LEADERSHIP TO SUPPORT E-QUALITY FOR ALL: A STUDY OF A SYSTEMWIDE ACCESSIBLE TECHNOLOGY POLICY IMPLEMENTATION

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SYSTEMWIDE ACCESSIBLE TECHNOLOGY POLICY IMPLEMENTATION

A Dissertation

by

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SPRING 2015
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I certify that this student has met the requirements for format contained in the University format manual, and that this dissertation is suitable for shelving in the library and credit is to be awarded for the dissertation.

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Caroline Sotello Viernes Turner, Ph.D.     Date
DEDICATION

This study is dedicated to the memory of Mary Shojai and to all of the current and former California State University leaders - including students, staff, faculty, administrators, and others - who have worked hard to advocate for and build accessible technology efforts in California through individual and collective agency.
ACKNOWLEDGEMENTS

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Higher education and disability

Leadership practices in higher education

Organizational change

Student success and persistence
Abstract

of

LEADERSHIP TO SUPPORT E-QUALITY FOR ALL: A STUDY OF A SYSTEMWIDE ACCESSIBLE TECHNOLOGY POLICY

by

Melissa Jayne Repa

This study explored how various campus leaders support implementation of an accessible technology initiative in a multi-campus university system. The researcher conducted a mixed methods study to explore leadership approaches to accessible technology policy implementation, perceived factors that facilitate and barriers that inhibit success of accessible technology initiatives and associated culture change. Data were collected from a document review and surveys sent to stakeholders from throughout the university system. The Critical Transformative Leadership, Diffusion of Innovations, and Emergent Change theoretical frameworks were useful in understanding the results. The democratic, bureaucratic, and political leadership approaches were found to be significantly correlated with reported accessible technology initiative implementation levels. Policy type, campus climate, familiarity with Section 508, and campus size also had significant correlations with reported accessible technology initiative implementation levels. Several overall themes emerged from the study, including critical support, critical relationships, leadership capacity, institutional barriers, and cultural inclusion, and a new model emerged: the Critical Collaborative Innovation for Accessibility (CCIA) model. Recommendations for policy and leadership and further study concluded the study.
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Chapter 1

INTRODUCTION

Background

As a student with a disability I assure you that the best way to achieve a real world education for students with disabilities is through accessible technology. Accessible and timely instructional materials assure me that I can keep up with my classmates. Accessible web design means that I can go home on my own time and work on my homework without the need to wait for a tutor or lab assistant. The procurement of IT, I cannot begin to tell you how that is going to impact my employment opportunities. (CSU student, personal communication, October 2007)

Diverse college-educated employees are needed to meet California’s workforce needs. However, too few students with disabilities are completing postsecondary degrees in a timely manner. In the California State University (CSU), the country’s largest and most diverse four-year public university system, only 47% of students with disabilities graduate within six years, whereas 52% of students without disabilities graduate within this timeframe (California State University [CSU], 2013a, 2012). At the same time, CSU courses are being increasingly converted to online or hybrid formats (e-learning) and new forms of technology are continuing to be adopted by campuses for administrative and teaching and learning purposes. However, moving courses to e-learning formats and using more technology on campuses may disadvantage students with disabilities if the technology isn’t accessible and doesn’t meet technology access standards (Burgstahler, 2004; United States Access Board [U.S. Access Board], 2000).
As the CSU continues to expand online learning and use of technologies, educational leaders face the dilemma of how to keep the pipeline accessible for all students and meet laws mandating accessibility of technology in higher education (California Senate Bill 302, 2003; CSU, 2013b; Section 508, 1998). The CSU Accessible Technology Initiative (ATI) was launched in 2006 by the CSU Office of the Chancellor to support CSU campuses in making technology and courses equally accessible to all students and employees, regardless of disability status. The vision of the initiative is “to create a culture of access for an inclusive learning and working environment” (CSU, 2013b, para 3). Table 1 outlines the related laws and policy guiding this critical initiative. Selected related laws will be described further in Chapter 3.
### Table 1

**CSU Accessible Technology Initiative: Timeline of Related Laws and Policy**

<table>
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<th>Year</th>
<th>Law/Policy</th>
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<td>1954</td>
<td><em>Brown vs. Board of Education</em>: Supreme Court case finding that separate education for separate groups of people is not equal.</td>
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<td>1973</td>
<td><em>Section 504 of the Rehabilitation Act</em>: federal law that requires reasonable accommodations for people with disabilities in educational and other settings receiving federal funds.</td>
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<tr>
<td>1990</td>
<td><em>Americans with Disabilities Act (ADA)</em>: federal law expanding civil rights protections for persons with disabilities.</td>
</tr>
<tr>
<td>1996</td>
<td><em>Telecommunications Act</em>: federal law requiring telecommunications services (e.g. television, videos, telephones) to be accessible.</td>
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<tr>
<td>1998</td>
<td><em>Section 508 of the Rehabilitation Act</em>: Amends federal law to eliminate barriers in technology for people with disabilities in programs receiving federal funds.</td>
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<td>1999</td>
<td><em>California Assembly Bill 422</em>: Amends California Education Code § 67302 to assert that when certain conditions are met publishers must provide printed material in an electronic format for students with disabilities attending a CSU.</td>
</tr>
<tr>
<td>2002</td>
<td><em>California Senate Bill 105</em>: Amends California Government Code § 11135 to clarify that state governmental entities need to address <em>Section 508 of the Rehabilitation Act</em>.</td>
</tr>
<tr>
<td>2003</td>
<td><em>California Senate Bill 302</em>: Amends California Government Code § 11135 to clarify that <em>Section 508 of the Rehabilitation Act</em> applies explicitly to the CSU.</td>
</tr>
<tr>
<td>2004</td>
<td><em>Assistive Technology Tech Act</em>: funds state programs to address assistive technology needs of individuals with disabilities.</td>
</tr>
<tr>
<td>2004</td>
<td><em>California State University Board of Trustees’ Executive Order 926</em>: Establishes that “the policy of the CSU is to make technology resources accessible to all CSU students, faculty, staff and the public, regardless of disability”.</td>
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<td>2006</td>
<td><em>California State University Coded Memorandum AA-2006-41</em>: establishes the CSU systemwide Accessible Technology Initiative (ATI).</td>
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<td>2008</td>
<td><em>Higher Education Opportunity Act (Sections 133, 761, 762, 772)</em>: requires increased textbook information, distance learning and curriculum accessibility and establishes a commission to review barriers to accessible materials.</td>
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<tr>
<td>2013</td>
<td><em>California State University Coded Memorandum AA-2013-03</em>: guides ATI implementations across the CSU system using a continuous improvement model.</td>
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Despite legal mandates, however, persistent barriers to technology are still being encountered by students with disabilities in higher education (U.S. Department of Education, 2010; Burgstahler, Anderson, Slatin & Lewis, 2008). For example, students who are Deaf may encounter course related websites containing videos without captions and students with visual impairments may find online course materials that are missing text alternatives and thus they cannot read them independently with their screen readers (Office of Services to Students with Disabilities, personal communication, April 2013). In addition, CSU systemwide graduation data suggest that students with disabilities are not performing any better since the ATI was first implemented. For example, the six-year graduation rate for CSU students with disabilities was 46.2% in Fall 2007 but was still only 45.8% in Fall 2012 (CSU, 2007, 2012); however, the economic recession and other factors may have also impacted these graduation rates.

Nevertheless, the CSU ATI has been recognized for its bold technology accessibility strategies, expertise, and coordinated systemwide change by the Chronicle of Higher Education (Keller, 2010), the U.S. Senate Committee on Health, Education, Labor and Pensions (2012), the California Department of Rehabilitation, and others. However, no comprehensive empirical study has been done to explore the efficacy of the implementation of the systemwide initiative in changing the culture of the CSU. Furthermore, there have been few studies related to implementation of accessible technology policy in higher education in general, as described in Chapter 2. For example, Locher (2004) used qualitative case study research to examine how one Midwestern university met state-mandated web accessibility standards and found that there were web
accessibility violations but that established relationships between internal and external constituencies involved in addressing accessibility issues appeared to have been a key component to improving web accessibility compliance. Despite mandates and laws designed to promote equal access, students, faculty and staff with disabilities may still experience systemic ableism, or prejudice based on disability status (Schitai, 2008).

Ableism can be enacted by individuals and institutions. Building on Locher (2004) and other existing web accessibility research, Schitai (2008) used case study methods to study the extent of ableist biases in web accessibility policies as evidenced in a California Community College and identified several key inclusiveness elements that were absent, including responses from power forces, relationships among stakeholders, and accountability of authority in implementing policy. According to Schitai (2008):

The prevalent biases in Web accessibility policymaking involve the following:
treating persons with disabilities as a marginal minority and as a population that needs managing; addressing matters related to Web accessibility only under pressure of the law; policies' focus on the individuals and their impairment rather than on the social response to disability; considering the norm's need first; and exclusion and avoidance of persons with disabilities (p.210).

In another case study on making distance learning programs at the University of Washington accessible, Burgstahler (2004) found that there was ambiguity in how accessibility guidelines should be implemented. In addition, Burgstahler (2004) observed that there were challenges in gaining faculty buy-in for accessibility and difficulties in overcoming general technical issues such as streaming media. Fichten, Ferraro,
Asuncion, Chwojka, Barile, Nguyen, Klomp, and Wolforth (2009) explored e-learning and accessibility in a survey of Canadian college students, e-learning professionals, service providers, and professors, and found that perspectives of these different groups influence their views around accessibility problems. Fielder (2011), in a study involving technical usability testing of one CSU campus web site, found that accessibility issues were still being encountered by students even when web sites claimed they followed accessibility guidelines. Overall, there is limited research on the topic of accessible technology policymaking and how leadership can improve higher education technology policy implementation and change initiatives.

**Problem Statement**

When educational technology resources are not accessible, this can impede equal access to educational opportunities for students with disabilities, including students with learning, hearing, vision, and other disabilities. Moreover, CSU campuses need to comply with federal and state laws prohibiting discrimination related to disability and other protected classes and address inequalities in accessing technology (ADA, 1990; CSU, 2013b; Advisory Commission on Accessible Instructional Materials in Postsecondary Education for Students with Disabilities [AIM Commission], 2011; U.S. Access Board, 2000). Furthermore, the complex accessibility challenges experienced by students with disabilities in navigating inaccessible technology used in higher education institutions (Seale, 2013) may be one of the many reasons why students with disabilities have lower graduation and retention rates in the CSU system compared with students without disabilities (CSU, 2012). Students with disabilities may find that their course materials
cannot be deciphered by their assistive devices and instead the information has to be manually reformatted line by line into separate alternate formats by disability services staff or translated and read aloud by a human reader. This process can take several weeks or more and can disadvantage students with disabilities by delaying their access to instructional materials, separating them from their peers and denying them full participation in their courses and their academic goals. In addition, Stahl (2009) points out that the separate alternate versions of course materials, which are created for students with disabilities as workarounds to inaccessible materials, have varying quality and involve inefficient use of campus resources.

The CSU cannot afford to waste its resources and fail its students with disabilities, especially given the state budgetary constraints, the need for more college-educated workers in the state of California, and the already high unemployment rates of people with disabilities (Johnson, 2010; United States Department of Labor, 2014). Turner (2012) suggests that “By addressing accessibility gaps in university programs/services, postsecondary institutions [can] ensure students have the opportunity to fully utilize curricular materials, demonstrate a mastery of their curriculum, and develop the skills necessary for future employment” (p.3). To bridge the accessibility gaps and diminish the need for separate and inadequate materials for students with disabilities, institutions need to develop capacity to advance the use of inclusive technology and to fundamentally transform the culture of the campus to be more accessible to persons with disabilities. The CSU Accessible Technology Initiative was launched to build this capacity.
However, despite the inclusive intentions and ambitious goals of the CSU’s accessible technology change initiative, many campus leaders may still face multiple barriers in actually implementing the ATI and related policy in practice on their campuses. For example, faculty and other stakeholders may not have enough support, resources, training, and time to implement accessible technology effectively (Seale, 2013). Limitations in the accessibility of educational technology products that are commercially available may present additional barriers to campuses (Turner, 2012). Attitudinal and cultural barriers such as ableism and implicit biases towards people with disabilities may also impact the implementation of accessible technology policy in practice (Schitai, 2008).

CSU campuses experience different levels of implementation of the ATI according to aggregated data from annual reports submitted by campuses and based on monthly discussions among campus executive sponsors of the initiative (CSU, 2014b). Since the CSU as a system did not earmark specific funds for the campuses for implementing ATI, each campus must identify resources to support the initiative. Furthermore, faculty and administrative leaders who oversee ATI efforts on each CSU campus may address the execution of accessible technology policy differently. Different leadership approaches may influence policy implementation and levels of support and commitment experienced by campuses involved in technology culture change initiatives (Bolman & Deal, 2008; Galla, 2010). For example, research has suggested that leadership approaches that promote collaboration and ownership from all stakeholders are essential for cultivating change and building an organizational culture that embraces educational
technology (Bridges, 2003; Galla, 2010). Moreover, theoretical literature implies that transformational leadership approaches can inspire campus stakeholders to stay committed to the greater goals and vision of a change initiative, despite obstacles, while transformative leadership approaches can convince stakeholders to support social justice and advocate strongly for equity and inclusion in addressing the needs of students (Nevarez, Wood, & Penrose, 2013; Santamaria, 2012). However, more research is needed on how leadership practices might specifically help to change and sustain a culture that encourages accessible technology in higher education.

**Nature of the Study**

The purpose of this study was to explore how higher education leaders can support accessible technology policy implementation and the organizational change required to foster a culture of access and inclusion in the CSU. The study aimed to investigate the implementation of accessible technology policy at multiple CSU campuses to identify barriers that interfere with implementation and factors that enhance support of accessible technology policy in order to build and sustain a culture of access and inclusion. The setting in this study included multiple CSU campuses in different regions of California that are implementing the systemwide accessible technology change initiative and related policy. This study proposed to address the following research questions:

- **Question 1:** How do CSU campus leaders support the implementation of ATI, institution-wide change associated with accessible technology, and a culture that promotes access and inclusion?
• **Question 1a:** Is there a significant relationship between perceived leadership style and levels of implementation of accessible technology initiatives in the CSU?

• **Question 2:** What cultural, emotional, social, and other barriers do faculty and administrative leaders experience in implementing accessible technology initiatives and promoting culture change in the CSU?

• **Question 3:** What are the factors that contribute to successful implementation of accessible technology policy and culture change in the CSU?

This study used a mixed methods research design to address the research questions. The study included surveys of multiple stakeholders (faculty and administrative leaders) involved in ATI implementation efforts on 23 campuses. Surveys were administered to purposeful samples of faculty and administrative leaders who are key stakeholders in the CSU involved in implementing accessible technology as noted in the ATI policy guiding document, *California State University Coded Memorandum AA-2013-03* (CSU, 2013c). These stakeholders included those designated by their campus Presidents as Executive Sponsors of the initiative (typically Vice Presidents, but may include different levels of the university hierarchy), Faculty Senate chairs, disability services directors, ADA compliance officers, and faculty leading centers for teaching and learning using technology, as referenced in the Coded Memorandum (CSU, 2013c). The selected methodology provided broad systemwide data about the perceived successes and challenges of leading and implementing accessible technology initiatives on campuses. Furthermore, the surveys provided the researcher an opportunity to explore leadership approaches, barriers and facilitators to implementation of ATI policy from multiple
insider leader perspectives. The quantitative and qualitative information gathered from multiple campuses and multiple faculty and administrative leaders helped to demonstrate how different leaders and campuses implement ATI and related culture change in the CSU. Different colleges experiencing similar outcomes and levels of implementation were compared in order to find common barriers and best practices and to analyze leadership approaches used to implement accessible technology policy. In addition, a review of CSU policy guiding documents, campus annual reports and other ATI related documents illuminated leadership practices, barriers, and factors related to different levels of ATI policy implementation. The review of documents allowed the researcher to triangulate data and further illuminate ATI policy implementation practices and factors and barriers that can foster or inhibit a culture of access.

Theoretical Frameworks

Several theoretical concepts were used to frame this study. See Figure 1 for different aspects of the Accessible Technology Initiative implementation that were studied and related theoretical/conceptual frameworks that grounded the study.
Figure 1. Three components of ATI implementation and theoretical frameworks.

