial boards for the leading six academic instructional technology journals during the considered 5 years (2014 to 2018)?

C. What was the total percentage of journal articles published in the leading academic journals in the field of instructional technology that was written by women during the considered 5 years (2014 to 2018), including their level of authorship?

D. What was the total percentage of female executive board members in the four leading professional organizations in the field of instructional technology during the considered 5 years (2014 to 2018)?

E. What was the total percentage of female presenters presenting at each of the two leading conferences in the field of instructional technology (2014 to 2018)?

2. Was there a significant change in the total percentage of females in each of the four areas addressed in subquestions 1B through 1E between the year 2014 and the year 2018?

Summary

Chapter 2 provided the theoretical perspective for the study and summarized literature relating to the topic of gender, leadership, and instructional technology. Women are still under-represented in higher education leadership positions, and gender stereotypes make it difficult for women to obtain high-level leadership careers. Additionally, women still trail men in scholarly productivity and academic rank. However, women are presenting in increasing numbers at professional conferences. A previous comprehensive study conducted by Yoder (2010) examined four areas of instructional technology leadership to determine the status of women in the field: faculty rank, journal editorial boards, publications in leading journals, and presentations at conferences.

The study examined the five areas of leadership identified in the Yoder study and include one new area of focus: women's leadership in leading professional organizations in the field. Since Yoder's (2010) study, no comprehensive study of gender, leadership and the instructional technology field has been documented. Richey (2016) noted that women still face barriers in higher education; therefore, investigating gender and leadership is still a relevant topic. At the time of the Yoder (2010) study, men dominated the leadership of the instructional technology field. Another comprehensive study was conducted to assess the leadership status of women to determine if men still dominated leadership in the field. Additionally, the research added to the existing literature regarding women leadership and instructional technology. Chapter 3 presents the methodology employed for the study.

Chapter 3: Methodology

Introduction

The purpose of this study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. Chapter 3 describes the methodology that was carried out for the study. It begins with a definition of a content analysis, then describes the procedures for collecting and analyzing data for the five areas of instructional technology leadership. Chapter 3 concludes with a summary.

Research Design

This study examined five areas of leadership in the instructional technology field to assess the leadership status of women in the academic field of instructional technology in the United States. The study used the content analysis technique to make inferences about the status of women's leadership in the field.

There are several definitions for content analysis (White & Marsh, 2006). Holsti (1969) stated that "content analysis is any technique for making inferences by objectively and systematically identifying specified characteristics of messages" (p. 14). More recently, Krippendorff (2013) stated that "content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (p. 24). Masood (2004b) identified a nine-step process to guide content analysis research: determining the purpose for the research, identifying research questions, determining the type of content analysis, preparing for the content analysis, coding the documents, categorizing and selecting the data, discovering information, reflecting on the information discovered and, reporting the findings of the analysis.

Content analysis has been used in numerous research studies in the instructional

technology field to identify trends and draw conclusions about the field. Foley et al. (1993, 1994) conducted content analyses to determine women's contribution to leading journal publications. Foley and Morgan (2003) conducted another study to determine women's contribution to the leading journals. Masood (2004a) analyzed educational technology literature published in one of the leading journals in the field, Educational Technology Research and Development, from 1993 to 2002. The study identified trends in the instructional technology field that were growing, evolving, or fading. Kennedy et al. (2009) examined women's publication rate in the AACE journals. Robinson (2014) conducted a content analysis to determine similarity and differences between six instructional technology journals published in six nations. Data for the study was collected from journals, conference proceedings, universities' websites. The information was analyzed in order to make inferences about the status of women's leadership in the field of instructional technology.

Falduto (2008) identified three main advantages of using the content analysis research method. First, the method is unobtrusive (utilizing documents instead of human subjects increases the validity of the data, as a human participant could influence the result of the study). Second, the data can be analyzed multiple times to remove possible errors. Last, the documents can be reproduced and studied over time. The dependent variable—gender—and independent variables faculty rank, editorial board leadership, journal publications, leadership in professional organizations, and conference presentations—were measured. The number and percentage for each of the five areas of instructional technology leadership were calculated.

An important aspect of a content analysis is the researcher's ability to objectively

identify the message from data source(s) (Holsti, 1969). Neuendorf (2011) identified six areas of concern that may cause issues for researchers utilizing the content analysis method: “establishment of a theoretical framework, population definition, sampling, validity, reliability and reportage” (p. 286). Neuendorf (2011) noted that a content analysis should be conducted based on a theoretical framework. Although a majority of studies about sex and gender incorporate a theoretical framework other types of studies using this method sometimes exclude theoretical framework. Another significant issue with the content analysis method is reportage; Neuendorf (2011) pointed out that some researchers do not keep accurate records of their data analysis.

The research design, procedures, and the data analysis steps are described in this chapter. A coding sheet was used to record data for each area of leadership in the study; the information was then be sorted and analyzed to determine the status of women's leadership in the field. The findings of the study were reported in Chapter 4. The following subsections include the research questions and the procedures for collecting the data for each indicator of instructional technology leadership.

Data Sources

The data for the study was collected from instructional technology doctoral program websites, instructional technology journals, instructional technology conference proceedings, and instructional technology professional organizations’ websites. The researcher reviewed the *Educational Media and Technology Year Book* (2017) and the AECT Curricula Data of Degree Programs (directory of current programs in the United States) website and compiled a list of university doctoral programs. The universities included in the study are shown in Appendix B.

The second indicator of leadership focused on women's membership on the editorial boards of six leading journals: *Educational Technology Research & Development*, *Journal of Educational Multimedia and Hypermedia*, *Journal of Research in Technology Education*, *Performance Improvement Quarterly*, *Quarterly Review of Distance Education*, and *TechTrends*. The selected journals for the study were identified by Kim and Lee (2006) as some of those most recommended to new faculty and students in the field. Kim and Lee (2006) identified the leading journals in the field based on the area of professional interest in the field, which include learning and instruction, media and technology, training and performance, and distance education. The following journals were chosen to represent four areas of professional interest in the instructional technology field: (a) *Educational Technology Research & Development*: learning and instruction, (b) *Journal of Educational Multimedia and Hypermedia*: media and technology, (c) *Journal of Research in Technology Education*: media and technology, (d) *Performance Improvement Quarterly*: training and development, (e) *Quarterly Review of Distance Education*: distance education, and (f) *TechTrends*: media and technology.

Data was collected from the professional organization's websites about the organization leaders. Each organization's executive director office was contacted by the researcher via email or telephone to identify the names of board members who served during the 5-year period 2014-2018.

Kim and Lee (2006) and Yoder (2010) identified some of the leading organizations in the field that host an annual conference. The conferences identified were: Association for Educational Communications and Technology (AECT International Convention), Association for the Advancement of Computing in Education (Society for

Information Technology and Teacher Education Conference), International Society for Performance Improvement (The Performance Improvement Conference), and International Society for Technology in Education (ISTE Conference).

Instruments and Data Collection Procedures

To answer the research questions and subquestions the researcher developed code sheets for each leadership area: (a) Faculty in Instructional Technology Doctoral Programs, (b) Editorial Board Members (2014- 2018), (c) Journal Publications (2014-2018), (d) Leaders in Professional Organization (2014-2018), and (e) Conference Proceeding Papers (2014-2018). The code sheets were used to collect the prevalence of gender for each of the five areas of leadership. The code sheets are provided in Appendix C.

Faculty in instructional technology doctoral programs. A list of graduate programs was obtained from *Educational Media and Technology Yearbook* and the AECT Curricula Data of Degree Programs (directory of current programs in the United States). Each university's website was analyzed to collect data to determine the number of faculty members in the department, the number of male and female, and the faculty rank of each faculty member in the department. If the information was not available on the university's website, the researcher contacted the department secretary by phone or email to verify the gender of the faculty member.

Women's leadership on editorial boards. The second area of the study focused on editorial board leadership for the leading journals identified in the Kim and Lee (2006) and Yoder (2010) studies. The names of the editorial board members who served during the 5-year period 2014-2018 were collected from the front matter of the journals and

categorized by gender. An online name database, Behind the Name, was used to determine whether the first names are masculine or feminine. The following journals were included in the study: *Educational Technology Research & Development, Journal of Educational Multimedia and Hypermedia*, *Journal of Research in Technology*, *Education Performance Improvement Quarterly*, *Quarterly Review of Distance Education*, and *TechTrends*. The journals and articles were retrieved from online databases and print-based copies of the journals. A code sheet was used to record the following data points: name of the journal, year, total number of editorial board members, number of women, and number of men. The first name of the editorial board members was used to classify their gender.

Scholarly productivity. The third area of the study focused on articles published in leading journals from 2014-2018. An analysis of the following six journals was conducted: *Educational Technology Research & Development, Journal of Educational Multimedia and Hypermedia*, *Journal of Research in Technology Education*, *Performance Improvement Quarterly*, *Quarterly Review of Distance Education* and *TechTrends*. The table of contents from each issue of each journal published during the period of 2014-2018 was analyzed to determine the names of the first, second, third, and fourth or more authors. The name of the authors was then be categorized by gender to determine what percentage of the primary authors are male or female. The Behind the Name database was used to determine whether the first names are masculine or feminine. If the researcher was unable to determine the gender of the author, the name was tentatively classified as unknown gender. If the author's email is provided, the researcher emailed the author and or coauthors to verify his or her gender. If the email was not

provided, a web search was conducted to concretely identify the gender of author of the article. If the researcher was still not able to determine the gender, the name remained listed as unknown.

Leaders in professional organizations. The fourth area of the study examined the leadership of the four leading professional organizations in the field—AECT, ISPI, ISTE, and SITE—to determine the positions of leadership women are serving in the organizations. The researcher conducted a web search on the organization's website to locate names the leaders of the organization during the 5-year period 2014-2018. If the information was not available on the website, the researcher emailed or called the executive director for the organization to provide the names, leadership position, and gender of the officers in the organizations during the 5-year period.