The first theoretical framework used to guide the study was Leadership Theory, namely Critical Transformative Leadership (CTL) Theory, which is informed by both Transformational Leadership and Critical Theory (Santamaria, 2012; Nevarez, Wood & Penrose, 2013; Bess & Dee, 2012). The CTL theoretical framework suggests that leadership must be critical, participatory and collaborative to support inclusive ATI policy efforts and to effectively advocate for e-quality of teaching and learning for all students. Students with disabilities may be reluctant to advocate for their right to have equal access to technology and to vocalize the barriers they experience. Therefore CTL Theory suggests that leaders must acknowledge the inequalities faced by students experiencing inaccessible technology as well as expose the barriers and factors related to advancing sustainable organizational change to make technology accessible.
Furthermore, CTL Theory asserts that critical leaders can shape the culture of their organizations to promote access and equity for all students, including students with disabilities. While various leadership approaches may be employed by leaders involved in CSU accessible technology efforts, the researcher hypothesized that leaders who adopt a CTL approach can more effectively counteract the culture of silence (Freire, 1993) experienced by students with disabilities and push for social change by giving students and employees a voice to communicate about their experiences, inviting collaboration and campus-wide participation in the initiative, challenging inequities and promoting universal design principles (CAST, 2011) and a culture of access espoused by the ATI.

The second set of frameworks that is used to guide this study is Organizational Change theory. One key organizational change theory, the Diffusion of Innovation (DOI) Theory (Rogers, 2003), describes how new ideas and technology can spread through cultures. According to Rogers (2003), “Innovativeness is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than the other members of a system” (p. 22). Although organizational change can be approached from several organizational change models, since the organizational change involved in ATI policy implementation is related to technology innovation, DOI Theory is most relevant. DOI Theory helped to explain the process of institution-wide organizational change and adoption of new ways of using technology needed to successfully implement accessible technology policy. Further, the DOI Theory suggests that faculty and administrative leaders who are “early adopters” of accessible technology and e-quality can be important influences on other faculty who may be hesitant or unsure of how to
make changes needed to support accessible technology; this is especially important for building trust and addressing concerns about transforming technology practices on a campus. Figure 2 illustrates the DOI theory and different individuals’ levels of innovation and adoption of change.

**Figure 2.** Diffusion of innovations (DOI) theory. Adapted from Rogers (2003, p.281).

DOI Theory centers on change processes and characteristics of individuals, but does not foster a culturally responsive, participatory approach needed to create and sustain a shared culture of access. Thus an additional organizational change model, the Emergent Change framework of social constructionism (Bess & Dee, 2012), complemented the DOI Theory for this study. The Emergent Change framework recognizes that change can emerge organically through multiple grassroots efforts and that creativity and continuous improvisation are needed to reflect the changing needs of students (Bess & Dee, 2012; Brown & Eisenhardt, 1997; Bastien & Hostager, 1988). Given that multiple campuses are implementing accessible technology change initiatives concurrently, organizational change can emerge through local grassroots initiatives. The DOI Theory was thus used as a lens for reviewing the planned implementation of the accessible technology policy and the Emergent Change framework was used to inform
the actual implementation of policy and culture change on campuses. These theoretical frameworks will be further discussed and reviewed in Chapter 2.

**Operational Definitions**

For the purpose of this study, the following terms apply:

- **Ableism**: Prejudice based on disability status or a view that disability is a deficit rather than a socially constructed concept (Merriam-Webster.com, n.d.; Kaplan, 1998; Schitai, 2008). Disablism may also be used as a term (Flanagin, 2013; Deal, 2007).

- **ADA**: Americans with Disabilities Act of 1990; federal civil rights law that prohibits discrimination based on disability (ADA, 1990).

- **Accessible technology**: Technology such as web pages, course videos, printers, and software that can be accessed readily by persons with disabilities, including those who use assistive technology as an aid. According to the Office of Civil Rights (U.S. Department of Education, 2013):
  
  - "Accessible" means a person with a disability is afforded the opportunity to acquire the same information, engage in the same interactions, and enjoy the same services as a person without a disability in an equally effective and equally integrated manner, with substantially equivalent ease of use. The person with a disability must be able to obtain the information as fully, equally and independently as a person without a disability. (p.1)

- **Accommodations**: Reasonable modifications and adaptations, such as interpreters, readers, and assistive devices, provided to allow access for persons
with disabilities (United States Department of Education, Office for Civil Rights, 1998).

- **Alternate Formats**: Alternative versions of print or electronic information converted into Braille, large print, audio, electronic text or other formats used by a person with a disability (AIM Commission, 2011).

- **Assistive Technology**: Specialized hardware and software used by persons with disabilities to access a computer; may include, but is not limited to, alternative input devices, screen readers, screen magnifiers, switches, and voice recognition (AIM Commission, 2011).

- **Critical Theory**: Organizational theory which highlights how power structures and dominant ideologies privilege and disadvantage individuals from different groups (Bess & Dee, 2012); Critical Theory applied to disability (Critical Disability Theory) suggests that disability is socially constructed and that power and institutional inequalities marginalize persons with disabilities (Linton, 1998).

- **Critical Transformative Leadership Theory (Social Justice Leadership)**: Leadership theory derived from Critical Theory and Transformational Leadership Theory, which suggests that transformative leaders at their core should advocate for others and should be participatory and collaborative. According to Santamaria and Santamaria (2011), as cited in Santamaria (2012), three behaviors characterize critical transformational leaders: understanding critical issues, convincing others of the urgency of these issues, and creating a safe space for dialogue, reflection and action.
**Diffusion of Innovations Theory**: Planned change model which differentiates individuals’ levels of innovativeness and adoption of change within a system using five sequential categories: innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003).

**Disability**: A person with a physical or mental impairment that substantially limits one or more major life activities, has a record of impairment, or is regarded as having such an impairment (ADA, 1990). For the purpose of this study person first language (e.g. “student with a disability” rather than “disabled student”) is used to emphasize the person, not the disability status (United Spinal Association, 2008).

**Emergent Change Framework**: Social constructionist model of organizational change which suggests that organizational change emerges through multiple, grassroots initiatives (Bess & Dee, 2012; Mintzberg & Waters, 1985).

**E-Quality**: Equitable and high quality electronic or information technology. American Association of Colleges and Universities (AAC&U) reflects on the concept of e-quality as follows: “But in our fascination with the promise of technology, are we paying sufficient attention to the connection between innovation and educational quality… Can we instead judge the value of innovations by how well they create long-term opportunity, strengthen students’ capacities, and reverse the most inequitable features of U.S. higher education?” (AAC&U, 2013).
• **Section 508**: Section 508 of the Rehabilitation Act of 1973, as amended in 1998. Federal law which codifies accessibility standards for information technologies, such as web pages, telecommunications, software, hardware, and other technologies, that are developed or maintained by federal agencies and other governmental entities receiving federal funds.

• **Social Constructionism**: Organizational paradigm which suggests that meaning comes from interpersonal interactions, experiences and ideas and that decisions are made through communication and participation of constituents (Bess & Dee, 2012).

• **Social Justice**: Addressing inequities and ensuring that individuals from marginalized groups are afforded equality of opportunities (Freire, 1993).

• **Transformational Leadership Theory**: Leadership approach in which leaders use work ethic, great communication, vision, affiliate development, and multi-skilled leadership to increase the motivation of followers and followers are empowered to perform beyond expectations (Nevarez, Wood & Penrose, 2013; Nevarez & Wood, 2010).

• **Universal Design**: Architecture-based approach to the design and use of services, environments, resources and materials that ensures equal access for a wide range of individuals regardless of their differences (CAST, 2011).

**Assumptions and Limitations**

One assumption of this study was that research on effective accessible technology policy implementation and leadership is significant and timely for educational leaders.
Since several campuses in the CSU system (including San Francisco, Los Angeles, Pomona, San Marcos, San Diego and Dominguez Hills) were audited for ADA compliance related to accessible technology in 2014 (CSU, 2014a), and several universities (e.g. Louisiana Tech, University of Montana, Florida State University) were recently litigated against or accused of inaccessibility of technology (Information Technology Systems and Services, 2013), the meaningfulness and urgency of this study is supported. Another assumption the researcher made was that CSU leaders can be successfully recruited to complete the surveys and that the leaders would be willing to volunteer, be honest and provide rich thick descriptions in the context of an issue with legal implications. Incentives for participating in the research and anonymity in survey responses were two strategies mitigating these concerns.

There were also several methodological limitations in this mixed methods study. One limitation was the number of participants in the sample. Since there are only 23 CSU campuses and a limited number of faculty, student, staff, and administrative leaders involved in implementation of the ATI policy on each campus, there are inherent limits to the number of participants who could be recruited and included in the study. However, since the study was specifically focused on leadership in CSU ATI policy implementation, this population was selected to best address the research questions and purpose of the study. In addition, the small sample size and use of purposive sampling of multiple CSU campus leaders means the study will not be generalizable to all higher education systems. Furthermore, results may not be representative of all campuses in the CSU and the sample of leaders who chose to participate may not include people with
disabilities or a diverse ethnic and gender make up of leaders, especially given the low representation of faculty and administrators of color in the CSU (CSU, 2013d). Using multiple sources of data, such as policy documents and annual reports, helped to promote data reliability and validity and better capture broad experiences. Other strategies for promoting data reliability and validity included the researcher providing detailed accounts of methods, procedures and decisions and engaging in critical self-reflection regarding assumptions and biases that may impact the data collection and analysis (Merriam, 2009), as described in Chapter 3.

There are also limitations in statistical methods that could be used to analyze surveys. The surveys explored leadership approaches and affordances and barriers to accessible technology policy implementation as perceived by selected faculty and administrative leaders in the CSU and could also provide insight on the relationship between leadership practices and the implementation of policy. However, the survey results do not suggest causation. Moreover, this study is not generalizable to all areas of technology policy. However the findings explored the problems and suggested possible solutions to accessible technology policy barriers.

Finally, since the researcher is involved closely with accessible technology efforts in the CSU through her role as an administrator of Services to Students with Disabilities at one CSU campus, the researcher needed to make the reader aware of this and ensure that the faculty and administrator participants’ responses were kept confidential and that pseudonyms were used. Furthermore, since the researcher knew some of the administrative leaders and executive sponsors, the researcher ensured surveys did not
include the names of the respondents. In addition, the researcher needed to have a second reviewer read and comment on the findings and themes to ensure the results were plausible based on the aggregated survey results and archival data (Merriam, 2009). However, the researcher’s background was also beneficial to the study because the researcher’s knowledge of the accessible technology initiative and policy and experience with some of the potential key issues helped the researcher to reflect more critically in order to interpret the findings.

**Significance of the Study**

The study built on research on organizational change, accessibility and educational technology policy and began to address the lack of research on leadership in technology accessibility policy, including barriers to policy implementation, and elaborates on knowledge related to social justice leadership by applying it to technology. The study recommended practices that leaders can use in policy implementation to help them advocate for inclusive technology and equity for all students. Leaders responsible for leading change efforts to ensure e-quality of technology can learn strategies for managing organizational culture change from this study.

Comparing various postsecondary leaders’ approaches to accessible technology policy implementation and perceived barriers to integrating accessible technology change initiatives and culture change provided insights on the differing needs of campuses. Further, understanding the factors affecting leaders could facilitate increased effectiveness of diffusion of the accessible technology change initiative. Faculty and administrative leaders involved in implementing technology initiatives and policy
changes were the main stakeholders who might benefit from the research. However, students and employees with disabilities were also key beneficiaries of successful policy implementation around inclusive technology. Based on results, campus leaders could improve local policies to be more inclusive of diverse students as online learning and use of campus technology continues to expand.

**Conclusion**

The CSU has an obligation to support equal access to technology to support the success of all of its students and to meet legal obligations. This study aimed to look specifically at leadership practices involved in implementing accessible technology policy at multiple campuses in the CSU system by analyzing policy implementation and comparing multiple leadership practices. Using Critical Transformative Leadership, Diffusion of Innovations, and Emerging Change theoretical frameworks, this study provided research-based findings related to effective leadership in ATI policy implementation in the CSU and challenges and facilitating factors to successful policy implementation.

Chapter 2 includes a review of the existing literature related to the study, including a legal overview, research related to technology and accessibility policy, leadership approaches, organizational change, theoretical literature, and gaps in the existing research. Chapter 3 discusses the mixed-methods research design, data collection and instrumentation, data analysis, and how validity and protection of participants are ensured. Chapter 4 describes the data management process, findings, and themes, and how research questions and underlying theoretical frameworks are addressed. Chapter 5
summarizes and interprets the findings, provide the researcher’s reflections on the study, and make recommendations in terms of leadership practices, policy implications, and future research studies needed.
Chapter 2

LITERATURE REVIEW

Introduction

Chapter 1 presented an overview of the researcher’s proposed dissertation study relating to leadership and implementation of the California State University (CSU) Accessible Technology Initiative (ATI) and related organizational culture change on CSU campuses. This chapter lays out the argument for this research in relation to the relevant literature. The literature review is divided into five sections. The first section provides a historical discussion and overview of laws related to the ATI and accessible technology. The second section discusses literature related to technology and accessibility policy implementation in higher education. The third section highlights research related to leadership approaches and organizational change in higher education. The fourth section reviews theoretical literature related to Critical Transformative Leadership, Diffusion of Innovations, and Emergent Change Theories. Throughout the Chapter, gaps in the existing research will be discussed, including how this dissertation study addresses those gaps and extend the current understanding of accessible technology policy and leadership.

Legal Background and History

This section examines selected legal requirements and policies that drive the California State University’s (CSU) accessible technology policy implementation. A review of related statutes and regulations can provide a broad understanding of how public policy can support equal access to technology for persons with disabilities.
Furthermore, a history of the laws, policies and cases that led up to the CSU’s Accessible Technology Initiative can help to provide a basic context and impetus for this study.

Federal and State Legislation

Non-discrimination and equal access for persons with disabilities dates back to historical federal policies such as the Equal Protection Clause of the Fourteenth Amendment of the United States Constitution in 1868, which declared that no state shall deny "the equal protection of the laws" (U.S. Const. amend. XIV). However, discrimination and bias against people with disabilities continued to occur despite these protections. For example, in 1914, the majority of states had laws prohibiting marriage for individuals with disabilities; individuals who violated these laws would risk imprisonment (Smith, Wilkinson, & Wagoner, 1914). Furthermore, people with disabilities as a group faced discrimination in education, employment, and society in the 20th century (Mayerson, 1992).

Later, civil rights laws were enacted to give persons with disabilities legal protection to advocate for equal access. These laws included Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1973, as amended in 1998, and Title II of the Americans with Disabilities Act of 1990, as amended in 2010. These laws passed over the past three decades essentially require postsecondary institutions to provide equitable access to put individuals with disabilities on a level playing field with their peers (Rainey, 2011). According to Cloud (2004), “Prior to the enactment of these laws, few students with disabilities could overcome the many obstacles that precluded attending college” (p.18). Moreover, these laws can help
encourage postsecondary educational leaders to create learning and working environments that are inclusive and effective for all students and employees.

Section 504 of the Rehabilitation Act of 1973 requires that federally-funded universities ensure that programs they provide are accessible to all students, including students with disabilities. This means that these institutions cannot deny benefits, discriminate or exclude students in any program based on disability (Marshak, Van Wieren, Ferrell, Swiss, & Dugan, 2010). Section 504 suggests that reasonable accommodations, including aids such as alternate formats and assistive technology, need to be provided to students with disabilities as needed to ensure that students have full access to programs (U.S. Department of Education, 1998; California State University, Sacramento, 2006).

The Americans with Disabilities Act (ADA) of 1990 requires that organizations, including postsecondary institutions, make reasonable accommodations and provide equal access to facilities for persons with disabilities. Specifications in the ADA include building and architectural accessibility guidelines and language ensuring that persons with disabilities enjoy an institution’s full range of programs and services. For example, the ADA requires curb cuts at intersections on public streets. Furthermore, under the ADA, programs and services must be provided in an integrated setting for persons with disabilities. Bradner (2008), citing a lawsuit by the National Federation of the Blind against Target, notes web pages and other technologies that are part of an institution’s facilities and programs are also subject to ADA requirements for equal access.
Section 508 of the Rehabilitation Act of 1973, as amended in 1998, is the main federal law referenced related to accessible technology. Section 508 includes a set of specific guidelines for how to design and implement various types of technology so that individuals with disabilities can access them. Technology standards are provided for software applications and operating systems; web-based intranet and internet information and applications; telecommunications products; video and multimedia products; and self-contained closed products (U.S. Access Board, 2000). The related Telecommunications Act (1996) requires that manufacturers and providers of telecommunications equipment and services ensure that such equipment and services are accessible to and usable by persons with disabilities. See Appendix A for the complete U.S. Access Board Section 508 technology accessibility standards. The Section 508 law represents a more proactive, inclusive approach for persons with disabilities in which access to information is readily available (not just when a person with a disability requests “special” access). According to Smith (2008), “Broadly, the Section 508 law and specifications are to electronic pathways what the "Americans with Disabilities Act" (ADA) law and specifications are to physical pathways” (p. 5). In other words, Section 508 provides electronic curb cuts to enable people with disabilities to use technologies or electronic pathways with the same ease as people without disabilities. The term “curb-cut” is used in some of the literature as a metaphor to highlight how designing instruction and services to be accessible to people with disabilities can be beneficial to all users (Pisha & Coyne, 2001; Johnson & Fox, 2003).
When Section 508 was passed in 1998, it was not initially clear that state agencies and institutions in California were required to meet the Section 508 federal technology access requirements. One reason for this confusion may be because the federal law refers to procurement of electronic and information technology by federal agencies for federal employees. For example, Section 508 states “… individuals with disabilities who are Federal employees [need] to have access to and use of information and data that is comparable to the access to and use of the information and data by Federal employees who are not individuals with disabilities” (Section 508, 1998, para 2).

However, accessibility of technology resources is still needed for persons with disabilities to participate fully in state programs and services and to meet ADA requirements. Consequently, California Senate Bill (SB) 105 was passed in 2002, requiring all state agencies to comply with Section 508; California Government Code Section 11135 (2002) was thus amended to say:

In order to improve accessibility of existing technology, and therefore increase the successful employment of individuals with disabilities, particularly blind and visually impaired and deaf and hard-of-hearing persons, state governmental entities, in developing, procuring, maintaining, or using electronic or information technology, either indirectly or through the use of state funds by other entities, shall comply with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations. (para 6)
According to Smith (2008), SB 105 excluded the CSU as a specific state entity required to comply with the Section 508 provisions. However, the California State Legislature passed Senate Bill 302 in 2003 to apply Section 508 to the CSU and amend Section 11135 of the California Government Code to include the CSU explicitly. As the Legislative Digest of Senate Bill 302 (2003) notes:

[T]he Legislature intended to apply the provisions requiring compliance with the accessibility requirements of the federal Rehabilitation Act of 1973 and its implementing regulations for the purposes of improving the accessibility of persons with disabilities to electronic or information technology to the California State University. (para 1)

Other related federal laws include the Assistive Technology Act (2004), which provides assistive technology (AT) grants to states to help fund AT devices such as screen readers, screen magnifiers, augmentative communication devices and other specialized technologies for individuals with disabilities as well as training and technical assistance programs to enhance public awareness of assistive technology. This public awareness effort complements the Accessible Technology Initiative efforts, which focus on universal access to technology and services, to ensure that they are inclusive to individuals with disabilities who use assistive technologies.

**Office for Civil Rights Cases**

The Office for Civil Rights (OCR) in the U.S. Department of Education investigates disability discrimination and related complaints at institutions subject to the requirements of the Rehabilitation Act and Title II of the ADA. Around the time that SB
105 and SB 302 passed, several complaints against CSU campuses were filed with OCR regarding the timeliness and availability of instructional materials and electronic text access at these institutions (U.S. Department of Education, 2003; The Galvin Group, 2014). These investigations resulted in OCR resolution agreements for the CSU campuses to ensure institutional compliance with federal law and OCR's expectations of timely and equitable access (The Galvin Group, 2014). The agreements recognized that students with disabilities and disability services staff cannot attain timely access to instructional materials and electronic texts in isolation; they need the bookstore, faculty, and others on the campus sharing in this responsibility (Access Technology in Higher Education [ATHEN], 2013). California Assembly Bill 422 (2001) and Assembly Bill 386 (2009) amended the California Education Code § 67302 to describe book publishers’ responsibility for providing printed material and videos in an electronic format for students with disabilities attending a CSU or other public postsecondary educational institutions to facilitate conversions into more accessible alternate formats such as electronic text and captioned video. However, the law does not outline the other entities involved in creating accessible instructional materials in the CSU, such as faculty, bookstore, disability services, academic technology, and others.

For the rest of the CSU system, the OCR cases solidified how critical it is to establish a shared, institution-wide process for providing instructional materials for students and others with disabilities. These OCR cases also set the legal groundwork for establishing CSU system policy on disability support and accommodations and the CSU Accessible Technology Initiative in 2006. More recently, a joint Dear Colleague letter
from the U.S. Department of Justice Civil Rights Division and the U.S. Department of Education Office for Civil Rights issued in 2010 (U.S. Department of Education, 2010) shared concerns and provided a warning to university Presidents: “It is unacceptable for universities to use emerging technology without insisting that this technology be accessible to all students” (para 5). Subsequently, several higher education Office for Civil Rights cases, e.g. Louisiana Tech University and South Carolina Technical College, have continued a national conversation around the topic of equal access to instruction and technology resources in higher education (Grasgreen, 2013). Furthermore, the CSU has been recognized as a national role model for ensuring that campus-wide educational technology and information is accessible to persons with disabilities (National Federation of the Blind of Minnesota, 2013). A study exploring the CSU’s unique accessible technology policy implementation was therefore timely and critical.

The California State University Accessible Technology Initiative

The CSU Board of Trustees’ policy on disability support and accommodations established by Executive Order 926 in 2004 states that “the policy of the CSU is to make technology resources accessible to all CSU students, faculty, staff and the public, regardless of disability” (CSU, 2004, p.5). The CSU Accessible Technology Initiative was launched by the CSU Office of the Chancellor in 2006 to reflect this policy. According to the CSU Office of the Chancellor, the Accessible Technology Initiative adopts the principles of universal design, an approach to the design of products and services to be usable to the greatest number of people regardless of ability, age, background or situation (CAST, 2011; CSU, 2013b). Universal design can proactively
accommodate and create welcoming environments for an increasingly diverse body of students, including students with disabilities. In the context of instructional technology and online learning, specific guidance for faculty teaching online courses is also recommended to make the instruction more accessible (Burgstahler, 2004; Rao & Tanners, 2011). Rao and Tanners (2011) recommend creating “curb cuts for cyberspace” using universal design educational models with a wide range of inclusive strategies and approaches such as:

a. Creating welcoming classrooms
b. Determining essential course components
c. Communicating clear expectations
d. Providing timely and constructive feedback
e. Exploring use of natural supports for learning, including technology
f. Designing diverse teaching methods that consider diverse learning styles, abilities, ways of knowing, and previous experience and background knowledge
g. Creating multiple ways for students to demonstrate knowledge
h. Promoting interaction among and between faculty and students (Rao & Tanners, 2011, p.212)

The CSU policy to make information technologies and resources accessible to individuals with disabilities to the fullest extent possible is also based on the principles of universal design (CSU, 2006). While the CSU Board of Trustees has authority to establish policy for all 23 campuses, each CSU campus has autonomy for establishing
policy in a shared governance system that involves faculty, administrators and other stakeholders (CSU, 2001). Within this decentralized context, the ATI has taken a multi-campus, multi-pronged strategy, with focus on implementation of three priorities: web accessibility, instructional materials accessibility, and accessible electronic and information technology procurement. According to *CSU Coded Memorandum AA 2013-04* (CSU, 2013c), each of the ATI priority areas has specific implementation goals:

**Web Accessibility Goals:**

- **Web Accessibility Evaluation Process:** Identify and repair or replace inaccessible websites, web applications, and digital content.

- **New Website/Web Application and Digital Content Design and Development Process:** New website/web application and digital content development complies with all Section 508 accessibility guidelines.

- **Ongoing Monitoring Process:** Updating and maintenance of websites/web applications and digital content comply with Section 508 Accessibility Standards.

- **Exemptions and Alternatives Process:** Documented non-compliant websites, web applications and digital content must be delivered in an equally effective alternate format and granted an exemption.

- **Training Process:** Professional development training has incorporated Section 508 accessibility guidelines into website and web applications development and digital content preparation.
• **Communication Process:** The campus community is aware of Section 508 guidelines to make web-based information available to everyone (students, staff, faculty & the general public) regardless of disability.

• **Administrative Process:** Campus governance entities are aware of and kept informed about web accessibility.

*Procurement Accessibility Goals:*

• **Procurement Procedures:** An ATI Electronic and Information Technology (E&IT) Procurement Plan, documents, forms, and other materials to support 508 procurements at the campus are created and published.

• **Staffing or Role Definition:** ATI procurement team is fully staffed with clearly defined roles for processing E&IT procurements.

• **Exemption Process:** A well-documented process has been established and is used for exemptions to E&IT procurements.

• **Equally Effective Access Plans:** Equally Effective Access Plans are created for E&IT products that are not fully 508 compliant.

• **Training:** All parties involved in E&IT procurement have been trained, and a continual training program is in place.

• **Outreach (Communications):** All individuals on campus involved in the purchasing of goods are knowledgeable about Section 508 in the context of E&IT procurement.

• **Evaluation & Monitoring:** Campus has established a continual evaluation process with standard forms and procedures. Feedback from the process along
with direction is provided to training, outreach, and other groups involved in E&IT procurements.

- **Experience/Implementation:** Campuses have sufficient experience and expertise in completing E&IT procurements.

**Instructional Materials Accessibility Goals:**

- **Timely Adoption:** The campus has implemented a comprehensive plan to ensure the timely adoption of textbooks and other instructional materials.

- **Identification of Instructional Materials for Late-Hire Faculty:** The campus has implemented a comprehensive plan to ensure that textbooks have been identified for courses with late-hire faculty.

- **Early Identification of Students with Disabilities:** The campus has implemented a comprehensive plan to ensure that students with disabilities are identified and able to request alternate media materials in a timely manner.

- **Faculty Use of Learning Management Systems (or non-Learning Management System) Course Websites:** The campus has implemented policies and procedures to promote the posting of all required curricular and instructional resources (including print-based and multimedia materials) in a central, accessible electronic location.

- **Accessibility Requirements for Multimedia:** The campus has implemented policies and procedures to ensure that accessibility requirements have been incorporated into the adoption process for all multimedia-based instructional resources.
• **Accessibility Requirements for Curricular Review and Approval:** The campus has implemented policies and procedures to ensure that accessibility requirements have been incorporated into the curricular review process.

• **Supporting Faculty Creation of Accessible Instructional Materials:** The campus has implemented policies and procedures to support faculty in selecting, authoring, and delivering accessible instructional materials.

• **Communication Process and Training Plan:** The campus has implemented a broad-based ATI awareness campaign, supported by a comprehensive training infrastructure to increase technological accessibility across the campus.

• **Process Indicators:** Campus Instructional Materials Accessibility Plan (IMAP) committee has sufficient breadth, resources, and authority to effectively implement a comprehensive IMAP initiative. (CSU, 2013c, pp. 3-4)

The successful completion of these accessible technology implementation goals benefits a large number of CSU students and employees with disabilities. In Fall 2012, 12,851 students with disabilities systemwide were reported as receiving disability services from a CSU campus. This represents an increase of 10.5%, from 11,502 students in Fall 2011 (CSU, 2012). Thus the overall number of identified students with disabilities in the CSU system is growing and is equivalent to a large college campus (Turner, 2012). Disabilities reported in the CSU population include visual limitation, communication disability, mobility limitation, learning disability, deafness, attention deficit / hyperactivity disorder (ADHD), acquired brain injury, psychological or psychiatric disability, autism spectrum disorder and other functional limitations (CSU, 2012).
Specific technology accessibility issues experienced by CSU students and employees with disabilities depend on the individual’s functional limitation/disability, instructional and administrative programs/services they use, and accessibility support available through those services/programs (Turner, 2012).

For example, a student who is deaf may encounter videos used in class missing closed captions; thus she may need to interact with disability services, the instructor, technology services and other departments to request captions for the videos. If the video was obtained from an external website, it may take weeks or more to coordinate with the vendor to get the video in a captioned format for the student. Likewise, an employee who is blind may try to access a training website required for his work that is not compatible with his screen reading software. If accessibility cannot be supported by the vendor’s training materials, the university would need to accommodate the employee through equivalent access, for instance through use of a reader, transcription of the web pages into an alternate format such as Braille, or other reasonable accommodation. These accommodations would potentially cost the university thousands of dollars, which is potentially more than the cost of the training materials. Instead, the ATI advocates for universities to work with vendors up front to demand accessibility improvements to their products and services to meet legal requirements and to help ensure additional costs are not incurred by the campus. Although the funding of disability services and reasonable accommodations differs on each campus, as the number of students and employees with disabilities increases, the CSU will have to spend an increasing amount of resources to
meet legal mandates. In times of shrinking state budgets, however, strategies that can reduce these institutional costs should be a clear fiscal priority.

The CSU ATI has been recognized for its efforts in advocating for improvements in technology product accessibility for students and employees with disabilities (Keller, 2010). For example, ATI staff were involved in negotiating for improvements in Apple’s iTunes U, Google Apps and Blackboard learning management system, products which are used by multiple universities across the nation. In fact, Senator Tom Harkin, one of the main authors of the ADA, lauded the California State University for its work in improving accessibility of higher education and educational technology (United States Senate Health, Education, Labor, and Pensions Committee, 2012). In addition, the CSU system campuses have observed higher average overall web accessibility ratings than other groups of public higher education institutions (60% for the CSU vs. about 50% in Texas and Illinois, and 44% in the other states) (Thompson, Comden, Ferguson, Burgstahler & Moore, 2013). However, the CSU Office of the Chancellor staff have acknowledged that despite these accomplishments and the development of “accessibility standards for IT products and an array of Federal and State legislation requiring that accessibility status be a major factor in the adoption of IT products, accessibility support by most educational technology vendors remains weak” (Turner, 2012, p. 4).

Furthermore, as the CSU continues to expand online courses and programs, faculty and administrative leaders face the challenge of ensuring e-learning and technology resources are both accessible and high quality for all students and employees. Although a memorandum was issued to CSU Presidents in August 2013 to remind campuses to plan
for accessibility and e-quality in online education, this was issued after the initial Request for Proposals (RFP) for funding online course redesign projects, especially for bottleneck courses (California State University, 2013f; Rivera, 2013). Moreover, the RFP did not include specific provisions for inclusive teaching for students from diverse backgrounds, including students with disabilities. Although access to electronic and online resources can be good for many students with disabilities since digital formats are usable by assistive technologies, ease of access is impacted by how the content is developed. For example, if the video content is not captioned or the web pages are not compatible with assistive technologies based on the Section 508 accessibility guidelines, students with disabilities may be excluded from full participation in the course. Further, because the proposals were submitted under a tight deadline, there was minimal time for faculty consultation on accessibility of the courses. Therefore research was needed to strategically address e-quality and to combat barriers such as vendor, financial, technical, and pedagogical issues as online learning and use of technology continues to rapidly expand in the CSU.

Now that the ATI has been operating on CSU campuses for about seven years, the time is ripe for studying barriers facing CSU leaders and facilitators for success as they work to continually maintain and improve implementation of accessible technology policy. Furthermore, according to educational leadership scholars, it takes about seven years to change organizational culture under the guidance of transformational leaders (C. Nevarez, personal communication, December 2012). Thus the timing to study the impact of leadership and the ATI on changing the culture of the CSU campuses is ideal.
Although there have been a few studies related to inaccessible technology at other higher education institutions, including several individual CSU campuses (Flanagan, 2013; Fielder, 2011), a broad systemwide study of accessible technology policy implementation from an organizational leadership perspective had never been done. A study of the CSU, as the largest four-year public university system in the country (CSU, 2014c), would greatly expand the limited literature on accessible technology policy. See Figure 3 for the campuses in the 23 campus system. Moreover, since there are differences in governance, culture, and implementation of policy on each CSU campus, this study can add to the literature on policymaking in a multi-campus university system (Colvin, 2005).