Professional conference proceedings. The fifth area of the study focused on presenters who were published in the conference proceedings at two leading conferences identified for the study. Kim and Lee (2006) identified five leading organizations, each of which hosts an annual professional conference. The leading organization and the associated annual conference that were included in the study are Association for Educational Communications and Technology: AECT International Convention; Society for Information Technology and Teacher Education (SITE): The conference proceedings were used to generate a list of a who presented at the conferences during the 5-year period from 2014-2018. The conference proceeding was be obtained from the organization’s website. If the information is not available on the website an email was sent to the executive director of the organization requesting copies of the conference proceedings for 2014-2018. The Behind the Name website was used to analyze the names

of the conference presenters to determine their gender. If the researcher is unable to determine the gender of the author; the name was tentatively classified as unknown gender. If the author's email was provided, the researcher contacted the author to verify their gender. If the email was not provided, a web search was conducted to identify the gender of author of the article. If the researcher was not able to determine the gender, the name remained listed as unknown.

Data Analysis Procedures

Neuendorf (2017) noted that the purpose of a quantitative analysis is to calculate, categorize, and measure the variables for the research study. Upon completion of data collection, the researcher analyzed the data to answer the research questions and subquestions. What follows is a description of the data analysis procedures that was carried out to answer each of the research questions and subquestions.

To better understand the prevalence rates of women and men in areas of leadership pertaining to instructional technology faculty in higher education, the percentage of females was compared to the percentage of males for each faculty rank. The Altman (1991) Z-test for one proportion calculator was employed for determining if there were more or less females per leadership area. Statistical tests for comparisons between pairs of proportions were conducted using Fisher's Exact Test, which is appropriate when sample sizes are moderate or small (McDonald, 2014). Fisher's Exact Test was used to determine if there were significant differences in the prevalence of females versus males in positions of leadership in higher education. A significant difference in the percentages between genders was indicated if the corresponding p-value is .05 or smaller.

Summary

Chapter 3 presented the research design and procedures for the study. The researcher used a quantitative approach to collect and analyze the data. Five areas of leadership were examined to assess the leadership status of women in the field of instruction technology during the period 2014-2018. Data was collected about faculty rank, leadership positions in instructional technology journal editorial boards, publications in six leading instructional technology journals, presentations at leading conferences in the instructional technology field, leadership in four leading professional organizations. The content analysis procedures and coding sheets were described. The following chapter presents the results from the study.

Chapter 4: Results

Introduction

The purpose of the study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. Two overarching research questions guided the study: “What was the leadership status of women in the instructional technology field during the period 2014-2018? “ and, “Was there a significant change in the total percentage of females in each of the four areas addressed subquestions 1B through 1E between the year 2014 and the year 2018?”A quantitative content analysis method was used to categorize the data collected from the university websites, journals, and conference proceedings over 5 years (2014-2018). Chapter 4 presents the findings for the two research questions. The chapter begins with the results for Research Question 1, then presents the results for Research Question 2. Chapter 4 concludes with a summary.

Data Analysis

Data for the study was collected and coded for analysis. Descriptive statistics were used to determine the proportion and percentage of men and women for the five areas of leadership included in the study. The One proportion Z test and Z-test were used to analyze the observed proportions to determine if there were statistically significant differences between number of men and women observed. Based on the analyses of the data, interpretations were made to provide insight about the status of women’s leadership in the instructional technology field during the period 2014-2018. The results of the data collection and analyses for each research question are presented in this chapter.

Research Subquestion 1A. The first research subquestion asked: What was the current total percentage of female faculty who were assistant, associate, professor,

instructor/lecturer, or some other designation in doctoral instructional technology programs in the United States? The observed proportion of females to males for each faculty rank was compared using a One proportion Z test calculator to determine if there were statistically significant differences between the observed proportions (see https://www.medcalc.org/calc/test_one_proportion.php). For this test, the null hypothesis was that the proportions are equal, or 50 percent of the sample n is in each group. The alternative hypothesis was that the proportion of the sample per group is not equal. Results of the One proportion Z test indicated statistical significance for two faculty rank areas, instructor/lecturer and associate professor; both areas reported a significance level of ($p = .001$). Professor rank and assistant professor indicated no significant differences in the observed proportions. The prevalence of academic professionals segregated by rank is recorded in Table 3.

Table 3
Prevalence of Male and Female Faculty, Segregated by Faculty Rank 2014-218

	Females		Males		Unknown	Total		
Faculty Rank	n	%	n	%	n	n	z	p
Instructor/Lecturer	41	71	17	29	0	58	3.20	.001*
Assistant Professor	33	48	36	52	0	69	0.33	.739
Associate Professor	68	66	35	34	0	103	3.23	.001*
Professor	47	52	43	48	0	90	0.32	.704
Doctoral Universities						47		

Table Note: Total n is sum of only the females and males in the considered analysis.
*$p < .05$.

Research Subquestion 1B. The second research subquestion asked: What was the total percentage of members who are female who serve on journal editorial boards for the leading six academic instructional technology journals during the considered 5 years (2014 to 2018)? The proportion of editors were observed for six leading journals: *ETR&D*, *JEMH*, *JRTE*, *PIQ*, *QRDE*, and *TechTrends* was compared using the One proportion Z test. Statistically significant differences were found for *JEMH* ($p =$

.025) *QRDE* (p = .028) *and TechTrends* (p = .002). Results of the One proportion Z test indicated no statistically significant differences were found for *ETR&D, JRTE,* and *PIQ*. The prevalence of female and male editors is recorded in Table 4.

Table 4
Prevalence of Male and Female Editors 2014-2018

	Females		Males		Unknown	Total		
Journals	n	%	n	%	n	n	z	p
ETR&D	15	60	10	40	0	25	1.00	.317
JEMH	0	0	5	100	0	5	2.23	.025*
JRTE	7	50	7	50	0	14	0.00	1.00
PIQ	5	56	4	44	0	9	0.36	.718
QRDE	25	68	12	32	0	37	2.19	.028*
TechTrends	0	0	9	100	0	9	3.00	.002*

Table Note: Total n is sum of only the females and males in the considered analysis.
*p < .05.

The observed proportions of editorial board members for the six leading journals were compared using the One proportion Z test. Statistical significance was found for *JEMH* (p < .001) *JRTE* (p = .011) and *QRDE* (p = .001). Results of the One proportion Z test indicated no statistical significance for *ETR&D, PIQ* and, *TechTrends*. The prevalence of female and male editorial board members is recorded for each journal in Table 5.

Table 5
Prevalence of Male and Female Editorial Board Members 2014-2018

	Females		Males		Unknown	Total		
Journals	n	%	n	%	n	n	z	p
ETR&D	33	54	28	46	0	61	0.62	.532
JEMH	64	33	132	67	0	196	4.76	.000*
JRTE	187	57	140	43	0	327	2.53	.011*
PIQ	12	71	5	29	0	17	1.73	.083
QRDE	52	37	90	63	0	142	3.09	.001*
TechTrends	49	54	42	46	0	91	0.76	.445

Table Note: Total n is sum of only the females and males in the considered analysis.
*p < .05.

Research Question 1C. The third research subquestion asked: What was the total percentage of journal articles published in the leading academic journals in the field of instructional technology that were written by women during the considered 5 years (2014

to 2018), including their level of authorship? A total of 2451 articles published in *ETR&D, JEMH, JRTE, PIQ, QRDE,* and *TechTrends* were examined. The observed proportions for the first, second, and third authors were compared using the One proportion Z test calculator. The result indicated there was no statistical significance for the first and third authors published in the leading journals. However, the results showed statistical significance for the second authors (p = .023). The prevalence of female and male authors is recorded for each journal in Table 6.

Research Question 1D. The fourth research subquestion asked: What was the total percentage of female executive board members in the four leading professional organizations in the field of instructional technology during the considered 5 years (2014 to 2018)? The observed proportion of leaders for four leading professional organization was compared using the One proportion Z test. The results of the One proportion Z test indicated no statistically significant differences for leaders serving of the ISPI professional organization during the 5 years. However, statistical significance was observed for AECT (p = .021) ISTE (p = .008) and SITE (p = .011). The prevalence of the male and female professional organization leaders is recorded for each professional organization in Table 7.

Table 6
Prevalence of Male and Female Authors, Segregated by Authorship Order 2014-2018

	Females		Males		Unknown	Total		
Authorship Order	n	%	n	%	n	n	z	p
First Author	620	52	564	48	3	1184	1.37	.168
Second Author	434	54	364	46	4	798	2.26	.023*
Third Author	245	52	224	48	19	469	0.86	.386
Unknown Authors						26		
Articles						2451		

Table Note: Total n is sum of only the females and males in the considered analysis.
*p < .05.

Table 7
Prevalence of Male and Female Leaders in Professional Organization in the Four Leading Professional Organizations 2014-2018

Professional Organizations	Females n	%	Males n	%	Unknown n	Total n	z	p
AECT	35	38	57	62	0	92	2.30	.021*
ISPI	22	59	15	41	0	37	1.09	.273
ISTE	56	64	32	36	0	88	2.62	.008*
SITE	1	10	9	90	0	10	2.53	.011*
						227		

Table Note: Total n is sum of only the females and males in the considered analysis.
*p < .05.

Research Question 1 E. The fifth research subquestion asked: What was the total percentage of the presenters presenting at each of the two leading conferences in the field of instructional technology are women? The conference proceedings were obtained for two professional organizations, AECT and SITE. The observed proportions for the first, second, and third authors were compared using the One proportion Z test calculator. The result found statistical significance for the first authors in both organizations AECT ($p = .003$) and SITE ($p < .001$). The results for the second authors also indicated statistical significance for AECT ($p = .001$) and SITE ($p < .001$). The third authors' results showed statistical significance ($p < .001$). There was no statistical significance found for AECT third authors. The prevalence of male and female conference presenters, segregated by authorship order, is recorded in Table 8.

Table 8
Prevalence of Male and Female Conference Presenters, Segregated by Authorship Order 2014-2018

Conference Affiliate	Females n %	Males n %	Unknown n	Total n	z	p
First Author						
AECT	128 60	85 40	10	213	2.91	.003*
SITE	1535 64	882 36	51	2417	13.76	.000*
Second Author						
AECT	92 63	54 37	8	146	3.14	.001*
SITE	912 61	573 39	29	1485	8.478	.000*
Third Author						
AECT	41 62	25 38	3	66	1.95	.051
SITE	438 58	313 42	19	751	4.38	.000*
Unknown						
AECT			21			
SITE			99			

Table Note: Total n is the sum of only the females and males in the considered analysis.
*p < .05.

Research Question 2. Was there a significant change in the total percentage of females in each of the four areas addressed in subquestions 1B through 1E between the year 2014 and the year 2018? A Z-test calculator was used to compare the magnitudes of two proportions—the proportion at time point 1 with the proportion at the considered time period 2 using an online calculator: (see https://www.socscistatistics.com/ztest/default2.aspx). The considered time periods were each consecutive year from 2014 to 2018; in addition, the proportion of females in year 2014 was compared to 2018. These proportion pairs were compared for female editors for six leading journals *ETR&D, JEMH, JRTE, PIQ, QRDE*, and *TechTrends*.

For *ETR&D*, there was no statistical significance observed over the 5 years. There were no female editors observed for *JEMH* (p = 1) because the proportions are identical. For JRTE, there was no statistical significance observed for the period 2014-

18. For PIQ, there was no statistical significance observed during the period 2014-18. For *QRDE*, there was no statistical significance found during the 5 years. The results for *TechTrends* indicated no statistical significance for the 5 years 2014-2018. The comparison results for each journal are recorded in Table 9.

A Z-test calculator was used to compare the proportion of female editorial board members for the six leading journals *ETR&D, JEMH, JRTE, PIQ, QRDE,* and *TechTrends*. There was no statistical difference observed during the 5 years. The comparison results for each journal are recorded in Table 10.

Table 9
Comparisons of Proportion of Female Editors Over Time, Segregated by Journal 2014-2018

	First Time Period		Second Time Period			
Journals	Proportion	n	Proportion	n	z	p-value
ETR&D						
2014-15	0.5	4	0.6	5	-0.3	p = .764
2015-16	0.6	5	0.6	5	0	p = 1
2016-17	0.6	5	0.6	5	0	p =1
2017-18	0.6	5	0.8	5	-0.69	p = .490
2014-18	0.5	4	0.8	8	-0.94	p = .342
JEMH						
2014-15	0	1	0	1	*NaN	p = 1
2015-16	0	1	0	1	*NaN	p = 1
2016-17	0	1	0	1	*NaN	p = 1
2017-18	0	1	0	1	*NaN	p = 1
2014-18	0	1	0	1	*NaN	p = 1
JRTE						
2014-15	0.5	2	0	2	1.15	p = .250
2015-16	0	2	0	2	*NaN	p = 1
2016-17	0	2	0.75	4	-1.73	p = .083
2017-18	0.75	4	0.75	4	0	p = 1
2014-18	0.5	2	0.75	4	-0.61	p = .541
PIQ						
2014-15	1	2	1	2	0	p = 1
2015-16	1	2	1	1	-0.86	p = .384
2016-17	1	1	0	2	1.73	p = .083
2017-18	0	2	0	2	*NaN	p = 1
2014-18	1	2	0	2	1.15	p = .250
QRDE						
2014-15	0.71	7	0.71	7	0	p = 1
2015-16	0.71	7	0.71	7	0	p = 1
2016-17	0.71	7	0.71	7	0	p = 1
2017-18	0.71	7	0.65	8	0.24	p = .802
2014-18	0.71	7	0.65	8	0.24	p = .802
TechTrends						
2014-15	0	2	0	2	*NaN	p = 1
2015-16	0	2	0	2	*NaN	p = 1
2016-17	0	2	0	2	*NaN	p = 1
2017-18	0	2	0	1	*NaN	p = 1
2014-18	0	2	0	1	*NaN	p = 1

Table Note: Total n is the sum of only the females in the considered analysis. *p < .05.
*Nan means that the calculator could not calculate the proportion of zero.

Table 10
Comparisons of Proportion of Female Editorial Board Members Over Time, Segregated by Journal 2014-2018

	First Time Period		Second Time Period			
Journals	Proportion	n	Proportion	n	z	p-value
ETR&D						
2014-15	0.5	12	0.58	12	-0.39	p = .696
2015-16	0.58	13	0.53	13	0.25	p = .794
2016-17	0.53	13	0.5	12	0.15	p = .880
2017-18	0.5	12	0.58	12	-0.39	p = .696
2014-18	0.5	12	0.58	12	-0.39	p = .696
JEMH						
2014-15	0.31	39	0.3	40	0.09	p = .920
2015-16	0.3	40	0.36	45	-0.58	p = .555
2016-17	0.36	45	0.34	41	0.19	p = .849
2017-18	0.34	41	0.32	31	0.17	p = .857
2014-18	0.31	39	0.32	31	-0.08	p = .928
JRTE						
2014-15	0.61	64	0.54	74	0.82	p = .406
2015-16	0.54	74	0.58	66	-0.47	p = .631
2016-17	0.58	66	0.56	62	0.22	p = .818
2017-18	0.56	62	0.57	61	-0.11	p = .912
2014-18	0.61	64	0.57	61	0.45	p = .652
PIQ						
2014-15	0.67	3	0.67	3	0	p = 1
2015-16	0.67	3	0.67	3	0	p = 1
2016-17	0.67	3	0.75	4	-0.23	p = .818
2017-18	0.75	4	0.75	4	0	p = 1
2014-18	0.67	3	0.75	4	-0.23	p = .818
QRDE						
2014-15	0.37	30	0.37	30	0	p = 1
2015-16	0.37	30	0.37	30	0	p = 1
2016-17	0.37	30	0.37	30	0	p = 1
2017-18	0.37	30	0.36	25	0.07	p = .936
2014-18	0.37	30	0.36	25	0.07	p = .936
TechTrends						
2014-15	0.56	18	0.58	19	-0.12	p = .904
2015-16	0.58	19	0.56	18	0.12	p = .904
2016-17	0.56	18	0.5	18	0.36	p = .718
2017-18	0.5	18	0.5	18	0	p = 1

Table Note: Total n is the sum of only the females in the considered analysis.

A Z-test calculator was used to compare the proportions of female authors during the 5 years 2014-18 for the six journals. A table was created for each journal: *ETR&D, JEMH, JRTE, PIQ, QRDE,* and *TechTrends*. For *ETR&D* there was no statistical significance found for the proportion of female first, second, and third authors during the 5 years. Table 11 presents the results for *ETR&D*.

Table 11
Comparisons of Proportion of Female Over Time for ETR&D Journal, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	0.4	40	.47	45	-0.64	p = .515
2015-16	.47	45	.58	62	-1.12	p = .258
2016-17	.58	62	.47	60	1.21	p = .222
2017-18	.47	60	.51	72	-0.45	p = .645
2014-18	0.4	40	.51	72	-1.11	p = .262
Second Author						
2014-15	.56	36	.56	41	0	p = 1
2015-16	.56	41	.58	62	-0.20	p = .841
2016-17	.58	62	.47	60	1.21	p = .222
2017-18	.47	60	.51	72	-0.45	p = .645
2014-18	.56	36	.51	72	0.49	p = .624
Third Author						
2014-15	.46	24	.62	32	-1.19	p = .234
2015-16	.62	32	.41	32	1.68	p = .092
2016-17	.41	32	.42	45	-0.08	p = .928
2017-18	.42	45	.53	47	-1.05	p = .289
2014-18	.46	24	.53	47	-0.05	p = .575

Table Note: Total n is the sum of only the females in the considered analysis.

A Z-test calculator was used to compare the proportion of female authors that were published in JEMH during 2014-18. Statistical significance was found for the first authors published during the period 2014-15 and 2015-16. The p-value for 2014-15 (p = .046) and the p-value for 2015-16 (p = .029). There was no statistical significance found

for the second and third authors published during 2014-18. The results for JEMH are presented in Table 12.

Table 12
Comparisons of Proportion of Female Over Time for JEMH Journal, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	0.5	18	.82	17	-1.99	p = .046*
2015-16	.82	17	.47	19	2.17	p = .029*
2016-17	.47	19	.76	21	-1.88	p = .058
2017-18	.76	21	.57	28	1.38	p = .167
2014-18	0.5	18	.57	28	-0.46	p = .638
Second Author						
2014-15	0.5	14	0.5	12	0	p = 1
2015-16	0.5	12	0.4	10	0.46	p = .638
2016-17	0.4	10	.55	11	-0.68	p = .490
2017-18	.55	11	.45	22	0.54	p = .589
2014-18	0.5	14	.45	22	0.29	p = .771
Third Author						
2014-15	.42	7	.67	3	-0.72	p = .471
2015-16	.67	3	.75	4	-0.23	p = .818
2016-17	.75	4	.57	7	0.59	p = .548
2017-18	.57	7	0.5	10	0.28	p = .779
2014-18	.42	7	0.5	10	-0.32	p = .741

Table Note: Total n is the sum of only the females in the considered analysis.
*P < .05.

A Z-test calculator was used to compare the proportion of female authors that were published in JRTE during 2014-18. There was no statistical significance found for the first, second, and third authors published during the period 2014-18. The results for *JRTE* are presented in Table 13.

Table 13
Comparisons of Proportion of Female Over Time for JRTE Journal, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	.38	8	.69	16	-1.45	p = .147
2015-16	.69	16	.75	20	-0.39	p = .689
2016-17	.75	20	.69	16	0.39	p = .689
2017-18	.69	16	.58	24	0.70	p = .483
2014-18	.38	8	.58	24	-0.98	p = .327
Second Author						
2014-15	0.5	8	.85	13	-1.72	p = .083
2015-16	.85	13	.63	16	1.32	p = .183
2016-17	.63	16	.46	13	0.91	p = .357
2017-18	.46	13	.58	19	-0.66	p = .502
2014-18	0.5	8	.58	19	-0.38	p = .703
Third Author						
2014-15	0.8	5	.71	14	0.39	p = .696
2015-16	.71	14	0.5	8	0.98	p = .327
2016-17	0.5	8	0.5	8	0	p = 1
2017-18	0.5	8	0.6	10	-0.42	p = .674
2014-18	0.8	5	0.6	10	0.77	p = .441

Table Note: Total n is the sum of only the females in the considered analysis.