Figure 3. The 23 outstanding campuses of the CSU. Adapted from CSU (n.d.).
Technology Accessibility Policy Implementation in Higher Education

A review of the literature revealed a lack of research related to technology accessibility policy in higher education. A search for literature from ERIC (EBSCO) from 2004 to 2014 with the terms “accessibility,” “technology,” “higher education or university,” and “policy” yielded only 46 results. When the search was modified to limit the results to peer-reviewed articles, 20 remained on the list. However, many of these results were related to distance education issues and geographic or material access, not access for persons with disabilities. The researcher changed the term “accessibility” to “disability” or “web accessibility” to find more relevant results, but still few were found. In addition, the articles were not focused on leadership experiences of faculty/administrators or implementation of accessible technology policy. Thus the researcher also extended the literature review to articles, books, reports, and white papers.

The Advisory Commission on Accessible Instructional Materials in Postsecondary Education for Students with Disabilities (AIM Commission) (2011) recently released a report for the U.S. Congress on how to improve availability of accessible instructional materials in higher education. The Higher Education Opportunity Act required that the commission conduct a study to assess the barriers and systemic issues that may impact the timely delivery and quality of accessible instructional materials for postsecondary students with print disabilities. The AIM Commission report focused on best practices and changes in policy to make instructional materials more accessible to college students with disabilities who utilize alternate formats. The report suggests that institution-wide policy regarding accessible materials can help instructors
ensure materials are accessible: “Where there is widespread systemic or faculty-based awareness of the need for accessibility, instructors may select accessible materials accordingly or pro-actively work with their DR/S [Disability Resources/Service] office to acquire alternate versions. In other circumstances where no institution-wide directives exist, instructors may not or, in some cases, cannot choose AIM [accessible instructional materials]” (p. 78). The report also recommended that postsecondary institutions reference and use Section 508 procurement and purchasing guidelines as part of institutional policy.

However, each higher education institution may have its own campus level policy or statement pertaining to accessible technology, including instructional materials and purchasing requirements. For example, one campus in the CSU system, California State University, Sacramento (2010, has a standalone accessible technology policy which says:

Sacramento State is committed to the following goals: Compliance with all applicable federal and state laws, regulations, and CSU policies governing accessible technology; Accessibility of instructional materials to allow for equally effective access for all faculty and students, as documented in the campus guidelines and plans for accessible technology; Accessibility of campus web sites, web applications, and web content, as documented in the campus guidelines and plans for accessible technology; Continued compliance with Section 508 of the federal Rehabilitation Act requirements for Electronic and Information Technology (E&IT) procurement, including acquisition of all computer, network, telecommunications, and multimedia hardware, software, and services. (para 3).
Although each campus policy may be placed in different organizational hierarchies and divisions of a campus, the shared nature of the Accessible Technology Initiative suggests that policies should be shared across divisions, with multiple accountability points. These accountability measures could then be shared with multiple campus stakeholders, including students, staff, administrators and faculty. For example, in the annual reports which are required by the CSU Office of the Chancellor (CSU, 2014d) individual campuses must indicate that they document the results of metrics applied to the areas of instructional materials, web accessibility and procurement compliance and to distribute those results to campus governance entities.

At other institutions, the accessible technology policy is more of a list of guidelines and resources rather than a formal policy statement. For example, the University of Pennsylvania (2014) has a Style Guide with a brief statement on accessibility and resources on web accessibility and Section 508. In fact, the literature suggests that few higher education institutions have a formal standalone policy related to accessible technology. Thompson et al. (2013) completed a nationwide study of web accessibility for 3,251 higher education institutions in the United States and found only 273 policies (8.4%) related to web and/or technology accessibility. Their study used a semi-automated web search for web/technology accessibility policies and collection of automated data on institutional website accessibility using Google’s Custom Search Application Program Interface (Google, n.d.). Analysis of Variance (ANOVA) and correlational analysis were used to explore relationships among website accessibility, degrees awarded (i.e. doctorate, master’s, associate’s) and policy type, along with other
variables. The Thompson et al. (2013) study suggests that there may be a relationship between policy and accessibility of an institution’s technology. According to the study, institutions with formal, standalone policies had significantly higher accessibility ratings than institutions with other types of policies. The study also found that there was a positive correlation between degrees awarded and policy; that is, Master’s and Doctorate degree granting institutions like the CSU had more standalone policies and were more accessible (Thompson et al, 2013). Land-grant institutions may also have more policies. However, in a study of land-grant institutions, Bradbard, Peters and Caneva (2010) found that “…while most universities have a Web accessibility policy, most policies have serious deficiencies. The deficiencies are of sufficient magnitude that many schools are likely in violation of the ADA” (p.258).

Written policies may clearly state an institutional commitment to e-quality and accessible technology, but without the implementation details, along with institutional commitment such as funding, training and faculty/staff awareness, it may be difficult for campuses to adequately address technology access and equity issues. Other factors that may impact implementation of accessible instructional materials may include faculty or staff background and computer skills. Olson’s (2013) quantitative study used a survey to determine whether different demographics of faculty on six public university campuses in South Dakota were related to awareness of accessibility barriers in computer-based instructional materials. His study found that increased skill level using a computer correlated with increased awareness of instructional materials accessibility barriers;
however, age, gender, and presence of a disability did not predict awareness of accessibility barriers.

Awareness of biases and attitudes toward disability may also impact accessibility of materials. For instance, Flanagin’s (2013) study used a survey delivered to students and faculty at two CSU campuses to explore if attitudes and emotional responses toward disability correlate with faculty decisions and behaviors related to use of accessible information and technologies in academic courses. The survey instrument included questions related to accessible technology awareness and existing measures of attitudes toward disability (Multidimensional Attitudes Scale toward persons with disabilities (MAS) and the Disability Rights Attitude Scale (DRAS)). The survey also measured implicit bias toward disability using the Project Implicit (2011) implicit association test (IAT). Unfortunately, given the small number of responses received from a large pool of subjects, the results were tentative. However, Flanagin suggested that “aversive disablism” - defined by Deal (2007) as subtle prejudice toward people with disabilities - may help to explain why few people responded to the survey and why many instructional technologies are still not accessible to all students with disabilities. Deal (2007) notes that exclusion of people with disabilities is often unintentional and that people with disabilities themselves may even support behaviors and social policy that exclude other people with disabilities.

Policies related to accessible technology should be developed from both the top-down and the bottom-up to promote a more inclusive culture campus-wide. For example, in an article describing web accessibility policymaking at three large state universities,
Burgstahler et al. (2008) found that initial development of web accessibility policy at University of Texas-Austin took several years, starting from the bottom-up with a report from a task force endorsed by the University Information Technology Coordinating Council, followed by a set of guidelines on accessible web authoring, which finally led to discussions which transformed the guidelines into policy. Campus conversations that included concerns about some of the initial guidelines transitioned into discussions on formal accessibility policy development. Meanwhile, after top-down development of web accessibility policy at University of Wisconsin-Madison, “Some people embraced the campus policy as a clear sign that access to information by people with disabilities was a high priority. Others felt that they were being told to do something that they did not have the skills or resources to do” (Burgstahler et al., 2008, para 34). Each campus in the case study involved a wide range of stakeholders in development of the policy, and the article suggested that both top-down institutional commitment and grassroots bottom-up collaboration strategies were employed. Based on the best practices at the three institutions, the authors’ recommendations for policy implementation processes include:

(1) securing the support of high-level administrators; (2) involving key stakeholder groups; (3) adopting guidelines or standards; (4) providing training and technical support; (4) developing goals, benchmarks, and timelines; (5) implementing a system for monitoring accessibility progress and revising policies and procedures; (6) working with one program to create a model of accessibility policies and practices to share with others; and (7) recognizing those who promote the use of accessible IT on campus. (Burgstahler et al., 2008, p.1)
Some of the literature on web/technology accessibility in higher education discusses the limitations of laws that govern accessible technology policies, namely Section 508. For example, Schitai (2008) states, “including Web accessibility guidelines in a "Rehabilitation Act" indicates a significant extent of ableist bias in the way policymakers view persons with disabilities in contrast with themselves” (p. 206). Furthermore, Schitai (2008) suggests that the term “undue burden” used in Section 508 and other federal policies reflects an ableist undertone that views accessibility as a marginal issue and a burden rather than a responsibility. Blansett (2008) also notes that the ADA, which requires places of public accommodation and their services to be accessible, has “…no specific reference to the Internet as a place of public accommodation and service for individuals with disabilities” (p. 26). This is despite recent case law and the U.S. Department of Justice (2014) asserting that the ADA does apply to web services and electronic information. In addition, some literature expressed the need for clarification between disability related laws such as Section 508, which takes a proactive universal access approach, versus Section 504, which takes a reactive interactive accommodations approach. According to Gaeir Dietrich (2014), High Tech Center Training Unit Director for the California Community Colleges and former Chair of the AIM Commission, access and accommodation need to work together. That is, faculty should design and buy instructional materials that are as accessible as possible under Section 508 accessibility guidelines, but “When access falls short…accommodate!” (Dietrich, 2014, p. 20) to address Section 504. Table 2 is a comparison of the two laws in the context of higher education institutions:
Table 2

Comparison of Section 504 and Section 508

<table>
<thead>
<tr>
<th>Section 504</th>
<th>Section 508</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation</td>
<td>Access</td>
</tr>
<tr>
<td>Based on person’s request and preference</td>
<td>No prior request needed—“open door”</td>
</tr>
<tr>
<td>Campus disability office handles student requests/ HR handles employee requests</td>
<td>All E&amp;IT [electronic and information technology] purchases are affected for entire organization - students, staff, and faculty</td>
</tr>
<tr>
<td>Begins where 508 ends</td>
<td>Ends where 504 Begins</td>
</tr>
</tbody>
</table>


When web pages or other technologies are inaccessible, a student or employee would need to request accommodations upon encountering the access issues. However, under this model, students or employees with disabilities have to wait for access while others already have access to the technologies; this means they are essentially being treated as second-class citizens (Mariger, 2011) as this is not timely access. Instead websites and technologies need to be designed to be accessible from the outset, with plans for accommodations or equally effective alternatives in place proactively based on accessibility issues. From an equity standpoint, technology and materials should only be used if the alternate materials are available and accessible simultaneously to all students or all employees using the technology. Ensuring timely and equal access to technology requires effective leadership willing to challenge the status quo.

Leadership Approaches and Organizational Change in Higher Education

There is limited literature examining efforts related to accessible technology/web accessibility policy implementation in higher education and a lack of literature about
which leadership approaches appear to produce more transformational changes across different campuses implementing these policies in higher education. Research on organizational change related to building a more inclusive campus culture committed to accessible technology is also limited. Thus the researcher extended the literature review to research leadership and school technology policies in general.

**Leadership Practices**

The researcher hypothesized that there is a relationship between leadership style and level of implementation of accessible technology initiatives in the CSU. A review of literature regarding leadership approaches in educational technology policy implementation suggests that leadership style may play a role in implementation of technology policy in education. For example, Hadjithoma-Garstka (2011) incorporated a large-scale survey and case studies of four elementary and secondary schools’ information communication technology (ICT) implementation and suggested that principals’ leadership style played a role in the implementation of ICT at the schools. Principals’ leadership styles were identified using Goleman’s (2000) typology of leadership (see Table 3) and compared for factors related to implementation outcomes (i.e. level of ICT resources at schools and use of ICT by educators at the schools). According to Goleman (2000), the coercive and pacesetting leadership styles have negative influences on organizational culture and the authoritative, affiliative, democratic and coaching styles have positive effects. In Hadjithoma-Garstka (2011)’s study, the school that was most successful in the implementation of ICT policy had a principal characterized by an “affiliative” leadership style, with a “people come first” approach.
(p.315). However, at a school with a less successful ICT policy implementation the principal used a “pacesetting” leadership style, with an emphasis on doing things faster and better.

Table 3

*Characteristics of Leadership Styles Based on Goleman's Typology*

<table>
<thead>
<tr>
<th></th>
<th>Coersive</th>
<th>Authoritative</th>
<th>Affiliative</th>
<th>Democratic</th>
<th>Coaching</th>
<th>Pacesetting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff manage -ment</strong></td>
<td>Compliance</td>
<td>Motivates people toward a vision</td>
<td>Emotional bonds and harmony</td>
<td>Consensus, trust, respect</td>
<td>Development of people</td>
<td>Setting high expectation for employees, pinpoints poor performers</td>
</tr>
<tr>
<td><strong>School manage -ment</strong></td>
<td>Top-down decision-making</td>
<td>Large vision for the organization</td>
<td>Flexibility, trust, discretion in delivery of services</td>
<td>Workers involved in decision-making</td>
<td>Flexibility, charity</td>
<td>Lack of flexibility, no rewarding system</td>
</tr>
</tbody>
</table>

*Note.* Adapted from Hadjithoma-Garstka (2011)

Meanwhile, Chang (2004) studied the relationship of leadership styles with faculty use of instructional technology at doctoral/research public universities using leadership frames (structural, political, human resource, and symbolic) as defined by Bolman and Deal (2008). Using two instruments - a Leadership Orientation and Faculty Utilization of Technology questionnaire - the researcher found that department chairs’ leadership styles were significantly associated with technical and administrative support for faculty use of technology; moreover, faculty utilization of technology was associated with chairs’ use of the structural frame, a combination of the structural and political frames, or a combination of the structural, human resource, and political frames.
Characteristics of leadership styles based on Bolman and Deal’s (2008) leadership frameworks are as follows:

- **Structural** – emphasizes rules, tasks, roles, technology, process structures, and policies (Bolman & Deal, 2008, p.18)
- **Human Resources** – centers on people’s “needs, skills, and relationships” (Bolman & Deal, 2008, p.18)
- **Political** – looks at the agendas of different groups, organizational politics, and competition for scarce resources (Bolman & Deal, 2008, p.18)
- **Symbolic** - when individual commitment and motivation are essential to success, symbolic frame can be tapped for its culture, meaning, and inspiration.

Another study using the Bolman and Deal (2008) framework suggests that leadership style can influence organizational climate as well. Mosser and Walls (2002) studied the relationship between the perceived leadership style of nursing department chairs and the organizational climate in nursing programs. The study used two-stage random sampling and surveys of faculty and chairs and found that relationships occurred for the human resource leadership frame with the organizational climate domain of consideration and the structural frame with the production emphasis domain. This research suggests that a culture of consideration and inclusion is more likely to occur with a leadership style that puts people first and that emphasize qualities such as consideration and advocating for equity. The study aimed to build upon this research on how leadership style plays a role in creating an accessible campus climate.
Seong and Ho (2012) suggest that leadership style also plays a role in reform of ICT policy in education. Their case study on how leadership is related to policy reform included interviews, observations and analyses of correspondence of principals and other school members who performed leadership actions in relation to an instructional reform involving the use of ICT. Their study included multiple levels of leaders, including principals and other school members. They observed that “…distributed leadership for ICT implementation requires a combination of transformational leadership and instructional leadership to develop teachers' capacity to enhance their instruction with ICT, emotional leadership to support teachers' effort to change, and strategic management of resources to sustain teachers' change efforts” (Seong & Ho, 2012, p.529). One area of further research suggested by the authors was whether there would have been a difference in implementation of policy if a teacher had initiated the ICT reform rather than official leaders. This study began to address that research gap, as the research studied the experiences of different levels of administrative and faculty leaders involved in accessible technology reform efforts on CSU campuses.

Another limitation of the existing studies in the literature is that they do not involve leaders advocating for social justice in relation to technology or include accessibility in their studies of technology implementation and leadership style. The study addressed this gap. In addition, most of the extant research was conducted in K-12 schools rather than in higher education settings. Nonetheless, the studies provide insight into how leadership approaches may be involved in the implementation of policies and reform in the use of technology in education. A study of leadership efforts involved in
implementing accessible technology policy in the CSU system enriched the limited literature on distributed leadership and educational technology reform, since the CSU is in a distributed leadership configuration with its 23 campuses and the Office of the Chancellor.