A Z-test calculator was used to compare the proportion of female authors published in PIQ during 2014-18. There was no statistical significance found for the first authors during 2014-17. However, statistical significance was found for the proportion of female first authors during 2014-18 (p = .023). There was no statistical significance found for the second and third authors. The results for PIQ are presented in Table 14.

Table 14
Comparisons of Proportion of Female Over Time for PIQ Journal, Segregated by Authorship Level 201-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	.75	21	.57	21	1.23	p = .218
2015-16	.57	21	.59	22	-0.13	p = .896
2016-17	.59	22	.39	18	1.25	p = .207
2017-18	.39	18	.41	22	-0.12	p = .896
2014-18	.75	21	.41	22	2.25	p = .023*
Second Author						
2014-15	.53	15	0.5	8	0.13	p = .888
2015-16	0.5	8	0.5	12	0	p = 1
2016-17	0.5	12	.67	12	-0.84	p = .395
2017-18	.67	12	.56	16	0.58	p = .555
2014-18	.53	15	.56	16	-0.16	p = .865
Third Author						
2014-15	0.4	10	0.6	5	-0.73	p = .465
2015-16	0.6	5	0.5	8	-0.35	p = .726
2016-17	0.5	8	.29	7	0.82	p = .406
2017-18	.29	7	.14	8	0.71	p = .477
2014-18	0.4	10	.14	8	1.21	p = .226

Table Note: Total n is the sum of only the females in the considered analysis.
*P < .05.

A Z-test calculator was used to compare the proportion of female authors published in QRDE during 2014-18. There was no statistical significance found during the period 2014-17 for the first authors. However, statistical significance was found for the first authors published during 2017-18 (p = .013). There was no statistical significance found for the second and third authors published in the journal during 2014-18. The results for QRDE are presented in Table 15.

Table 15
Comparisons of Proportion of Female Over Time for QRDE Journal, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	.61	23	.66	32	-0.38	p = .703
2015-16	.66	32	.42	24	1.78	p = .073
2016-17	.42	24	.68	31	-1.92	p = .053
2017-18	.68	31	.32	19	2.48	p = .013*
2014-18	.61	23	.32	19	1.87	p = .061
Second Author						
2014-15	.71	14	.48	21	1.34	p = .177
2015-16	.48	21	0.5	14	-0.11	p = .904
2016-17	0.5	14	.63	19	-0.74	p = .453
2017-18	.63	19	0.5	10	0.67	p = .496
2014-18	.71	14	0.5	10	1.04	p = .293
Third Author						
2014-15	0.5	4	.38	8	0.39	p = .689
2015-16	.38	8	0.5	10	-0.50	p = .610
2016-17	0.5	10	0.8	10	-1.40	p = .158
2017-18	0.8	10	0.8	5	0	p = 1
2014-18	0.5	4	0.8	5	-0.94	p = .342

Table Note: Total n is the sum of only the females in the considered analysis.
*p < .05.

A Z-test calculator was used to compare the proportions of female authors published in *TechTrends* during 2014-18. There was no statistical significance found for the first authors published during 2014-16. However, statistical significance was found for the first authors published during 2016-17 (p = .001). Statistical significance was also found for the first authors published during 2017-18 (p = .011). There was no statistical significance found for the second and third authors. The results for *TechTrends* are presented in Table 16.

Table 16
Comparisons of Proportion of Female Over Time for TechTrends Journal, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	0.5	100	.54	93	-0.55	p = .575
2015-16	.54	93	.65	107	-1.58	p = .114
2016-17	.65	107	.42	96	3.28	p = .001*
2017-18	.42	96	.60	103	-2.53	p = .011*
2014-18	0.5	100	.60	103	-1.43	p = .152
Second Author						
2014-15	.52	54	.62	47	-1.01	p = .312
2015-16	.62	47	.48	58	1.43	p = .152
2016-17	.48	58	.55	53	0.73	p = .459
2017-18	.55	53	.57	69	-0.22	p = .825
2014-18	.52	54	.57	69	-0.55	p = .582
Third Author						
2014-15	.62	21	.48	27	0.96	p = .332
2015-16	.48	27	.65	31	-1.30	p = .193
2016-17	.65	31	.48	25	1.27	p = .200
2017-18	.48	25	.49	39	-0.07	p = .936
2014-18	.62	21	.49	39	0.96	p = .337

Table Note: Total n is the sum of only the females in the considered analysis.
*p < .05.

A Z-test calculator was used to compare the proportion of female authors published in AECT conference proceedings during 2014-18; there was no statistical significance found. The results for the proportion of female published in the conference proceedings is presented in Table 17.

Table 17
Comparisons of Proportion of Female Over Time Published in the AECT Conference Proceedings, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	.60	57	.55	51	0.52	p = .603
2015-16	.55	51	.65	37	-0.94	p = .347
2016-17	.65	37	.62	29	0.25	p = .802
2017-18	.62	29	.62	39	0	p = 1
2014-18	.60	57	.62	39	-0.19	p = .841
Second Author						
2014-15	.67	36	.53	34	1.19	p = .230
2015-16	.53	34	.77	26	-1.91	p = .056
2016-17	.77	26	.68	19	0.67	p = .502
2017-18	.68	19	.55	31	0.91	p = .362
2014-18	.67	36	.55	31	1.00	p = .312
Third Author						
2014-15	0.5	12	.58	12	-0.39	p = .696
2015-16	.58	12	0.5	10	0.37	p = .703
2016-17	0.5	10	0.8	10	-1.40	p = .158
2017-18	0.8	10	.53	15	1.37	p = .167
2014-18	0.5	12	.53	15	-0.15	p = .872

Table Note: Total n is the sum of only the females in the considered analysis.

A Z-test calculator was used to compare the proportion of female authors published in the SITE conference proceedings during 2014-18. There was significance found for the first and second authors. For the third authors, there was no statistical significance found during 2014-18. However, when the 2014 proportion was compared to 2018, statistical significance was found (p = .019). Results for SITE are presented in Table 18.

Table 18
Comparisons of Proportion of Female Over Time Published in the SITE Conference Proceedings, Segregated by Authorship Level 2014-2018

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
First Author						
2014-15	.60	570	.62	610	-0.70	p = .483
2015-16	.62	610	.61	538	0.34	p = .726
2016-17	.61	538	.59	400	0.61	p = .535
2017-18	.59	400	.61	127	-0.4	p = .689
2014-18	.60	570	.61	127	-0.20	p = .833
Second Author						
2014-15	.64	317	.62	409	0.55	p = .582
2015-16	.62	409	.60	387	0.57	p = .561
2016-17	.60	387	.59	288	0.26	p = .794
2017-18	.59	288	.64	84	-0.82	p = .412
2014-18	.64	317	.64	84	0	p = 1
Third Author						
2014-15	.56	148	.60	207	-0.75	p = .453
2015-16	.60	207	.62	200	-0.41	p = .681
2016-17	.62	200	.69	226	-1.51	p = .128
2017-18	.69	226	.73	64	-0.61	p = .535
2014-18	.56	148	.73	64	-2.33	p = .019*

Table Note: Total n is the sum of only the females in the considered analysis.
*p < .05.

A Z-test calculator was used to compare the proportion of female leaders in the four leading professional organizations: AECT, ISPI, ISTE, and SITE during 2014-18. There was no statistical significance found for AECT, ISPI, ISTE and SITE. The results for the proportion of female leaders are presented in Table 19. To determine if there were changes in the total percentages for each leadership area indicated in research question 2, a Z-test calculator was used to compare the magnitudes of two proportions—the proportion at time point 1 with the proportion at the considered time point 2. There were no statistically significant differences found for the changes in the total percentages of females for five areas of leadership identified in the study. Table 20 presents the results the change in total percentage of female editors during the time period 2014 and 2018.

There was no statistical significance found for the first and second time periods. Table 21 presents the results the change in total percentage of female editorial board members during the time period 2014 and 2018. There was no statistical significance found for the first and second time periods.

Table 19
Comparisons of Proportion of Female Executive Board Members Over Time, Segregated by Professional Organization 2014-2018

	First Time Period		Second Time Period			
Professional Organizations	Proportion	n	Proportion	n	z	p-value
AECT						
2014-15	.33	21	.39	18	-0.38	p = .696
2015-16	.39	18	.33	18	0.37	p = .703
2016-17	.33	18	.39	18	-0.37	p = .703
2017-18	.39	18	.44	18	-0.30	p = .764
2014-18	.33	21	.44	18	-0.70	p = .477
ISPI						
2014-15	.83	6	.71	7	0.50	p = .610
2015-16	.71	7	.44	9	1.07	p = .280
2016-17	.44	9	.44	9	0	p = 1
2017-18	.44	9	0.5	6	-0.22	p = .818
2014-18	.83	6	0.5	6	1.21	p = .226
ISTE						
2014-15	.73	22	.67	18	0.41	p = .681
2015-16	.67	18	.68	19	-0.06	p = .952
2016-17	.68	19	0.5	16	1.08	p = .280
2017-18	0.5	16	.47	15	0.16	p = .865
2014-18	.73	22	.47	15	1.60	p = .109
SITE						
2014-15	0	2	0	2	*NaN	p = 1
2015-16	0	2	0	2	*NaN	p = 1
2016-17	0	2	0	2	*NaN	p = 1
2017-18	0	2	0.5	2	-1.15	p = .250
2014-18	0	2	0.5	2	-1.15	p = .250

Table Note: Total n is the sum of only the females in the considered analysis.
*Nan means that the calculator could not calculate the proportion of zero.

Table 20

Changes in the Total Percentages 2014-2018, Editors

	First Time Period		Second Time Period			
Journals	Proportion	n	Proportion	n	z	p-value
ETR&D	0.5	4	0.8	8	-0.94	p = .342
JEMH	0	1	0	1	NaN	p = 1
JRTE	0.5	2	0.75	4	-0.61	p =.541
PIQ	1	2	0	2	1.15	p = .250
QRDE	0.71	7	0.65	8	0.24	p = .802
TechTrends	0	2	0	1	*NaN	p = 1

Table Note: Total n is the sum of only the females in the considered analysis.
*Nan means that the calculator could not calculate the proportion of zero.

Table 21

Changes in the Total Percentages 2014-2018, Editorial Board Members

	First Time Period		Second Time Period			
Journals	Proportion	n	Proportion	n	z	p-value
ETR&D	0.5	12	0.58	12	-0.39	p = .696
JEMH	0.31	39	0.32	31	-0.08	p = .928
JRTE	0.61	64	0.57	61	0.45	p = .652
PIQ	0.67	3	0.75	4	-0.23	p = .818
QRDE	0.37	30	0.36	25	0.07	p = .936
TechTrends	0.56	18	0.5	18	0.36	p = .718

Table Note: Total n is the sum of only the females in the considered analysis.

Table 22 presents the results of the change in total percentage of female authors during the time period 2014 and 2018. There was no statistical significance found for the first and second time periods. Table 23 presents the results of the change in total percentage of female authors published in the conference proceedings during the time period 2014 and 2018. There was no statistical significance found for the first and second time periods. Table 24 presents the results of the change in total percentage of female professional association leaders during the time period 2014 and 2018. There was no statistical significance found for the first and second time periods.

Table 22

Changes in the Total Percentages 2014-2018, Authorship Level

	First Time Period		Second Time Period			
Journals	Proportion	n	Proportion	n	z	p-value
ETR&D						
First Author	0.4	40	.51	72	-1.11	p = .262
Second Author	.56	36	.51	72	0.49	p = .624
Third Author	.46	24	.53	47	-0.05	p = .575
JEMH						
First Author	0.5	18	.57	28	-0.46	p = .638
Second Author	0.5	14	.45	22	0.29	p = .771
Third Author	.42	7	0.5	10	-0.32	p = .741
JRTE						
First Author	.38	8	.58	24	-0.98	p = .327
Second Author	0.5	8	.58	19	-0.38	p = .703
Third Author	0.8	5	0.6	10	0.77	p = .441
PIQ						
First Author	.75	21	.41	22	2.25	p = 0.23
Second Author	.53	15	56	16	-0.16	p = .865
Third Author	0.4	10	.14	8	1.21	p = .226
QRDE						
First Author	.61	23	.32	19	1.87	p = .061
Second Author	.71	14	0.5	10	1.04	p = .293
Third Author	0.5	4	0.8	5	-0.94	p = .342
TechTrends						
First Author	0.5	100	.60	103	-1.43	p = .152
Second Author	.52	54	.57	69	-0.55	p = .582
Third Author	.62	21	.49	39	0.96	p = .337

Table Note: Total n is the sum of only the females in the considered analysis.

Table 23

Changes in the Total Percentages 2014-2018, Conference Proceedings

	First Time Period		Second Time Period			
Authorship Order	Proportion	n	Proportion	n	z	p-value
AECT						
First Author	.60	57	.62	39	-0.19	p = .841
Second Author	.67	36	.55	31	1.00	p = .312
Third Author	0.5	12	.53	15	-0.15	p = .872
SITE						
First Author	.60	570	.61	127	-0.20	p = .833
Second Author	.67	36	.55	31	1.00	p = .312
Third Author	0.5	12	.53	15	-0.15	p = .872

Table Note: Total n is the sum of only the females in the considered analysis.

Table 24

Changes in the Total Percentages 2014-2018, Segregated by Association

	First Time Period		Second Time Period			
Conference Affiliate	Proportion	n	Proportion	n	z	p-value
AECT	.33	21	.44	18	-0.70	p = .477
ISPI	.83	6	0.5	6	1.21	p = .226
ISTE	.73	22	.47	15	1.60	p = -1.09
SITE	0	2	0.5	2	-1.15	p = .250

Table Note: Total n is the sum of only the females in the considered analysis

Summary

Chapter 4 presented the results for the two overarching research questions for the study. The purpose of the study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. Research question 1 examined five areas of leadership using One proportion Z test and Z-test. The findings of the One proportion Z test and Z-test indicated statistical significance for the following areas of leadership: faculty rank, editorial board members, authorship level, professional organization leaders, and conference proceedings. A greater number of females than males were observed in the instructor/lecturer, associate, and professor ranks. Of the six journals examined, there were a greater number of female than male editors for *ETR&D*, *PIQ*, and *QRDE*. For *JRTE*, men and women were equally represented.

However, men editors outnumbered women for *JEMH* and *TechTrends.* There were a greater number of women than men serving as editorial board members; women editorial board members outnumbered men for *ETR&D, JEMH, JRTE, PIQ, and TechTrends.* However, there were more men than women editorial board members for *QRDE.* Of the 2451 articles examined, women represented over 50% of the first, second, and third authors published. A greater number of women than men served as leaders for ISPI and ISTE professional organizations. However, a greater number of men than women served as leaders for AECT and SITE professional organizations. Conference proceedings were examined for two professional organizations AECT and SITE; there were more women than men listed as first, second, and third authors in the conference proceedings.

Research question 2 examined the change in total percentage for the areas of leadership indicated in question 1B—1E during the 5-year period 2014-2018. For the majority of leadership areas examined, there were no changes found in the total percentages. However, statistically significant differences were reported for *JEMH, PIQ,* and *QRDE, and TechTrends* journals. Comparisons of the proportion of female first authors published in *JEMH* showed statistically significant difference during the time period 2014-2015 ($p = .046$) and the time period 2015-2016 ($p = .029$). The comparisons of the proportion of female first authors published in *PIQ* showed a statistically significant difference during the time period 2014-2018 ($p = .023$). Statistically significant difference was found for comparisons of the proportion of female first authors published *QRDE* during the time period 2017-2018 ($p = .013$).

For *TechTrends*, statistically significance was found for the first authors published during time period 2016-17 ($p = .001$) and time period 2017-18 ($p = .011$). In addition, a statistically significant difference was reported for the SITE proceedings during the period 2014-2018 ($p = .019$). Chapter 5 begins with a summary of the findings, followed by interpretation of the findings, and a discussion of the context of the findings, limitations of the study, and potential directions of further research.

Chapter 5: Discussion

Introduction

The purpose of the study was to assess the leadership status of women in the instructional technology field during the period 2014-2018. Prior to the Yoder (2010) study few studies examined gender and leadership status, focusing on scholarly productivity in the field. Yoder (2010) provided insight about four indicators of leadership:(a) faculty rank, (b) positions on editorial boards, (c) publications in leading journals, and (d) presentations at leading conferences in the field. The present study examined the same four areas of leadership, plus a fifth: leadership of four leading professional organizations in the field. A quantitative content analysis method was chosen to examine the following research questions:

1. What was the leadership status of women in the instructional technology field during the period 2014-2018?

A. What was the total percentage of female faculty who were assistant, associate, full professor, instructor/lecturer, or some other designation in doctoral instructional technology programs in the United States during the period 2014-2018?

B. What was the total percentage of female members who served on journal editorial boards for the leading six academic instructional technology journals during the considered 5 years (2014 to 2018)?

C. What was the total percentage of journal articles published in the leading academic journals in the field of instructional technology that was written by women during the considered 5 years (2014 to 2018), including their level of authorship?

D. What was the total percentage of female executive board members in the four leading professional organizations in the field of instructional technology during the considered 5 years (2014 to 2018)?

E. What was the total percentage of female presenters presenting at each of the two leading conferences in the field of instructional technology (2014 to 2018)?

2. Was there a significant change in the total percentage of females in each of the four areas addressed in subquestions 1B through 1E between the year 2014 and the year 2018?

A code sheet was developed for each of the five areas of leadership to record the categorical information identified in each sheet (see Appendix C). The appropriate data were recorded into several Excel workbooks. The resulting data for each area of leadership were then analyzed using statistical calculators. A One proportion Z-test calculator was used to determine if there were statistically significant differences between the observed proportions for the areas of leadership identified in Research Question 1. For Research Question 2, a Z-test calculator was used to compare the magnitudes of two proportions for two time periods. The results for each test were recorded in the tables presented in Chapter 4.

Summary of Findings

This study examined five areas of leadership: (a) faculty rank in instructional technology programs, (b) positions on editorial boards of leading instructional technology journals, (c) publications in leading instructional technology journals, (d) presentations at leading conferences in the instructional technology field, and (e) leadership of four leading professional organizations in the field. The results of the study showed that there was a greater percentage of female leaders than men in the instructional technology field

during the period 2014-2018. This section begins with the summary of Research Question 1 subquestions and conclude with the summary of Research Question 2.

Research subquestion 1A: Faculty rank. The results for faculty teaching at doctoral instructional technology programs indicated that there was a greater percentage of women teaching at the doctoral level. Women outnumbered men at the following ranks: instructor/lecturer (71%), associate (66%) and professor (52%). Statistically significant differences were found at the instructor/lecturer and professor ranks. Men outnumbered women at the assistant professor level (52%); however, no statistical significance was found.

Research subquestion 1B: Editorial board. The findings of the study indicated there was a greater percentage of female editors for *ETR&D*, (60%); *PIQ*, (56%); and *QRDE*, (68%). No female editors were observed for *JEMH* and *TrechTrends*. There was equal representation of male and female editors for the *JRTE*. Statistically significant differences were found for *JEMH*, ($p = .025$), *QRDE*, ($p = .028$), and *TechTrends*, ($p = .002$). Of the six journals included in the study, results for four of the journals indicated a greater percentage of women editorial board members for: *ETR&D*, (54%), *JRTE*, (57%), *PIQ*, (71%), and *TechTrends*, (54%). There was a greater percentage of male editorial board members serving on *JEMH*, (67%) and *QRDE*, (63%). Statistically significant differences were found for *JEMH*, ($p < .001$), *JRTE*, ($p = .011$), and *QRDE*, ($p = .001$).