In the case of the ATI, leadership is distributed and multiple roles are involved in implementation, as outlined in the CSU Coded Memorandum AA-2013-03 (CSU, 2013c), including the Office of the Chancellor and multiple campus stakeholders on campuses. The following are listed on the Coded Memorandum as key stakeholder groups on campuses involved in ATI implementation:

- **Campus Administration including Presidents, Provosts, CIO's, Vice-Presidents, etc:** Provide regular communication and ensure adequate resources in support of the ATI campus implementation.

- **Academic and Faculty Senates:** The Senate Chair or their designee is strongly encouraged to serve on the campus ATI Steering Committee and participate in ATI instructional materials activities. The Senate at large is strongly encouraged to pass and facilitate the implementation of policies or resolutions that support the adoption of accessible technology.

- **Centers for Faculty Development:** Participate in relevant campus ATI committees and systemwide activities; Coordinate or actively participate in providing faculty training on ATI-related subjects.

- **Disability Services Offices:** Participate in the campus ATI Steering Committee; Participate in the development of Equally Effective Alternate Access Plans.
• **ADA Compliance Office:** Participate in the campus ATI Steering Committee; actively support the campus ATI implementation. (CSU, 2013c, pp. 5-6)

Although there are multiple leadership styles and approaches discussed in the literature (e.g. Golenan, 2000; Bolman & Deal, 2008; Nevarez, Wood, & Penrose, 2013), the following five leadership approaches were selected to guide the study on how various CSU leaders can support the implementation of accessible technology initiatives and policy.

1. **Bureaucratic Leadership** – Regulations-oriented leadership approach focused on individual and organizational control, clear policies, roles, responsibilities, and procedures; input is rarely solicited from affiliates (Nevarez, Wood, & Penrose, 2013, p.13).

2. **Democratic Leadership** – Group-oriented leadership where participation, discussion, input, and multiple perspectives are employed in making decisions and accomplishing goals (Choi, 2007; Nevarez et al., 2013).

3. **Political Leadership** – Leadership approach that emphasizes power, interest groups, building coalitions, and negotiating conflicts over limited resources (Bolman & Deal, 2008).

4. **Transformational Leadership** – Style of leadership in which leaders and followers help each other to advance to a higher level of morale and motivation; leaders guide followers towards both individual and institutional success (Burns, 1978; Nevarez & Wood, 2010).
5. **Critical/Transformative Leadership** - Leadership that is “…a social justice-oriented approach undergirded by notions of democracy (e.g. opportunity, equity, fairness, freedom). Leaders… seek to identify, challenge and redress issues of marginalization, power, privilege, and subjugation in society (Keddie, 2006; Weiner, 2003)” (Nevarez, Wood & Penrose, 2013, p.143).

The Critical Transformative Leadership Theory is further discussed in the Theoretical Frameworks section below.

**Organizational Change**

In a literature review on e-learning and accessibility in higher education prepared by Seale (2014), three drivers for change in e-learning/technology accessibility practice in higher education organizations were identified: 1) increasing numbers of students with disabilities pursuing higher education; 2) anti-discrimination and equality legislation; 3) accessibility guidelines and standards. Increasing numbers of students with disabilities in the CSU system (CSU, 2012) along with the goals of improving retention and graduation rates of all CSU students, are major drivers for change for CSU leaders (CSU, 2014e).

The model in Figure 4 represents some internal and external factors that are driving the change initiative aimed at increasing accessibility of technology and e-quality in the CSU. A key factor is legislation mandating accessibility under federal and state law. In addition, student factors, such as increasing numbers of students with disabilities in higher education, also influence the need for e-quality and accessibility. Students with disabilities who use specialized assistive technology may also lack access to the
technology due to functional limitations and material access barriers, similar to low-income students who lack the materials to access the internet.

There are also factors that drive the change process related to the curriculum, such as usability of the design (based on accessibility standards), and pedagogical strategies such as universal design for learning, interactivity, engagement, and academic rigor in learning to align courses to support student needs. Also, faculty who are “early adopters” (Bess & Dee, 2012, p. 800) of accessible technology innovations and e-quality can be important influences on other faculty who may be hesitant to make curricular changes; this is especially important for building trust and addressing concerns about academic freedom involved in e-learning and curricular change.

In addition there is pressure externally to graduate and retain more students, to meet workforce needs. This goal is in line with the CSU’s Graduation Initiative and the national and state college completion policy agenda (National Center for Public Policy and Higher Education (NCCPHE), 2011). President Obama’s American Graduation Initiative aims to increase the number of college graduates in the country by 5 million by 2020 (The White House, 2009). Some CSU programs may launch additional online degree programs and courses to address industry needs and to accommodate increased numbers of students attending the CSU or needing courses to graduate in a timely manner. However, some of these factors may promote “e-quantity” over “e-quality”. Instead, institutions have a responsibility to provide educational quality and equitable opportunity for all students participating in e-learning (Bauman, Bustillos, Bensimon, Brown & Bartee, 2005).
As use of e-learning expands and awareness of legislation and guidelines increases in the CSU, more stakeholders on campuses should have the ability to recognize technology access issues for persons with disabilities. However, Bradbard and Peters (2010) suggest that as web pages and technology increase in complexity, an increase in accessibility issues, and lack of accessibility awareness may occur. Bradbard and Peters (2010) also note “As faculty are placing an increasing amount of course-related content on the Web, they are simultaneously expressing concern about the lack of free time and institutional support necessary to stay abreast of new technology [and technology to design accessible content] for instructional purposes,” (p.2). A change initiative like the ATI can increase awareness of accessible technology and give needed technical support to faculty.
However, since the ATI is an unfunded initiative, some CSU campuses may not have discretionary resources to support the initiative. The literature suggests that the extent of an institution’s response to innovations is contingent on the resource allocations (Cheng & Kesner, 1997). Besides financial resources, other factors such as faculty workload, time, training, and awareness may provide slack, as there are shifts in an institution’s environment and organizational changes (L. Romero, personal communication, December 2014). Organizational or institutional slack, according to Bourgeois (1981), is the “cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy as well as to initiate changes in strategy with respect to the external environments” (p. 29). Furthermore, there may be a relationship between an institution’s slack and levels of innovation in terms of changes in policy and accessible technology; however, some researchers disagree whether slack facilitates or inhibits innovation (Nohria & Gulati, 1997).

The study on implementation of ATI in the CSU aimed to identify factors that can promote and hinder e-quality and equal opportunity as technology use in higher education expands. Striving for e-quality for all does not mean, “one size fits all”; instead, as Oblinger (2013) suggests, we can “apply our expanding capacity in information technology and …the learning sciences to meet not uniform needs but, rather, students’ wide range of varying capacities” (p.4).
Theoretical Frameworks

Based upon the results of the researcher’s study, a dynamic model of higher education leadership related to accessible technology policy implementation will be discussed. This model was based on three complementary theories as introduced in Chapter 1: the Critical Transformative Leadership (CTL) Theory, Diffusion of Innovations (DOI) Theory, and Emergent Change (EC) Framework. The researcher has selected a balance of theories stemming from all three organizational leadership paradigms to inform the research. The researcher believes that organizational change requires a multidimensional approach, through postmodern, positivist, and social constructionist paradigms (Bess & Dee, 2012). To help ensure all students are afforded high quality and inclusive education, the researcher selected CTL theory to carefully critique inequities through a postmodern lens and work towards closing opportunity gaps and addressing inequities for persons with disabilities while striving for academic excellence. From a social constructionist perspective, e-quality and accessible technology can be approached as a collective problem and grassroots leaders involved in e-learning, procurement, student success, technology and shared governance should be mobilized to move the campuses incrementally forward towards promising practices using the EC framework. Finally, from the positivist approach, the DOI theory can be used to understand the diffusion of innovation process and make data driven decisions to advocate for more urgent adoption of accessible technology by both individuals and the institution.
**Critical Transformative Leadership Theory**

Although effective organizational leaders in higher education may use multiple leadership theories to inform practice (Nevarez & Wood, 2010), the CTL theoretical framework was selected in particular in the context of the accessible technology policy implementation due to the importance of effectively advocating for individuals who are marginalized to drive the institutional change towards more accessible technology. CTL is a leadership theory stemming from critical theory and critical pedagogy traditions that transforms status quo educational practice and uses leadership for social justice (Santamaria & Santamaria, 2011). In the literature, it is also sometimes referred to as social justice leadership or transformative leadership. As previously discussed, there are many factors involved in driving the campus towards increasing e-quality of technology. Given the external demands and push for adoption of more technology and online delivery modes, CTL theory suggests that power plays a large role in which equity issues are recognized and uncovered. Furthermore, leaders employing CTL theory would recognize that “perspectives and values of top management may become the privileged voice of the organization” (Bess & Dee, 2012, p.385). Some organizational members may not even be aware that certain goals and values are privileged over others. For example, an ideology that values efficiency, cost savings, and workforce needs may be dominating higher education but can lead to marginalization of students, such as students with disabilities or underrepresented students.

Instead, the CTL theory suggests that leaders promote social justice, encourage voices of traditionally silenced groups and focus critical conversations on equity to drive
change (Santamaria, 2012). For example, a student from a less dominant group must navigate cultural barriers that limit her access to resources such as equipment, financial aid, and technology. CTL theory can encourage administrators and faculty leaders to advocate for this student and embrace values such as equity, inclusion, and academic excellence and use leadership practices to expose the inequities and barriers and ultimately promote a more inclusive culture where the student’s diversity is valued. Moreover, since accessibility is a shared responsibility that cuts across many roles and departments on campus, faculty, staff, administrators, and students, CTL theory can help leaders influence institutional culture change to make the campus more inclusive for all students. CSU leaders need to change the culture on their campus to be a culture of “access” and engage stakeholders’ values, beliefs and perceptions. There may be a strong resistance to change, especially related to purchasing accessible technology and designing accessible instructional materials, because it represents a departure from past practices focused on individual autonomy and preference for purchases and curriculum development. Although the literature has suggested that other leadership theories may also have an impact on technology policy reform and culture change, the CTL theory is the most appropriate theory to select. CTL theory can encourage faculty and administrative leaders to critically challenge issues, to “choose change” and to have critical conversations around accessibility to promote equity for all (Santamaria, 2012, p.20).
**Diffusion of Innovations Theory**

The Diffusion of Innovations (DOI) Theory, as defined by its seminal author Rogers (2003), notes that adopters of innovations such as technologies follow a predictable process and suggests five steps through which campus members can successfully adopt new technologies: awareness/knowledge, persuasion, evaluation/decision, implementation and confirmation/reinforcement. Hoover (2003), citing Rogers (1995), describes these five steps in the innovation diffusion process as follows:

1. **Knowledge**: An adopter receives first knowledge of an innovation and some understanding of how it functions.
2. **Persuasion**: An adopter forms an attitude toward the innovation, becoming familiar with advantages and disadvantages.
3. **Decision**: An adopter adopts or rejects the innovation.
4. **Implementation**: An adopter implements and uses the innovation, and
5. **Confirmation**: An adopter seeks reinforcement of the decision to adopt (p. 25).

In the case of the ATI, the innovation being diffused is the incorporation of accessibility features into information technology resources and services at higher education institutions, in order to ensure accessibility for persons with disabilities. According to DOI theory, there are adopters and non-adopters, as well as different levels or rates of adoption. As noted in Figure 2 in Chapter 1, the types of adopters and percentages of those who make up the types are: Innovators (2.5%), Early Adopters (13.5%), Early Majority (34%), Late Majority (34%) and Laggards (16%). The rate of
diffusion or spread of a new idea can be impacted by the innovation, communication channels, time, and social system. Also some potential adopters are more difficult to persuade than others – these are the late majority or laggards. Thus communications, technologies, and support related to accessibility of technology and “e-quality” must be planned wisely, through the accessible technology initiatives. However, if the related innovation of accessible technology is implemented too quickly and without support of faculty and strong commitment from leadership, the adopter may reject the change and adoption of accessible technologies may stall or fail.

There is related research on technology diffusion in higher education using the Diffusion of Innovations model. However, many of the examples of studies found by the researcher relate to industry or the private sector as DOI model usually relates to adoption of an innovation or product. One study of private companies looked at IT professionals’ responses to adoption and implementation of innovations of incorporating accessibility features into information technology. In that study, binary logistic regression analysis was conducted on survey data to determine the relative importance of the variables such as organizational characteristics and level of degree to predict adopter or non-adopter status (Hoover, 2003). This study built upon that existing literature in a higher education setting.
Emergent Change Theory

Without a deliberate, collaborative plan towards addressing e-quality and success for all students and employees, the university is perpetuating the “status quo” in terms of barriers to technology for persons with disabilities, and this can lead to negative academic, social, emotional, and economic impacts on students and employees. A strategic and comprehensive action plan is needed to implement a campus culture change towards more accessible technology and to address barriers and social injustices to ensure high quality learning and working for all. Bess and Dee (2012) suggest that successful change initiatives in higher education need to be deliberate and planned. However, from an organizational change perspective, striving toward e-quality also needs to reflect an emergent change (Bess & Dee, 2012). That is, multiple “islands of innovation” from grassroots change agents must emerge from individuals and departments that are involved in technology efforts on campuses. The CSU has recognized some of these efforts and various CSU campuses for their work driving incremental change (Turner, 2012).

Mintzberg and Waters (1985) described organizational change strategies as either Deliberate or Emergent. A change strategy is deliberate when the vision and goals are clearly articulated to stakeholders in the institution to address certain goals. When the CSU ATI was launched with a set of specific priorities and goals, this was consistent with the Deliberate or planned change strategy. On the other hand, change strategy can be described as Emergent when patterns arise in actions of institutions, even though the change was never explicitly intended; an example of this is the decentralized local
adaptation of the ATI on multiple campuses. As the implementation efforts and best practices on campuses have evolved, so have the success indicators for each of the ATI priority areas (CSU, 2014d).

Grassroots efforts have been important drivers of changes in higher education. However, research on the role of leaders who work from the bottom-up in implementing organizational change is rarely discussed. Further, there is limited research on the Emergent Change model in higher education. This study helped to address these gaps in the literature.

**Conclusion**

This study extended the literature by tying together three frameworks to develop effective leadership policies and practices that fully empower individuals with disabilities. Critical Transformative Leadership Theory, Diffusion of Innovations Theory and Emergent Change Framework were the frameworks for this study due to the complexity of the problems and stakeholders. See Figure 5 for an illustration of how these theories interact and factors identified in the literature review that were suggested by this study.

This chapter supported the study of leadership and accessible technology initiative (ATI)/policy implementation in a system of higher education. The literature review began to describe how institutions are challenged in implementing accessible technology policy. Although there is literature related to leadership approaches and organizational change and implementation of technology policy reform, social justice and a systemwide setting were largely missing from the discussion. Chapter 3 will follow and discuss the
researcher’s methodology, data collection and future analysis of the data. Chapter 4 will present the quantitative and qualitative findings from the research. Chapter 5 will summarize and interpret the findings, suggest recommendations for action for higher education leadership and policy, discuss limitations and make suggestions for further study.

Figure 5. Leadership styles, emergent change, and diffusion of innovations.
Chapter 3
METHODOLOGY

Introduction

This study sought to explore how California State University (CSU) campus leaders support the implementation of the Accessible Technology Initiative (ATI); whether there is a relationship between the perceived leadership style of different administrative and faculty leaders and levels of implementation of ATI; and the barriers and facilitators to successful implementation of accessible technology initiatives. This study used a mixed methods approach utilizing both qualitative and quantitative research methods. This chapter includes the setting, role of the researcher, research questions, research design, sample and participants, instrumentation and data collection, protection of participants, and data analysis techniques.

Setting

California State University

California State University (CSU) is a public, four-year postsecondary education system with 23 campuses, about 447,000 students, and 45,000 faculty and staff (CSU, 2014c). The setting of this study included multiple CSU campuses in different regions of California that are implementing the systemwide accessible technology change initiative and related policy (CSU, 2006). The campuses differ in size, demographics, and type of location, among other factors. This study used extant university policy data combined with survey data from all 23 CSUs to understand the implementation of various campus policies, culture, and actions identified as barriers and facilitators for change.
Implementation of the systemwide accessible technology efforts involves leadership, collaboration, and expertise from, among other stakeholders, CSU executive administrators, faculty leaders, and staff leaders.