Research subquestion 1C: Scholarly productivity. The findings of the study indicated that there was a greater percentage of women than men publishing in the six journals included in the study. There were 2451 articles examined. Of all the first and

third authors listed, women represented 52%; for second authors listed, women represented 54%. Statistical significance (p = .023) was found for second authors.

Research subquestion 1D: Executive board membership. There was a greater percentage of male leaders serving in the AECT and SITE professional organization during the 5-year period 2014-2018. For AECT, 62% of the leaders were men, and for SITE, 90% of the leaders were men. During the 5-year period 2014-2018, there was a greater percentage of women in leadership positions for ISPI and ISTE professional organizations. For ISPI, 59% of the leaders were women, and for ISTE, 64% of the leaders were women.

Research subquestion 1E: Professional conference proceedings. Conference proceedings were obtained for AECT and SITE organizations. The AECT proceedings results indicated that 60% of first authors, 63% of second authors, and 62% of third authors were women. Similarly, the SITE conference proceedings results indicated that 64% of first authors, 61% of second authors, and 58% of third authors were women. Findings of this study showed there were more women than men presenting at professional conferences in the field.

Research Question 2. This question examined the change in total percentages of females addressed in subquestions 1B—1E during the 5-year period 2014-2018. For the majority of leadership areas examined, there were no changes found in the total percentages. However, statistically significant differences were reported for *JEMH, PIQ,* and *QRDE* journals. For *JEMH,* a statistically significant difference was observed for the time period 2014-2015 (p =.046) and the time period 2015-2016 (p = .029). The *PIQ* results indicated a statistically significant difference during the time period 2014-2018 (p

= .023). A statistically significant difference was found for *QRDE* during the time period 2017-2018 (p = .013). In addition, a statistically significant difference was reported for the SITE proceedings during the period 2014-2018 (p = .019).

Interpretation of Findings

The present study was designed to assess the status of women's leadership in the field of instructional technology during the period 2014-2018. The One proportion Z test and Z-test were used to assess the observed proportions of men and women in leadership positions in the field. Previous studies (e.g., Foley et al., 1993; Foley et al., 1994; Foley & Morgan, 2003; Yoder, 2010) documented in the literature review of this study indicated that the instructional technology field has been male-dominated. Therefore, the researcher anticipated that more than half of the leadership positions in the field would be held by men. Yet, the results of this study showed a greater percentage of women in leaderships positions compared to men in the field as indicated by the five areas of leadership examined in this study.

Context of Findings

This section links the results of the present study to the findings of relevant prior studies discussed in Chapter 2. The section begins with a discussion of Research Question 1, followed by a discussion of Research Question 2.

Research subquestion 1A: Faculty rank. Several studies have indicated that women are underrepresented at the top professor ranks (e.g., Allan, 2011; Dobele et al., 2014; Hult, Callister, & Sullivan, 2005; Jacobs, 1996; Kulis, 1997; Monroe & Chiu, 2010; Perna, 2005). A Catalyst (2020) report about the status of women in academia noted that women in the United States were still less likely than men to achieve high

ranking faculty positions. The results of the Catalyst (2020) report showed there was a greater percentage (57%) of women at the instructor ranks, while men outnumbered women at the assistant, associate, and professor levels. However, the results of the present study showed that in the instructional technology field, women represent 71% of the faculty at the instructor/lecturer rank, and 66% of the associate professor rank. No statistically significant differences were found between the percentages of men and women at the assistant and professor ranks in the field. Therefore, findings of this study were not consistent with the overall conclusions of the Catalyst (2020) report, perhaps because the present study focused exclusively on doctoral instructional technology faculty in the United States during the 5-year period 2014-2018.

Research subquestion 1B: Editorial board members. The second area of leadership examined in this study was editorial board membership. For the purpose of this study, editorial board members were separated into two categories: editors and editorial review board. Of the six journals included in the study, statistically significant differences were found for three of the journals. Both *JEMH* and *TechTrends*, had only (100%) male editors during the period 2014-2018. *QRDE* had a statistically significant percentage of female editors (68%). Women represented a higher percentage of editors than men for *ETR&D* (60%) and *PIQ* (56%) journals. *JRTE* had an equal number of male and female editors.

An examination of editorial board membership found statistically significant differences for three journals *JEMH* ($p < .001$) *JRTE* ($p = .011$) and *QRDE* ($p = .001$). Women represented a higher percentage of the editorial board members than men for ETR&D (54%) and PIQ (71%) and TechTrends (54%): however, no statistically

significant differences were found. The findings of this study are not consistent with the findings of Yoder (2010); her study found no statistical significance in the number of male and female editorial board members.

Research subquestion 1C: Scholarly productivity. The third area of leadership examined was scholarly productivity. Several studies reported that women produced less scholarly research than men (e.g., Foley et al., 1993; Foley et al., 1994; Foley & Morgan, 2003; Kennedy et al., 2009; Scharber et al., 2017; Yoder, 2010). The findings from this study are not consistent with the findings of the previous studies. The present study showed statistically significant differences for women published as second authors. In addition, there is a greater percentage of female first, second, and third authors published in the six journals included in the study. Therefore, it is concluded that women in the instructional technology field may be closing the scholarly productivity gap. However, other research studies are needed to determine whether scholarly productivity findings of the present study identified an overall trend in the field.

Research subquestion 1D: Executive board membership. The fourth area of leadership examined was leadership of professional organizations. At the time of the present study, no other studies were identified that examined the prevalence of male and female leaders of professional organizations in the instructional technology field. Studies had examined professional involvement and successful networking. Twale (1996) examined the differences between male and female education administration faculty involvement in six professional associations: American Educational Research Association (AERA), Eastern Educational Research Association (EERA), National Association of Elementary School Principals (NAESP), National Association of

Secondary School Principals (NASSP), American Association of School Administrators (AASA), and Association for the Study of Higher Education (ASHE). Twale (1996) found no statistically significant differences between the number of men and women in professional association involvement.

The findings of the present study showed that 62% of AECT leaders and 90% of SITE leaders were men, while 64% of ISTE leaders were women. For ISPI, there was no statistically significant difference found between the number of men and women leaders, although there was a slightly greater percentage (59%) of women leaders. The results of the present study are consistent with the findings of the Bhattacharjee et al. (2007) study: there is an "upward trend" of women in leadership positions in professional organizations in the field.

Research subquestion 1E: Professional conference proceedings. The fifth area of leadership examined was the percentage of women presenters published in conference proceedings. The findings of the present study are consistent with the results of the previous studies (e.g., Casadevall & Handelsman, 2014; Gruberg, 2008; Sardelis & Drew, 2016; Wiest et al., 2006; Yoder, 2010), that a higher percentage of women present at conferences in the field. Two professional organizations were included in the study: AECT and SITE. Statistically significant differences were found for first and second authors published in both proceedings. There was a higher percentage of women presenters (at least 60%). For third authors published in the proceedings, statistically significant differences were observed for SITE: 58% of the presenters were women. For AECT, there were no statistically significant differences found for third authors, although women represented (62%) of the presenters published in the conference proceedings.

Research Question 2. The second research question examined whether there were significant changes in the total percentage of females in each of the four areas addressed in subquestions 1B—1E between the year 2014 and the year 2018. A Z-test calculator was used to compare the magnitudes of two proportions—the proportion at time point 1 with the proportion at the considered time period 2. The considered time periods were each consecutive year from 2014 to 2018; in addition, the proportion of females in year 2014 was compared to 2018. There were no other relevant research studies that compared the areas of leadership identified in research subquestions 1B—1E.

Statistically significant differences were found for changes in the total percentage of females for *JEMH*, *PIQ*, *QRDE*, *TechTrends*. Statistically significant differences were also found for changes in the total percentage of females published in the SITE conference proceedings. The results for *JEMH* showed statistically significant differences between changes in the total percentage of females first authors during the periods 2014-2015 ($p = .046$) and 2015-2016 ($p = .029$). The results for *PIQ* showed statistically significant differences between changes in the total percentage of females first authors during the period 2014-2018 ($p = .023$). The results for *QRDE* showed statistically significant differences between changes in the total percentage of females first authors during the periods 2017-2018 ($p = .013$). The results for *TechTrends* showed statistically significant differences between changes in the total percentage of females first authors during the periods 2016-2017 ($p = .001$) and 2017-2018 ($p = .011$). The results for SITE conference proceedings showed statistically significant differences between changes in the total percentage of female third authors during the period 2014-2018 ($p = .019$).

Implications of Findings

The present study was designed to assess the status of women's leadership in the field of instructional technology during the period 2014-2018. Five areas of leadership where examined to assess the status of women's leadership in the field of instructional technology. Two overarching research questions guided the study: what was the leadership status of women in the instructional technology field during the period 2014-2018? and, was there a significant change in the total percentage of females in each of the four areas addressed subquestions 1B through 1E between the year 2014 and the year 2018? The following sections discusses implications of the findings for each research question.

Research Subquestion 1A. What was the total percentage of female faculty who are assistant, associate, full professor, instructor/lecturer, or some other designation in doctoral instructional technology programs in the United States during the period 2014-2018? Yoder (2010) found a greater percentage of male faculty taught at the doctoral level. The findings for the present study showed that there is a greater number of women faculty teaching at the doctoral instructional technology programs in the United States. It is reasonable to conclude that more women in the field now have the opportunity to shape the direction of the instructional technology field and serve as mentors and role models for doctoral students in the field. Schweitzer et al. (2011) Schweitzer et al. (2011) noted that persons are more likely to establish their career goals based on information provided by someone of the same gender. Therefore, it is anticipated that if there are more women than men in higher faculty ranks, more females in the field would continue to seek promotion into a higher faculty rank.

According to the National Center for Education Statistics (2018a), women in the United States are completing doctoral programs at a higher rate than men; and by 2029, it is projected that 53.9% of all doctoral program graduates in the United States will be women. During the period 2016-2017, 211 instructional technology degrees were awarded, of which 119 of were awarded to women (National Center for Education Statistics, 2018b). Yoder (2010) found that men outnumbered women at the assistant, associate, and professor ranks. An interesting implication of the present study was that women represented a significant percentage of instructor/lecturer (71%) and associate professors (66%) in the field. Additionally, there is a slightly higher percentage of women at the professor rank (52%). One explanation for the higher percentage of women at the instructor/lecturer rank is that there are more qualified women in the career pipeline seeking career opportunities. Perhaps there are not enough available positions at the higher ranks. Gradually, as senior faculty retire from the field it is reasonable to concluded there will be more opportunities for promotion to the higher ranks. Another explanation is that women may choose to teach at the instructor/lecturer rank while they pursue full-time jobs outside of academia.

Research Subquestion 1B. What was the total percentage of female members who served on journal editorial boards for the leading six academic instructional technology journals during the considered 5 years (2014 to 2018)? Yoder (2010) found no statistically significant differences between male and female editorial board members in the field. The present study's findings are not consistent with Yoder's. Of the six journals examined, there was a greater percentage of women serving a editors and editorial board members. Therefore, women serving as editors and editorial board

members would determine the articles that are selected for publication and thus shaping the research direction of the field.

Research Subquestion 1C. What was the total percentage of journal articles published in the leading academic journals in the field of instructional technology that were written by women during the considered 5 years (2014 to 2018), including their level of authorship? One important part of faculty responsibility is to research and publish (Allan, 2011). Several studies reported that women produced less scholarly research than men (e.g., Foley et al., 1993; Foley et al., 1994; Foley & Morgan, 2003; Kennedy et al., 2009; Scharber et al., 2017; Yoder, 2010). The present study found that overall, a greater percentage of women in the field were listed as first, second, and third authors. This finding could be related to the fact that there are more women completing doctoral degrees than men are in the field. One explanation for the gender differences in scholarly productivity was that women in the field may choose to publish their research in some of the leading journals based on the research emphasis of the journal. Perhaps the journals selected for the study had a research emphasis that more women in the field wanted to address. Scholars in the field (e.g., Butler & Lockee, 2016; Foley et al., 1994; Yoder, 2010) noted that male scholars' publications were more likely to be emphasized, such as required literature and seminal works in the field. Also, Jones, Fanson, Lanfear, Symonds, & Higgie, 2014 pointed out that women are less likely to be cited, obtain fewer awards, and have research that may not be as respected compared to than men in their field. The findings of the present study showed that women in the instructional technology field published more research articles than men in the field during the time period 2014-2018. It is likely that, since there are more women in the field publishing in

scholarly journals, over time research published by women would be cited more than research written by men.

Research Subquestion 1D. What was the total percentage of female executive board members in the four leading professional organizations in the field of instructional technology during the considered 5 years (2014 to 2018)? Of the four professional organizations examined, there was a greater percentage of women in two of the organizations, ISPI (59%) and ISTE (64%), while there was a greater percentage of men in the other two organizations, AECT (62%) and SITE (90%).

Ewert (2012) discussed the reversal of gender disproportion in education. Since the 1980s, women have been graduating from college at a higher rate than men. The increased degree completion rate for women can be attributed to changes in society to stop gender discrimination against women. Also, a higher percentage of women return to college than men (Ewert, 2012). Doyle (2016) pointed out that changes in U.S. laws (e.g., Equal Rights Act, Civil Rights Act, and Equal Pay Act) and changes to social norms provided opportunities for more women to serve as president of AECT. Additionally, because men are obtaining fewer degrees than women in the field, it is reasonable to conclude that, in several years, women will outnumber men as leaders of professional organizations in the field. This is an interesting implication because professional organizations are instrumental for the development of professionals in the field. Professional organizations such as AECT are responsible for defining the field of education. If women are the leaders of the organization, they will have the opportunity to shape and redefine the field of instructional technology.

Research Subquestion 1E. What was the total percentage of the presenters presenting at each of two leading conferences in the field of instructional technology are women (2014 to 2018)? The present study found that, overall, a greater percentage of women in the field were listed as first, second, and third authors in the conference proceedings examined in the study. Yoder's (2010) study showed that there were significantly more women presenters than men (54.25%). Casadevall and Handelsman (2014) noted that a key to women's academic success and career retention is their opportunity to present at events such as professional conferences. One explanation is that promotion committees often review the number of presentations when making decisions to promote a faculty member to the next rank. Perhaps women who are seeking promotion are presenting more at the leading conferences. Additionally, there are more female doctoral students in the instructional technology field: perhaps the female doctoral students are presenting their doctoral research findings at the leading professional conferences. It is reasonable to conclude that women in the field will continue to present at a higher rate than men because there are more women than men earning degrees in the field.

Research Question 2. Was there a significant change in the total percentage of females in each of the four areas addressed in subquestions 1B through 1E between the year 2014 and the year 2018? Comparisons of the proportion of females over time found few significant differences, and there were no additional implications found for Research Question 2.

Findings from the present study showed that women are now fully represented in the five leadership areas examined in the study. As a result of the findings of the present

study, the general conclusion was that the instructional technology field which was once dominated by male leaders are now dominated by female leaders. It is reasonable to conclude that women in leadership positions in the instructional technology field are better positioned to influence the direction of the field. Scharber et al. (2017) noted that the instructional technology needed a more diverse perspective and more female role models. As women continue to obtain leadership positions in the field it is reasonable to conclude that more women will become role models and mentors for doctoral students and young professionals entering the field. Perhaps with more women leaders in the field a greater emphasis will also be placed on diverse perspectives in the field. Another implication to consider is whether one gender should dominate leadership of the field. In the past, leadership of the field was dominated by men. The results of the present study showed that women outnumbered men in key areas of leadership in the field. The present study indicated several changes relating to the status of women's leadership: (a) significantly more women than men women are teaching at the doctoral level, (b) significantly more women than men are serving as editorial board members, (c) significantly more women than men are presenting at conferences in the field, (d) there were also significantly more women than men were listed as first, second, and third authors in journals and conference proceedings. Perhaps equal leadership opportunities should be provided to men and women in the field (e.g., selecting equal number of men and women to lead professional organizations and serve on editorial boards). Another consideration is that there are fewer men graduating from instructional technology doctoral programs may need to recruit male students and provide support to ensure they complete the doctoral programs.

Limitations of the Study

Creswell (2012) defines limitations as a "potential weakness or problems with the study identified by the researcher" (p. 199). Two categories of limitations were identified for the study. The first category, properly referred to as delimitations, were implemented to limit the scope of the present study: data collected from the 5-year period 2014-2018 and the selection of four specific data sources. Another delimitation was the selection of the five areas of leadership, four of which were identified by Yoder (2010). However, there may be other areas of leadership in the instructional technology field that were not included in the present study. Perhaps the outcome of the study would be different if other areas of leadership were examined. The second category is the limitations of the study, of which there are two: the inability to obtain conference proceedings from all four of the identified professional conferences, and the inability to determine the gender for of some authors listed in the journal articles and conference proceedings.

Edmonds and Kennedy (2013) noted that a cross-sectional design enables the researcher to collect data from a specific period. In order to limit the scope of this study, a cross-sectional design was used to collect available data regarding the five areas of instructional technology leadership. Yoder (2010) collected data for a 1-year period (2007). However, for the present study a 5-year period (2014-2018) was considered to be appropriate because previous studies (e.g., Foley et al., 1993; Foley et al., 1994; Foley & Morgan, 2003), examined data for a 5-year period.

Another delimitation is that the present study only included doctoral faculty from instructional technology programs in the United States. However, there are other doctoral instructional technology programs in other continents such as Europe and Asia that were

not included in the study. Perhaps including institutions from other continents would impact the findings of the study. In addition, the names of the doctoral universities were retrieved from the educational technology yearbook, and there is a possibility that not all institutions that offer instructional technology doctoral programs in the United States were included in the study. Therefore, the overall findings for this leadership area could be different if all doctoral programs in the Unites States were not included in the present study.

Kim and Lee (2006) identified 18 journals that were frequently recommended to new professionals in the field of instructional technology. Based on Kim and Lee's (2006) recommendations, Yoder (2010) examined five journals: *ER*, *ETR&D, JEMH, JRTE,* and *PIQ*. To limit the scope of the present study, six of the most recommend journals (Kim & Lee, 2006; Yoder 2010) were examined: *ETR&D, JEMH, JRTE, PIQ, QRDE,* and *TechTrends*. The six journals were chosen because they were also associated with the most recommend professional organizations in the field identified by Kim & Lee, 2006; Yoder 2010. While the present study examined some of the leading journals in the instructional technology field, they are not all the journals in the field. The data for editors, editorial board membership, and scholarly productivity were also retrieved from the six journals included in the present study. Perhaps the findings for of the study would have been different if other journals were selected for the present study.

Three limitations were identified for the study. The researcher had intended to examine the four conference proceedings that were examined in the Yoder (2010) study: AACE, AECT, ISPI, and ISTE. However, some of the professional organizations identified no longer published their conference proceedings. Therefore, the study only

included conference proceedings for two organizations, AECT and SITE limiting the data collected. However, the findings of the present study support Yoder (2010) results that was a higher number of female than male presenters in the field. Another limitation of the study is the accuracy of the information available on the university's website; information provided on the website may not be up-to-date. Perhaps some of the faculty were promoted or are no longer teaching at the university, which may cause a margin of error in the data analyzed for the present study. An additional limitation was that the researcher was not able to identify the gender for all the authors of the journal articles and conference proceedings. Web searches were conducted and emails were sent in an attempt to identify the unknown authors' gender; however, some of the names were excluded from the study. The findings for this leadership area perhaps would be different if all the authors were included in the study. Of all the journal articles observed in the present study, 1% of the authors were classified as unknown. For AECT, 5% of the conference presenters' names were listed as unknown, and for SITE, 2.4% of the conference presenters were listed as unknown.