**Role of the Researcher**

The researcher in this study has worked as an administrator of disability services at a CSU campus for the past eight years and previously served as an assistive technology coordinator, providing technology related support services and instruction to students with disabilities. The researcher has also served as the campus Accessible Technology Initiative (ATI) coordinator under the leadership of the Chief Information Officer (CIO) and Vice President for Information Resources and Technology, who serves as the campus Executive Sponsor for the initiative. The researcher also has experience in providing alternate formats for students with print disabilities and has advocated for students and employees who have encountered barriers getting materials in an accessible format at the same time as individuals without disabilities. The researcher is involved in accessible technology related policy development on the campus, and has led discussion and consultation with faculty stakeholders. Furthermore, the researcher formerly served as an advisor on a systemwide task force related to training and professional development for the Accessible Technology Initiative in the CSU. Therefore, the researcher will need to be aware of personal bias regarding the study and to “bracket” personal experiences in order to allow for “imaginative variation” to occur, by attempting to see the study from many different angles (Merriam, 2009, p. 199).
The researcher developed and administered a multifaceted survey instrument that incorporated measures designed to explore the research questions and concepts related to Critical Transformative Leadership, Diffusion of Innovations, and Emergent Change Strategy. In addition, the researcher mined data from policy guiding documents and annual reports, formal policy statements, and public record documents related to the implementation of the ATI in the CSU system. Such documents were familiar to the researcher and were used to provide an additional data source for studying ATI policy implementation and culture change in the CSU. The researcher also analyzed the quantitative and qualitative data to determine emerging trends.

Research Questions

The research questions posited were:

- **Question #1**: How do CSU campus leaders support the implementation of ATI, institution-wide change associated with accessible technology, and a culture that promotes access and inclusion?
  - **Question #1a**: Is there a significant relationship between perceived leadership style and levels of implementation of accessible technology initiatives in the CSU?

- **Question #2**: What cultural, emotional, social, and other barriers do faculty and administrative leaders experience in implementing accessible technology initiatives and promoting culture change in the CSU?

- **Question #3**: What are the factors that contribute to successful implementation of accessible technology policy and culture change in the CSU?
For the purposes of this study, research questions #1, 2 and 3 are qualitative in nature as they seek in-depth description. In addition, the questions are quantitative in nature as they seek to explore relationships between variables that can be measured. A mixed methods approach that allows for several types of data and uses qualitative results to inform and interpret quantitative findings is most appropriate for this study (Creswell, 2003).

**Research Design**

This study used a sequential exploratory mixed methods research design which included both statistical and text analysis methods (Creswell, 2003; Creswell & Clark, 2011). This research design provided the researcher with an opportunity to review ATI related policy documents from each campus and identify emerging themes before surveying leaders involved in systemwide policy implementation efforts. The researcher made interpretations of the data mined from the document review to analyze text, code common themes and identify additional variables; this information was then used to develop a quantitative survey instrument that further examined the variables (Creswell & Clark, 2011). Drawing upon the qualitative results of the document review, the researcher conducted an anonymous survey with both open- and closed-ended questions to triangulate the data and identify additional themes, relationships, and emergent findings.

Some of the research questions related to relationships between variables, such as perceived leadership style, levels of implementation of the accessible technology initiative, barriers, and facilitators. Quantitative research methods are appropriate for
investigating relationships between variables. However, other questions sought rich thick descriptions of policy implementation, such as experiences and details related to barriers and facilitators, and seek to empower and advocate for change, so qualitative research methods was also appropriate (Merriam, 2009). In sum, a mixed methods research method was the most appropriate research method for the purposes of this study.

**Participants and Sample**

The participants for the survey portion of the study included the following individuals:

- *ATI Executive Sponsors*, who are designated by campus Presidents to oversee ATI activities and provide regular communication to support campus ATI implementation;

- *Administrative leaders*, including disability service directors, ADA coordinators, and other campus administrators and staff who have actively participated in the ATI implementation process and who participate on the campus ATI steering committee;

- *Other faculty, staff, administrators, and student leaders* who have actively participated in the ATI implementation process; includes Faculty Development/Centers for Teaching and Learning directors and Faculty Senate chairpersons among other faculty, staff, and administrative stakeholders.

The abovementioned individuals were specifically identified as key stakeholders in the CSU ATI Coded Memorandum (CSU, 2013c). See Table 4 below for a list of the roles in the target population.
Table 4

*Estimated Number of Subjects in Sample by Role*

<table>
<thead>
<tr>
<th>Role</th>
<th>Per Campus</th>
<th>CSU System</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATI Executive Sponsor</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Academic/Faculty Senate Chair</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Faculty Development Director</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Disability Services Director</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>ADA Coordinator</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Other Staff, Faculty, Administrators or Student Leaders involved in ATI</td>
<td>4+</td>
<td>92+</td>
</tr>
<tr>
<td><strong>Total Sample</strong></td>
<td>9+</td>
<td>207+</td>
</tr>
</tbody>
</table>

To recruit the individuals to participate in the study, the researcher contacted the Office of the Chancellor Accessible Technology Initiative director for assistance encouraging ATI stakeholders in the CSU system to participate. The Office of the Chancellor manages several CSU systemwide distribution lists, such as those for Executive Sponsors and ATI communities of practice for Web Accessibility, Procurement, and Instructional Materials. The researcher was invited by the Office of the Chancellor Accessible Technology Initiative director to provide information about the study during conference calls with the CSU system stakeholders to encourage participation. The researcher sent an email message (see Appendix D) explaining the goals of the study with a link to the online survey and consent form (see Appendix C), which were both administered via a secure version of Survey Monkey. The researcher also contacted the campus Faculty Senate Chair, Faculty Development/Center for Teaching and Learning Director, ADA Coordinator, Procurement Director, Student Affairs Vice President, Chief Administrative and Business Officer, and Academic Technology Director, to request their help with responding to the survey. The researcher
also asked them to forward a link to the consent form and survey to individuals from different constituent groups on the other CSU campuses on the researcher’s behalf (e.g. the CSU academic technology directors’ email list). The researcher also sent the survey to the CSU Chief Administrative and Business Officers (CABO) roster and the CSU California Academic Technology Staff community of practice email list. Administrative and faculty leaders were given four weeks to complete the survey with a reminder notification sent for the Executive Sponsors’ meeting during the second week.

To encourage greater participation in the survey, participants were invited to enter into a drawing for one of ten $25 Amazon gift cards. After completing the survey, participants had the option to open a separate web page where they could enter a drawing to win a gift card. The gift card drawing web page was not associated with the participants’ survey responses. The researcher aimed to successfully recruit a minimum of 30 participants for the study, including leaders in a variety of roles, but attempted to recruit more than 50 participants since results were richer and more significant. Several respondents only answered part of the survey, and some individuals did not complete any questions or were possibly previewing the survey prior to taking it.
Data Collection and Instrumentation

Quantitative Data

The survey included both open- and closed-ended questions based on literature and overall research questions and variables in terms of 1) Level of ATI Policy Implementation (as measured by perceived Web Accessibility, Instructional Materials Accessibility, and Procurement Accessibility) 2) Gender; 3) Race/Ethnicity; 4) Age; 5) Years on Campus; 6) Position; 7) Level of Involvement; 8) Campus Size; 9) Campus Climate; 10) Type of Campus Policy; 11) Familiarity with Section 508; 12) Participation on ATI Steering Committee; 13) Executive Sponsor Position; 14) Executive Sponsor Organizational Placement; 15) Commitment of Campus Resources; 16) Compliance with Section 508; 17) Adoption of Innovation; 18) Barriers that Inhibit Success; 19) Factors that Facilitate Success; 20) Leadership Styles (Transformative, Bureaucratic, Democratic, Political, and Transformational). The survey included variables based on the three theoretical bases (Critical Transformative Leadership, Diffusion of Innovations, and Emergent Change) that needed to be examined to help support or refute those theoretical frameworks. Each of the variables was measured through Likert scale questions relating to the variables. The questions also gave participants an opportunity to respond as to what their campuses were doing to implement accessible technology, in compliance with Section 508 and related legislation, and how they felt about their experiences. The survey instrument included questions from pre-existing survey instruments and inventories to support reliability. For example, to assess the degree to which leaders were oriented towards a particular leadership style, the Nevarez & Wood-Transformative Leadership
Inventory and other inventories related to Bureaucratic, Democratic, Political, and Transformational Leadership (Nevarez & Wood, 2011a, 2011b, 2011c, 2011d, 2011e) were used, with permission. According to Nevarez et al. (2013), internal consistency of these inventories was examined using split-half coefficient and coefficient alpha, and the inventories demonstrated satisfactory reliability.

Since the survey was self-report, validity was improved by avoiding leading questions and including open questions that expanded upon quantitative data. Another way validity was enhanced was through using peer debriefing with a colleague familiar with student accessibility issues and research methods to ensure the survey questions resonated with others and made sense in the context of the issues (Creswell, 2003). The survey data was triangulated with the document review data to provide validation for the study as well.

**Qualitative Data**

The first qualitative portion of the sequential exploratory research design consisted of *documents* as the data collection type. The researcher reviewed websites on accessible technology and policies across 23 universities and the Office of the Chancellor. Campuses that are both high-performing and low-performing in terms of accessible technology (based on previous CSU ATI annual report success indicators) were included. For an example of the annual report goals and status levels, see Appendix B. Using multiple sources of data, such as policy documents, websites and annual reports helped to promote data reliability and validity and better captured broad experiences. According to Creswell (2003), document data collection enables the researcher to gather
unobtrusive sources of information and obtain the language and words of contributors. The researcher reviewed documents over multiple years to assess significant change. Because websites are important ways for campuses to enhance awareness of accessible technology, the researcher also assessed the quality of information on accessible technology on campus websites, both in terms of availability and ease of accessibility. In addition, the following themes were coded based on review of the documents: 1) leadership practices; 2) level of accessibility; 3) type of campus policy; 4) campus size; 6) organizational change; 7) barriers; and 8) factors that facilitate success. However, materials were incomplete, some information was outdated, many reports and plans were not posted, and the researcher needed to search extensively for the information as documents were not easy to locate or access through public web pages. The researcher also requested assistance from the CSU Office of the Chancellor to obtain ATI related policy documents and a systemwide report of aggregated results of annual reports submitted to the Office of the Chancellor by campuses.

The second qualitative portion of the research design was a survey to faculty, staff and administrative leaders involved in implementing the accessible technology initiative on their campuses. Based on results of the review of campus policy documents and reports, themes emerged that were incorporated into survey questions that further explored how leaders implement the ATI and associated culture change. A multifaceted survey instrument was developed to address each research question and variable and to triangulate different data sources where appropriate (Creswell, 2003). The survey was done online through Survey Monkey using the secure, professional version of the
software with the highest security protection and most advanced data reporting, including the ability to extract data as Statistical Package for the Social Sciences (SPSS) files. The online survey was selected as a way to reach faculty, staff, students, and administrators without the need to mail and hand code a paper survey. The survey also offered a convenient option as participants could take the survey 24 hours per day. Additionally, the online survey could be taken on mobile devices.

**Protection of Participants**

Participants electronically submitted a consent form that explained the purpose of the study, how the findings will be helpful, how the data were collected and used, potential risk, benefits, and voluntary participation. Participants read the consent form information prior to completing the survey, and provided their informed consent to participate by continuing with the survey online. All participants remained unidentified for the protection of participants and the study. In all instances, anonymity was preserved to elicit honest responses regarding implementation of accessible technology, a legislative mandate. Likewise, California State University, Sacramento’s Institutional Review Board confirmed that the online survey questions posed minimal risk of harm or discomfort. Due to the sensitivity of the topic and the researcher’s professional connection to the potential participants, the researcher ensured that all individuals involved understood that there were no repercussions for honest responses or for exiting the survey or withdrawing their participation from the study at any time. Participants could withdraw themselves (their survey/data) at any time prior to the completion of the study with no consequences. Data from the survey were contained in a password
protected account with the survey instrument and all results were maintained in a password protected file on a secure server. The survey results will be destroyed one year after the completion of the study, following the Institutional Review Board guidelines.

Data Analysis

Quantitative Data Analysis

SPSS software was used to organize, analyze, and present the quantitative survey data. First, descriptive statistics, such as frequencies, percentages, means, and standard deviations, were calculated and used to analyze and summarize overall results. To determine whether there was a significant relationship ($p \leq .05$) between perceived leadership style and ATI policy implementation level, the researcher calculated correlations statistically using the Pearson product moment correlation coefficient ($r$) based on the finalized variables and survey sample size. The researcher also computed Pearson correlation coefficients among ATI implementation levels and other variables, such as campus size. The results helped the researcher ascertain which variables in terms of leadership style and other factors most closely associate with the successful implementation of accessible technology initiatives. The quantitative survey data were also triangulated with the qualitative survey and document review data to provide validation for the study and to identify emergent themes to address the research questions.

Qualitative Data Analysis

For the document review part of the study, the researcher coded information relevant to each campus’ ATI implementation based on ATI policy guiding documents.
such as ATI web pages and reports. The researcher assessed whether information on the ATI was available on the websites as well as the accessibility of the information presented. In addition, the researcher examined whether the campus accessible technology policy, if available, was a standalone policy or one of the other policy types referenced in the literature (Thompson, Comden, Ferguson, Burgstahler, & Moore, 2013):

- **Formal-standalone** – a formal policy that specifically addresses web or technology accessibility
- **Formal-incorporated** – a formal web or technology policy that includes accessibility along with other issues such as use of templates, logos, privacy, and security
- **Standards or guidelines** – a set of techniques or recommended practices, with no expressly stated requirement that they be followed
- **General statement** – a general statement in support of web accessibility, including an institution’s commitment, but without the implementation details of a formal policy (p. 1).

The data analysis for the second qualitative part of the study used inductive reasoning by reviewing the participants’ comments from the surveys along with text from the document analysis to develop categories and subcategories through an iterative process. First the researcher looked for words, phrases, and concepts that reappeared throughout the surveys and documents and coded them into themes and categories. The results from the first document review part of the qualitative study were combined with
the results from the survey part of the study. The researcher identified general themes related to the literature, theoretical frameworks and research questions and grouped ideas together to identify interrelated themes and meaning of the themes in terms of how leaders support accessible technology implementation and culture change.

Conclusion

This chapter described a mixed methods approach to explore how leaders support accessible technology policy implementation in the CSU, including barriers and facilitators of successful implementation. Using multiple sources of data in the form of document review of plans, web pages, and other policy documents along with surveys of faculty, staff, and administrative leaders allowed the researcher to address the research questions and expand upon the existing literature. The results of the analysis of the data, including significant relationships among variables and themes from coding the data, will be presented in Chapter 4. Chapter 5 will focus on summarizing the findings, suggesting recommendations for action for educational leadership and policy, discussing limitations, and making suggestions for further study.
Chapter 4

ANALYSIS OF THE DATA

Introduction

Chapter 4 will describe the results of the research study, including findings from the quantitative data derived from the online survey and the qualitative data gathered from the document review data and open-ended survey questions. The quantitative data collected in the survey address research questions #1 (and sub-question #1a), #2 and #3. The qualitative data from the document review and survey address questions #1, #2 and #3. The research questions included:

- **Question #1**: How do California State University (CSU) campus leaders support the implementation of accessible technology initiatives (ATI), institution-wide change associated with accessible technology, and a culture that promotes access and inclusion?
  - **Question #1a**: Is there a significant relationship between perceived leadership style and levels of implementation of accessible technology initiatives in the CSU?

- **Question #2**: What cultural, emotional, social, and other barriers do faculty and administrative leaders experience in implementing accessible technology initiatives and promoting culture change in the CSU?

- **Question #3**: What are the factors that contribute to successful implementation of accessible technology policy and culture change in the CSU?
In this chapter, data collected from the document review and surveys will be used to support the responses to each research question, to be summarized in Chapter 5. The quantitative findings section will present the survey’s demographics and descriptive statistics. The quantitative section will also present results from statistical correlation analyses and provide an overview of the statistical methods used to analyze the data. The qualitative findings section will report themes from the data gathered through open-ended survey questions and document review of public web searches. In Chapter 5, the data will be interpreted through theoretical concepts related to leadership and organizational change theories. More specifically, the data will be filtered through the lenses of Critical Transformative Leadership (CTL) theory, Diffusion of Innovations (DOI) theory, and Emergent Change (EC) framework.