Future Research Directions

The present study is the second known study in the field of instructional technology that examined several areas of leadership in order to assess the status of women leaders in the field. The results of the present study and the existing research studies identified in Chapter 2 literature review should be used as a basis for further research about the status of women's leadership in the field of instructional technology. The present study used a cross-sectional research design for specific 5-year period 2014-2018. A future study could examine the status of women's leadership over a longer

period of time. Additionally, the study could employ another research method, such as a phenomenological methodology or mixed method research design, to gain a deeper understanding of the leadership status of women in the field.

One of the identified delimitations of the present study was that only six journals were included in the study; a future research study could assess women's scholarly contributions by using a broader selection of instructional technology journals. After an analysis of the names of the journal authors names for the present study it was observed that there was a great number of Asian authors published in the journals. A future study could examine the scholarly productivity of Asian women in the field. Another study could examine the leadership status of minority women in the field.

The present study only examined faculty teaching at the doctoral level. A future study could examine women faculty in master's programs in the United States. The results of the present study showed a great percentage (71%) of women faculty at the instructor/lecturer level. An examination into why there is such a large prevalence of women at this rank would be beneficial to documenting the status of women's faculty rank in the field.

A delimitation of the study was the selection of instructional technology doctoral programs in the United States to determine the status of women's leadership in the field. Another study could assess the status of women's leadership outside of higher education. A study should also be conducted to investigate the career aspirations of doctoral students to determine if women are aspiring to work in leadership position outside of academia.

One of the limitations identified for the present study is the availability of published conference proceedings. A future study could examine the status of women

presenting at professional conferences by analyzing the names published in the programs for professional conferences instead of the conference proceedings. Another limitation was the accuracy of the information provided on the university website. Another researcher could survey department chairs at the universities to find out the number of faculty, their rank, and gender.

Further investigation into the status of women's leadership in the instructional technology field is still needed. A replication of this study over the next several years is recommended to continue documenting the status of women's leadership. The present study was conducted a decade after the Yoder (2010) study. The findings of Yoder's study showed that the field was still dominated by men. The result of Yoder's study showed women only outnumbered men in one area leadership: conference presentations. The present study documented several changes in the status of women's leadership in the field. Therefore, it would be beneficial if other researchers continued to assess and document the changes in the field and identify leadership trends in the field. Despite the overall findings of the present study, additional research is needed in order to make generalizations about the overall status of women's leadership in the field.

Summary

Chapter 5 presented the summary of the findings, interpretation, context, implications, limitations, and future research directions for the study. The purpose of the study was to assess the status of women's leadership in the field of instructional technology during the period 2014-2018. Since the previous research studies (e.g., Foley et al., 1993; Foley et al., 1994; Foley & Morgan, 2003; Kennedy et al., 2009; Scharber et al., 2017; Yoder, 2010) were conducted, the status of women's leadership in the field has

improved. The results of the study indicated a greater number of women faculty, editorial board members, authors, and conference presenters. There is also a rising trend of women leading professional organizations. This study provided an insight in to the status of women's leadership in the field. The general conclusion was that the instructional technology field which was once dominated by male leaders is now dominated by female leaders. However, additional research studies are needed to document the status of women's leadership in the instructional technology field as the status of women's leadership in the field is not fully documented and the areas of leadership included in this study may not represent the overall leadership trends in the instructional technology field.

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Appendix A

Significant Contributors to the Educational Technology Field

Leaders who made Significant Contribution's the Educational Technology Field

Men Profiled as Leaders	Men Profiled as Leaders (Continued)	Women Profiled as Leaders
John C. Belland	Wesley Joseph McJulien	Betty Collis
Robert K. Branson	M. David Merrill	Jacquelyn (Jackie) Hill
James W. Brown	Michael Molenda	Addie Kinsinger
Bob Casey	David Michael Moore	Jean E. Lowrie
Edward Caffarella	Robert M. Morgan	Rita C. Richey
Robert E. De Kieffer	Robert Morris	Sharon Smaldino
Robert M. Diamond	James Okey	Constance Dorothea Weinman
Walter Dick	Ronald Oliver	
Philip L. Doughty	Tjeerd Plomp	
Frank Dwyer	Tillman (Tim) James Ragan	
Donald P. Ely	W. Michael Reed	
James D. Finn	Thomas C. Reeves	
Robert Mills Gagné	Paul Saettler	
Castelle (Cass) G. Gentry	Wilbur Schramm	
Thomas F. Gilbert	Charles Francis Schuller	
Kent Gustafson	Don Carl Smellie	
John Hedberg	Glenn Snelbecker	
Robert Heinich	Howard Sullivan	
Stanley A. Huffman	William Travers	
Harry Alleyn Johnson	Paul Welliver	
David H. Jonassen	Paul Robert Wendt	
Roger Kaufman	Ronald Zemke	
Jerrold E. Kemp		
David R. Krathwohl		

Appendix B

Doctoral Granting Universities

Universities	Degree and Concentrations
Arizona State University	Ph.D. Learning, Literacies and Technologies
Boise State University	Ed.D. Educational Technology
Brigham Young University	Ph.D. Instructional Psychology and Technology
Florida State University	Ph.D. Instructional Systems and Learning Technologies
George Mason University	Ph.D. Concentration in Learning Technologies Design Research (LTDR)
Georgia State University	Ph.D. Instructional Technology
Indiana University	Ed.D. or Ph.D. Instructional Systems Technology
Iowa State University	Ph.D. in Education with a specialization in Teaching, Learning, Leadership, and Policy (TLLP) and emphases in (1) Instructional Technology
Kansas State University	Ed.D. and Ph.D. in Curriculum and Instruction
Kennesaw State University	Ed.D. Instructional Technology
Kent State University	Ph.D. in Educational Psychology with concentration in Instructional Technology
Lehigh University	Ph.D. Teaching, Learning, & Technology
Morehead State University	Ed.D. Educational Technology Leadership
Northern Illinois University	Ph.D. Instructional Technology
Nova Southeastern University	Ed.D. Instructional Technology and Distance Education
Ohio University	Ph.D. Instructional Technology
Old Dominion University	Ph.D. Instructional Design and Technology
Oklahoma State University	Ph.D. Education Concentration in Educational Technology
Penn State University	Ph.D. Learning, Design and Technology
Perdue University	Ph.D. Learning Design and Technology
Southern Illinois University at Carbondale	Ph.D. Learning Systems Design and Technology
Syracuse University	Ph.D. in Instructional Design, Development, and Evaluation
Texas A&M University	Ph.D. Educational Psychology: Specialization in Educational Technology
Texas Tech University	Ed.D. Educational and Instructional Technology
The Ohio State University	Ph.D. Educational Studies, Learning Technologies
The University of Alabama	Ph.D. Instructional Leadership with a concentration in Instructional Technology
The University of Southern Mississippi	Ph.D. Instructional Technology and Design
The University of Texas at Austin	Ph.D. in Learning Technologies
Towson University	Ed.D. Instructional Technology
Universities Continued	Degree and Concentrations
University of Central Florida	Ph.D. in Education with Instructional Design and Technology or Ed.D. in Education Instructional Technology concentration
University of Connecticut	Ph.D. Educational Psychology: Cognition, Instruction and Learning Technology
University of Florida	Ed.D. or Ph.D. Educational Technology
University of South Florida	Ph.D. Curriculum and Instruction with Specialization in Instructional Technology
University of Georgia	Ph.D. Learning, Design, and Technology
University of Hawaii at Manoa	Ph.D. Learning Design & Technology
University of Houston	Ph.D. Curriculum and Instruction-Learning, Design, and Technology
University of Memphis	Ed.D. Instructional Design and Technology
University of Hawaii at Manoa	Ph.D. Learning Design & Technology

Universities Continued	Degree and Concentrations Continued
University of Houston	Ph.D. Curriculum and Instruction-Learning, Design, and Technology
University of Memphis	Ed.D. Instructional Design and Technology
University of Michigan	Ph.D. Educational Studies-Learning Technology
University of Missouri- Columbia	Ph.D. Information Science & Learning Technologies Doctoral
University of North Texas	Ph.D. Learning Technologies or Ph.D. Advanced Training and Performance Improvement
University of Oklahoma	Ph.D. Instructional Psychology and Technology
University of South Alabama	Ph.D. Instructional Design and Development
University of Toledo	Ph.D. Educational Technology
University of Virginia	Ed.D. in Curriculum and Instruction-Instructional Technology Concentration
University of West Florida	Ed.D. Instructional Design and Technology
Utah State University	Ph.D. Instructional Technology and Learning Sciences
Virginia Tech	Ed.D. and Ph.D. in Instructional Design and Technology.
Wayne State University	Ph.D. Learning Design and Technology

Appendix C

Coding Sheets

Faculty in Instructional Technology Doctoral Programs

Name of University
Department
Total Number of Doctoral Faculty
Number of Female Faculty:
Professor
Associate
Assistant
Instructor/Lecturer
Number of Male Faculty
Professor
Associate
Assistant
Instructor/Lecturer

Editorial Board Members (2014- 2018)

Name of Journal
Year
Total Editorial Board Members
Number of Women
Number of Men

Journal Publications (2014- 2018)

Name of Journal	Volume and Issue #	Year	Article Title	Author (s) Name(s)	Author 1 Male or Female	Author 2 Male or Female	Author 3 Male or Female

Leaders in Professional Organization (2014-2018)

Name of Professional Organization		
Year:		
Name of Leaders:	Gender	Position

Conference Proceeding Papers (2014-2018)

Name of Professional Organization and Conference	Author 1 Male or Female	Author 2 Male or Female	Author 3 Male or Female
Year			
Total Number of Proceeding Papers			
Number of Women Presenters			
Number of Men Presenters			