**The Sequential Exploratory Approach**

As discussed in Chapter 3, a sequential exploratory approach was selected for this study. After careful review of the literature and policy related documents from the 23 CSU campuses, the researcher developed an online survey instrument that was used to gather participant data from CSU faculty, staff, students and administrators who could provide insights on the accessible technology initiatives on their campuses. The qualitative document analysis was used to inform the quantitative and qualitative survey. The data from both phases of the study were then triangulated and mixed to inform the final interpretation, with Critical Transformative Leadership Theory, Diffusion of Innovations Theory and Emergent Change Framework used as theoretical frameworks to better interpret the data. Figure 6 below illustrates the sequential exploratory approach.
Figure 6. Sequential exploratory approach. Adapted from Creswell (2013).

**Quantitative Data Summary**

As described in Chapter 3, the survey protocol was created and compiled by the researcher using some results from the document review along with the theoretical frameworks. Data were collected through online survey to address the research questions. The dependent variable for the study was the perceived Level of ATI Implementation, as measured by perceptions of:

- **a. Web Accessibility**;
- **b. Instructional Materials Accessibility**;
- **c. Procurement Accessibility**.

The following independent variables were also included in the survey:

1. **Gender**;
2. **Race/Ethnicity**;
3. **Age**;
4. *Years on Campus*;

5. *Position*;

6. *Level of Involvement*;

7. *Campus Size*;

8. *Campus Climate*;

9. *Type of Campus Policy*;

10. *Familiarity with Section 508*;

11. *Participation on ATI Steering Committee*;

12. *Executive Sponsor Position*;

13. *Executive Sponsor Organizational Placement*;

14. *Commitment of Campus Resources*;

15. *Compliance with Section 508*;

16. *Adoption of Innovation*;

17. *Barriers that Inhibit Success*;

18. *Factors that Facilitate Success*;

19. *Section 508 Compliance*;

20. *Leadership Styles (Transformative, Bureaucratic, Democratic, Political, and Transformational)*.

Examples of the survey questions that pertain to each variable are in Table 5. See Appendix C for the complete survey questions.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample Survey Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adoption of innovation</td>
<td>Which statement best reflects your own stage with regard to adoption of the innovation of incorporating accessibility into technology or instructional materials?</td>
</tr>
<tr>
<td>Age</td>
<td>Please indicate your age</td>
</tr>
<tr>
<td>Barriers that inhibit success</td>
<td>Please indicate which of the following are barriers to accessible technology implementation on your campus</td>
</tr>
<tr>
<td>Campus climate</td>
<td>There is an emphasis on developing appreciation for a diverse society on campus and the general climate of the campus is respectful and inclusive towards people with disabilities.</td>
</tr>
<tr>
<td>Campus size</td>
<td>To your knowledge, how many total students attend your campus?</td>
</tr>
<tr>
<td>Commitment of campus resources</td>
<td>To your knowledge, are financial resources allocated to support ATI on your campus?</td>
</tr>
<tr>
<td>Compliance with Section 508</td>
<td>Based on my knowledge of Section 508, I feel there is compliance with Section 508 on my campus</td>
</tr>
<tr>
<td>Executive sponsor organizational placement</td>
<td>To your knowledge, where does the ATI Executive Sponsor on your campus work?</td>
</tr>
<tr>
<td>Executive sponsor position</td>
<td>To your knowledge, what position is the ATI Executive Sponsor?</td>
</tr>
<tr>
<td>Factors that facilitate success</td>
<td>Please indicate which of the following are factors that facilitate successful accessible technology implementation on your campus</td>
</tr>
<tr>
<td>Familiarity with Section 508</td>
<td>How familiar are you with Section 508 of the Rehabilitation Act?</td>
</tr>
<tr>
<td>Gender</td>
<td>Please indicate your gender</td>
</tr>
<tr>
<td>Level of ATI policy implementation</td>
<td>Please indicate how strongly you agree or disagree with the following goals and statements regarding levels of accessible technology implementation on your campus.</td>
</tr>
<tr>
<td>Level of involvement</td>
<td>How actively are you involved in implementing accessible technology on your campus?</td>
</tr>
<tr>
<td>Participation on ATI steering committee</td>
<td>Do you participate on the ATI Steering Committee on your campus?</td>
</tr>
<tr>
<td>Perceived leadership styles</td>
<td>Read the following statements [about leadership styles] and mark the appropriate response following your instincts; see Table 7.</td>
</tr>
<tr>
<td>Position</td>
<td>What is your position on your campus?</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>Please indicate your race/ethnicity.</td>
</tr>
<tr>
<td>Type of campus policy</td>
<td>What type of policy is it?</td>
</tr>
<tr>
<td>Years on campus</td>
<td>How many years have you been on your campus?</td>
</tr>
</tbody>
</table>
Examples of questions from the five selected leadership inventories of leadership styles are found in Table 6. See Appendix C for the full leadership inventories in the survey.

Table 6

Sample Questions from Leadership Inventories

<table>
<thead>
<tr>
<th>Transformative leadership</th>
<th>Bureaucratic leadership</th>
<th>Democratic leadership</th>
<th>Political leadership</th>
<th>Transformational leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am committed to social justice</td>
<td>1. Organizational success necessitates that processes and structures are efficient</td>
<td>1. I prefer/enjoy investing in the personal and professional development of my staff</td>
<td>1. I contemplate my actions multiple steps in advance</td>
<td>1. I am known for being a great communicator</td>
</tr>
<tr>
<td>2. I challenge the “status quo”</td>
<td>2. Organizational success is achieved through the pursuit of productivity</td>
<td>2. I believe that collaboration (e.g. working in teams, committee work) is vital to organizational success</td>
<td>2. I maneuver people and resources to meet my goals</td>
<td>2. I have established a clear vision and strategic plan</td>
</tr>
<tr>
<td>3. I advocate against marginalization</td>
<td>3. Handbooks, frameworks, and organizational documents should clearly delineate each individual’s areas of responsibility</td>
<td>3. I regularly provide and support learning and development opportunities for my staff</td>
<td>3. I am adept in consolidating power</td>
<td>3. I have a high degree of socioemotional intelligence</td>
</tr>
<tr>
<td>4. I am concerned with inequities facing diverse student communities</td>
<td>4. Policies drive organizational practices</td>
<td>4. I value the experience, insight and knowledge of staff</td>
<td>4. I develop coalitions to gain power and resources</td>
<td>4. My staff regularly exceed established goals</td>
</tr>
</tbody>
</table>

Quantitative Data Analysis

Descriptive Statistics

Participant demographics. Eighty-six individuals consented to participate in the survey, however not all participants fully completed all of the survey questions. The following tables (Tables 7 through 10) provide the frequencies and percentages for participant demographic variables included in the survey (i.e. gender, race/ethnicity, age, and position). Missing responses are not included.

The sample consisted of 71 participants, approximately 66.2% of them were women (n=47) while the rest were men (n=24). Approximately 71.8% of the participants were Caucasian/White, while the remaining participants were Latino/Hispanic (12.7%), African American (5.6%), Asian (5.6%), Pacific Islander (1.4%) and Other (2.8%) (for the Other category, participants specified White and Hapa). The sample included faculty (n=15), staff (n=31), students (n=2) and administrators (n=21) from various campuses from the California State University system. Approximately 59% of participants were 51 years of age or older, while about 41% of participants were 50 years of age or younger.

Table 7

Frequencies and Percentages – Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>47</td>
<td>66.2%</td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>33.8%</td>
</tr>
</tbody>
</table>
Table 8

Frequencies and Percentages – Race/Ethnicity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>4</td>
<td>5.6%</td>
</tr>
<tr>
<td>Asian</td>
<td>4</td>
<td>5.6%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>51</td>
<td>71.8%</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>9</td>
<td>12.8%</td>
</tr>
<tr>
<td>Native American</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>1</td>
<td>1.4%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

Table 9

Frequencies and Percentages – Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30</td>
<td>3</td>
<td>4.2%</td>
</tr>
<tr>
<td>31-40</td>
<td>8</td>
<td>11.3%</td>
</tr>
<tr>
<td>41-50</td>
<td>18</td>
<td>25.4%</td>
</tr>
<tr>
<td>51-60</td>
<td>28</td>
<td>39.4%</td>
</tr>
<tr>
<td>61 or older</td>
<td>14</td>
<td>19.7%</td>
</tr>
</tbody>
</table>

Table 10

Frequencies and Percentages – Position

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>15</td>
<td>21.7%</td>
</tr>
<tr>
<td>Staff</td>
<td>31</td>
<td>44.9%</td>
</tr>
<tr>
<td>Student</td>
<td>2</td>
<td>2.9%</td>
</tr>
<tr>
<td>Administrator</td>
<td>21</td>
<td>30.4%</td>
</tr>
</tbody>
</table>

Participant experience. The survey also asked participants to indicate how many years they had worked on their campus, if they participated on their campus ATI steering committee, their level of involvement in implementing accessible technology, their familiarity with Section 508, and their stage in adoption of the innovation of accessible technology. As seen in Table 11, the majority of participants (53.5%) have worked on
campus for over 10 years. This finding means that many participants were on campus when the CSU Accessible Technology Initiative (ATI) was first launched. Furthermore, as seen in Tables 12 through 14, the majority of participants reported that they served on the campus ATI steering committee (58.6%), were actively involved in implementation efforts (60.3%) and were familiar with the Section 508 law (84.2%). Furthermore, as seen in Table 15 and Figure 7, the majority of participants (87.9%) said they had actually implemented or intended to continue implementing accessible technology themselves.

Table 11

*Frequencies and Percentages – Years on Campus*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 year</td>
<td>2</td>
<td>2.8%</td>
</tr>
<tr>
<td>2-4 years</td>
<td>10</td>
<td>14.1%</td>
</tr>
<tr>
<td>5-10 years</td>
<td>21</td>
<td>29.6%</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>38</td>
<td>53.5%</td>
</tr>
</tbody>
</table>

Table 12

*Frequencies and Percentages – Participation on ATI Steering Committee*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34</td>
<td>58.6%</td>
</tr>
<tr>
<td>No</td>
<td>24</td>
<td>41.4%</td>
</tr>
</tbody>
</table>

Table 13

*Frequencies and Percentages – Level of Active Involvement in ATI*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all active</td>
<td>3</td>
<td>5.2%</td>
</tr>
<tr>
<td>Somewhat active</td>
<td>20</td>
<td>34.5%</td>
</tr>
<tr>
<td>Active</td>
<td>10</td>
<td>17.2%</td>
</tr>
<tr>
<td>Very active</td>
<td>25</td>
<td>43.1%</td>
</tr>
</tbody>
</table>
Table 14

Frequencies and Percentages – Familiarity with Section 508

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did not hear of this law prior to taking this survey</td>
<td>1</td>
<td>1.8%</td>
</tr>
<tr>
<td>I am somewhat familiar with this law</td>
<td>8</td>
<td>14.0%</td>
</tr>
<tr>
<td>I am familiar with this law</td>
<td>20</td>
<td>35.1%</td>
</tr>
<tr>
<td>I am very familiar with this law</td>
<td>28</td>
<td>49.1%</td>
</tr>
</tbody>
</table>

Table 15

Frequencies and Percentages – Adoption of Innovation of Accessible Technology

<table>
<thead>
<tr>
<th>Which statement best reflects your own stage with regard to adoption of the innovation of incorporating accessibility into technology or instructional materials?</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have not heard of this innovation</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>I have some understanding of what’s involved in implementing accessible technology</td>
<td>8.6%</td>
<td>5</td>
</tr>
<tr>
<td>I am in the process of gathering more information about implementing accessible technology</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>I intend to implement accessible technology</td>
<td>3.5%</td>
<td>2</td>
</tr>
<tr>
<td>I have actually implemented accessible technology</td>
<td>29.3%</td>
<td>17</td>
</tr>
<tr>
<td>I plan to continue implementing or maintaining accessibility in technology</td>
<td>58.6%</td>
<td>34</td>
</tr>
</tbody>
</table>
Campus related variables. Tables 16 through 22 provide the frequencies and percentages of campus related variables collected in the survey (i.e. campus size, campus climate, Section 508 compliance, type of campus policy, campus executive sponsor placement, executive sponsor position, and commitment of financial resources). The majority of participants (59.2%) were from larger sized campuses (20,001 or more). Fifty-five percent of participants who responded agreed or strongly agreed that the campus climate was inclusive and respectful. However 13.7% reported that they did not feel the campus was inclusive. Likewise, only 32.76% strongly agreed or agreed that the campus was compliant with Section 508 accessibility standards.
Table 16

*Frequencies and Percentages – Campus Size*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000-5,000</td>
<td>2</td>
<td>2.82%</td>
</tr>
<tr>
<td>5,001-10,000</td>
<td>14</td>
<td>19.72%</td>
</tr>
<tr>
<td>10,001-20,000</td>
<td>13</td>
<td>18.31%</td>
</tr>
<tr>
<td>20,001-30,000</td>
<td>27</td>
<td>38.03%</td>
</tr>
<tr>
<td>30,001+</td>
<td>15</td>
<td>21.13%</td>
</tr>
</tbody>
</table>

Table 17

*Frequencies and Percentages – Campus Climate is Respectful and Inclusive*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>1.72%</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>5.17%</td>
</tr>
<tr>
<td>Somewhat Disagree</td>
<td>4</td>
<td>6.9%</td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>18</td>
<td>31.03%</td>
</tr>
<tr>
<td>Agree</td>
<td>24</td>
<td>41.38%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>8</td>
<td>13.79%</td>
</tr>
</tbody>
</table>

Table 18

*Frequencies and Percentages – Section 508 Compliance*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>3</td>
<td>5.17%</td>
</tr>
<tr>
<td>Disagree</td>
<td>4</td>
<td>6.9%</td>
</tr>
<tr>
<td>Somewhat Disagree</td>
<td>5</td>
<td>8.62%</td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>27</td>
<td>46.55%</td>
</tr>
<tr>
<td>Agree</td>
<td>17</td>
<td>29.31%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>2</td>
<td>3.45%</td>
</tr>
</tbody>
</table>

**Policy type.** Table 19 presents the results for the variable type of policy. The majority of participants (56.9%) indicated that they had formal standalone policies related to accessible technology. This finding is consistent with the previous literature which suggested that master’s and doctorate granting institutions like the CSU tend to have
more formal standalone accessible technology policies. However, 17.24% of participants indicated that they had guidelines but no formal requirement.

Table 19

*Frequencies and Percentages – Type of Policy*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal standalone policy that addresses accessible technology</td>
<td>33</td>
<td>56.9%</td>
</tr>
<tr>
<td>Formal policy but accessible technology is incorporated</td>
<td>7</td>
<td>12.07%</td>
</tr>
<tr>
<td>General statement only</td>
<td>3</td>
<td>5.17%</td>
</tr>
<tr>
<td>Guidelines or standards but no formal requirement</td>
<td>10</td>
<td>17.24%</td>
</tr>
<tr>
<td>Unsure</td>
<td>5</td>
<td>8.62%</td>
</tr>
</tbody>
</table>

**Executive sponsors.** Tables 20 and 21 provide the frequencies and percentages of Executive Sponsor placement and position. The participants indicated that their campus’ Executive Sponsors were placed in divisions such as Information Technology (45.45%), Academic Affairs (10.91%), Student Affairs (10.91%), Disability Services (12.73%), and Administrative Business Affairs (7.27%). Thirteen percent stated that they were unsure of the Executive Sponsor Placement. Two participants marked “Other” and specified in the open-ended comments box that they had Co-Executive Sponsors (Disability Services and Information Technology) and Risk Management and Internal Control.

Likewise, the participants indicated that the Executive Sponsors had positions such as Associate Vice President (6.9%), Chief Information Officer (25.86%), Director (20.69%), Provost (6.9%), and Vice President (6.9%). Twenty-one percent of participants stated that they were unsure of their Executive Sponsor’s position. Other Executive Sponsor positions specified in open-ended comments were Co-Executive Sponsors
(Director of Disability Services and Chief Information Officer (CIO)), Assistant Vice President, Associate CIO, Associate Provost, and ATI Coordinator.

Table 20

Frequencies and Percentages – Campus Executive Sponsor Placement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Affairs</td>
<td>6</td>
<td>10.91%</td>
</tr>
<tr>
<td>Administrative Business Affairs</td>
<td>4</td>
<td>7.27%</td>
</tr>
<tr>
<td>Disability Services</td>
<td>7</td>
<td>12.73%</td>
</tr>
<tr>
<td>Information Technology</td>
<td>25</td>
<td>45.45%</td>
</tr>
<tr>
<td>Student Affairs</td>
<td>6</td>
<td>11.1%</td>
</tr>
<tr>
<td>Unsure</td>
<td>7</td>
<td>12.73%</td>
</tr>
</tbody>
</table>

Table 21

Frequencies and Percentages – Campus Executive Sponsor Position

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Vice President</td>
<td>4</td>
<td>6.9%</td>
</tr>
<tr>
<td>Chief Information Officer</td>
<td>15</td>
<td>25.86%</td>
</tr>
<tr>
<td>Dean</td>
<td>1</td>
<td>1.72%</td>
</tr>
<tr>
<td>Director/Program Coordinator</td>
<td>12</td>
<td>20.69%</td>
</tr>
<tr>
<td>Provost</td>
<td>4</td>
<td>6.9%</td>
</tr>
<tr>
<td>Vice President</td>
<td>4</td>
<td>6.9%</td>
</tr>
<tr>
<td>Unsure</td>
<td>12</td>
<td>20.69%</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>10.34%</td>
</tr>
</tbody>
</table>

Financial resources. Table 22 provides the frequencies and percentages of commitment of financial resources related to accessible technology. Only just over half of the participants (51.72%) indicated that their institution had committed financial resources to support the accessible technology initiative on their campus.
Table 22

*Frequencies and Percentages – Commitment of Financial Resources*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>30</td>
<td>51.72%</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>27.59%</td>
</tr>
<tr>
<td>Unsure</td>
<td>12</td>
<td>20.69%</td>
</tr>
</tbody>
</table>

**ATI implementation levels.** Table 23 presents the means, minimum, maximum, and standard deviations of the perceived ATI implementation levels according to the surveys. To report levels, a Likert scale of 1-6 was used for each of the questions related to implementation levels, with 1 indicating strong disagreement and 6 indicating strong agreement. The data suggest that the mean web accessibility implementation levels (4.57) and procurement accessibility levels (4.33) were higher than the mean for instructional materials accessibility implementation levels (3.91). This data can be compared with the status levels from the aggregated systemwide annual reports discovered in the document review (CSU, 2014b), which reported that average implementation levels for instructional materials accessibility and web accessibility tended to be more established than procurement accessibility levels. Data from both the survey and document review suggest that some campuses may have a more difficult time implementing policy related to goals for procurement and instructional materials (see ATI goals in Appendix B).
Table 23

Minimum, Maximum, Means, and Standard Deviations for ATI Implementation Levels

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Web Accessibility:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus web pages generally comply with Section 508 Accessibility Standards.</td>
<td>58</td>
<td>1</td>
<td>6</td>
<td>4.57</td>
<td>1.03</td>
</tr>
<tr>
<td><strong>Instructional Materials</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessibility:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The campus has implemented plans, policies and procedures to ensure that accessibility is incorporated into instructional resources.</td>
<td>58</td>
<td>2</td>
<td>6</td>
<td>3.91</td>
<td>1.06</td>
</tr>
<tr>
<td><strong>Procurement Accessibility:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All individuals on campus involved in the purchasing of goods are knowledgeable about Section 508 in the context of Electronic and Information Technology (E&amp;IT) procurement.</td>
<td>58</td>
<td>1</td>
<td>6</td>
<td>4.33</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Note. 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.

Tables 24 through 26 present frequencies and percentages of perceived ATI implementation levels (for web accessibility, instructional materials accessibility and technology procurement accessibility). The descriptive statistics for these levels are also illustrated in Figures 8 through 10.
Table 24

Frequencies and Percentages – Web Accessibility Implementation

**Web Accessibility:** Campus web pages generally comply with Section 508 Accessibility Standards.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>5.2%</td>
</tr>
<tr>
<td>Somewhat Disagree</td>
<td>1</td>
<td>1.7%</td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>17</td>
<td>29.3%</td>
</tr>
<tr>
<td>Agree</td>
<td>29</td>
<td>50.0%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>7</td>
<td>12.1%</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*Figure 8. Web accessibility implementation.*
Table 25

Frequencies and Percentages – Instructional Materials Accessibility Implementation

**Instructional Materials:** The campus has implemented plans, policies and procedures to ensure that accessibility is incorporated into instructional resources.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Disagree</td>
<td>8</td>
<td>13.8%</td>
</tr>
<tr>
<td>Somewhat Disagree</td>
<td>9</td>
<td>15.5%</td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>23</td>
<td>39.7%</td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>27.6%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>2</td>
<td>3.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>58</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Figure 9. Instructional materials accessibility implementation.*
Table 26

*Frequencies and Percentages – Procurement Accessibility Implementation*

**Procurement Accessibility**: All individuals on campus involved in the purchasing of goods are knowledgeable about Section 508 in the context of Electronic and Information Technology (E&IT) procurement.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>2</td>
<td>3.4%</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>5.2%</td>
</tr>
<tr>
<td>Somewhat Disagree</td>
<td>7</td>
<td>12.1%</td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>16</td>
<td>27.6%</td>
</tr>
<tr>
<td>Agree</td>
<td>22</td>
<td>37.9%</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>8</td>
<td>13.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>58</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Figure 10. IT procurement accessibility implementation.*

**Barriers in implementing accessible technology policy.** The barriers to implementation of accessible technology initiatives according to the survey participants are presented quantitatively in Table 27. The majority of participants identified the
following as barriers: lack of faculty/staff buy in (68.97%); lack of awareness (62.04%); lack of staffing (60.34%); lack of time (58.62%); lack of funding (56.9%); and lack of training (53.45%). Open-ended survey comments and document content specifying other barriers will be addressed in the Qualitative Data Analysis section.

Table 27

*Frequencies and Percentages – Barriers*

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of faculty/staff buy in</td>
<td>68.97%</td>
<td>40</td>
</tr>
<tr>
<td>Lack of awareness</td>
<td>62.04%</td>
<td>36</td>
</tr>
<tr>
<td>Lack of staffing</td>
<td>60.34%</td>
<td>35</td>
</tr>
<tr>
<td>Lack of time</td>
<td>58.62%</td>
<td>34</td>
</tr>
<tr>
<td>Lack of funding</td>
<td>56.9%</td>
<td>33</td>
</tr>
<tr>
<td>Lack of training</td>
<td>53.45%</td>
<td>31</td>
</tr>
<tr>
<td>Confusion about different accessibility standards</td>
<td>44.83%</td>
<td>26</td>
</tr>
<tr>
<td>The complexity of accessible technology</td>
<td>43.1%</td>
<td>25</td>
</tr>
<tr>
<td>Lack of rewards (e.g. release time, incentives)</td>
<td>43.1%</td>
<td>25</td>
</tr>
<tr>
<td>Attitudinal barriers/ableism</td>
<td>37.93%</td>
<td>22</td>
</tr>
<tr>
<td>Lack of top level administrator support</td>
<td>34.48%</td>
<td>20</td>
</tr>
<tr>
<td>Vendor noncompliance</td>
<td>31.03%</td>
<td>18</td>
</tr>
<tr>
<td>Technology infrastructure issues (e.g. software or hardware issues, limited availability of technology)</td>
<td>25.83%</td>
<td>15</td>
</tr>
<tr>
<td>Lack of user support</td>
<td>22.41%</td>
<td>13</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>15.52%</td>
<td>9</td>
</tr>
<tr>
<td>Total respondents</td>
<td></td>
<td>58</td>
</tr>
</tbody>
</table>

**Factors that contribute to successful implementation of accessible technology policy.** The results of the survey for factors facilitating successful implementation (facilitators) are presented in Table 28. The researcher expected to see training (68.97%) as one of the top factors reported as facilitating success, since lack of training was
reported as a top barrier. Other factors reported by the majority of participants as facilitating factors for success included top level administrator support (62.07%); collaboration between offices/programs (60.34%); user support (50%); and assessing progress to make sure ATI is being implemented as intended (50%). Open-ended survey responses and document content related to facilitators will be addressed in the Qualitative Data Analysis section.

Table 28

Frequencies and Percentages – Facilitators

Please indicate which of the following are factors that facilitate successful accessible technology implementation on your campus:

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>68.97%</td>
<td>40</td>
</tr>
<tr>
<td>Top level administrator support</td>
<td>62.07%</td>
<td>36</td>
</tr>
<tr>
<td>Collaboration between offices/programs</td>
<td>60.34%</td>
<td>35</td>
</tr>
<tr>
<td>User support</td>
<td>50.0%</td>
<td>29</td>
</tr>
<tr>
<td>Assessing progress to make sure ATI is being implemented as intended</td>
<td>50.0%</td>
<td>29</td>
</tr>
<tr>
<td>Buy-in from faculty and staff</td>
<td>48.28%</td>
<td>28</td>
</tr>
<tr>
<td>A clear accessible technology implementation plan</td>
<td>43.1%</td>
<td>25</td>
</tr>
<tr>
<td>Hiring of key personnel</td>
<td>43.1%</td>
<td>25</td>
</tr>
<tr>
<td>ATI committee support</td>
<td>41.38%</td>
<td>24</td>
</tr>
<tr>
<td>Adequate resources/funding</td>
<td>39.66%</td>
<td>23</td>
</tr>
<tr>
<td>A comprehensive accessible technology policy</td>
<td>36.21%</td>
<td>21</td>
</tr>
<tr>
<td>Sufficient time and effort allocated to personnel</td>
<td>36.21%</td>
<td>21</td>
</tr>
<tr>
<td>Awareness and marketing efforts</td>
<td>32.76%</td>
<td>19</td>
</tr>
<tr>
<td>Involvement of students in the initiative</td>
<td>29.31%</td>
<td>17</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>10.34%</td>
<td>6</td>
</tr>
<tr>
<td>Total respondents</td>
<td></td>
<td>58</td>
</tr>
</tbody>
</table>
**Correlation Results from Leadership Inventories**

The researcher included four sample survey questions associated with each of the five selected leadership inventories adapted from Nevarez and Wood (2011a, 2011b, 2011c, 2011d, & 2011e). The following table (Table 29) provides the means, minimum, maximum, and standard deviations of the average results from the leadership inventories by leadership approach (i.e. transformative, bureaucratic, democratic, political and transformational leadership types). Each leadership inventory question utilized a Likert scale of 1-6 (with 6 indicating strong agreement for the leadership style and 1 indicating strong disagreement). The average scores corresponding to each leadership inventory were calculated using the SPSS transform feature. In other words, the results from the four questions for each leadership inventory were converted into an average leadership score, with higher scores (i.e. scores of 5 or higher) indicating that participants had higher levels of agreement with that particular leadership approach, on average. Overall, participants ranked democratic and transformational leadership approaches higher on average than transformative, bureaucratic and political leadership approaches. The mean average democratic leadership score was 5.31; the mean average transformative leadership score for all participants was 5.10; the mean average transformational leadership score was 4.76; the mean average bureaucratic leadership score was 4.57; and the mean average political leadership score was 3.99.
Table 29

Means and Standard Deviations for Average Leadership Inventory Scores

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Transformative Leadership Score</td>
<td>45</td>
<td>3.00</td>
<td>6.00</td>
<td>5.10</td>
<td>.74696</td>
</tr>
<tr>
<td>Average Bureaucratic Leadership Score</td>
<td>44</td>
<td>2.25</td>
<td>6.00</td>
<td>4.57</td>
<td>.84283</td>
</tr>
<tr>
<td>Average Democratic Leadership Score</td>
<td>45</td>
<td>4.00</td>
<td>6.00</td>
<td>5.31</td>
<td>.60276</td>
</tr>
<tr>
<td>Average Political Leadership Score</td>
<td>46</td>
<td>1.25</td>
<td>6.00</td>
<td>3.99</td>
<td>1.10616</td>
</tr>
<tr>
<td>Average Transformational Leadership Score</td>
<td>44</td>
<td>3.25</td>
<td>6.00</td>
<td>4.76</td>
<td>.65459</td>
</tr>
</tbody>
</table>

Note. 1 = Strongly Disagree, 2 = Disagree, 3=Somewhat Disagree, 4=Somewhat Agree, 5=Agree, 6=Strongly Agree

Next, a Pearson bivariate correlation analysis was performed to identify significant correlations between the leadership approaches and the three indicators of perceived levels of ATI implementation (i.e. web accessibility, instructional materials accessibility, and procurement accessibility). Pearson Correlations were conducted in SPSS using the Analyze-Correlate-Bivariate function to determine if there were significant relationships between variables. The significant correlations found between the leadership styles and levels of accessibility implementation included in this study are presented in Table 30. The results suggest that several leadership styles may help to support or hinder implementation of ATI, depending on the direction of the correlations.
Table 30

Results from Pearson’s Correlation Analysis for Leadership Styles and Levels of Implementation

<table>
<thead>
<tr>
<th>Leadership Style</th>
<th>Web Accessibility</th>
<th>Instructional Materials</th>
<th>Procurement Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership Score</td>
<td>Pearson Correlation</td>
<td>.147</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.334</td>
<td>.978</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Bureaucratic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership Score</td>
<td>Pearson Correlation</td>
<td>.497**</td>
<td>.023</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.880</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Democratic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership Score</td>
<td>Pearson Correlation</td>
<td>.301*</td>
<td>-.057</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.044</td>
<td>.710</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Political</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership Score</td>
<td>Pearson Correlation</td>
<td>.086</td>
<td>-.015</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.572</td>
<td>.923</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Transformational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership Score</td>
<td>Pearson Correlation</td>
<td>.181</td>
<td>-.153</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.241</td>
<td>.322</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>44</td>
<td>44</td>
</tr>
</tbody>
</table>

Note. Effect Size (r) is determined according to Cohen’s Scale (Cohen, 1995); 0.1 = Low Effect Size, 0.3 = Medium Effect Size, 0.5 = High Effect Size (r ≥ .8 suggests collinearity); * Statistically significant at p ≤ .05 ** Statistically significant at p ≤ .01.

Figure 11 displays a Scatterplot Matrix run in SPSS to illustrate how leadership styles were correlated with ATI implementation levels and to what degree and direction. The results of the correlational analyses presented in Table 31 and Figure 11 show that three out of the 15 correlations were statistically significant. The researcher found that
there were significant, positive correlations between average democratic leadership score and web accessibility ($r = 0.301, p = .044$) and between average bureaucratic leadership score and web accessibility ($r = 0.497, p = .001$). The correlations also indicated a significant, negative correlation between average political leadership score and procurement accessibility ($r = -0.298, p = .044$). The correlations for web accessibility, instructional materials accessibility, and procurement accessibility implementation levels with average transformational leadership score and average transformative leadership score tended to be lower and not significant. In general, the results suggest that if participants scored higher on the average bureaucratic leadership score and average democratic leadership score, they tended to state that web accessibility levels were higher. Likewise, the results suggest that participants who had higher average political leadership scores tended to report that the procurement accessibility levels were lower. These findings will be discussed further in Chapter 5.
Figure 11. Scatterplot matrix for ATI implementation levels and leadership style scores.
Correlation Results for Participant and Campus Variables

Participant variables. Additionally, Pearson correlation coefficients were computed among the three indicators of perceived levels of ATI implementation (i.e. web accessibility, instructional materials accessibility, and procurement accessibility) and participants’ demographics-characteristics (i.e. gender, race/ethnicity, age, number of years on campus, position, level of involvement in ATI, and familiarity with Section 508). See Table 31 for correlations among ATI implementation levels and participant variables.

Table 31

Correlations Among ATI Implementation Levels and Participant Variables

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Race/ethnicity</th>
<th>Age</th>
<th>Position</th>
<th>Years on campus</th>
<th>Familiar Section 508</th>
<th>Actively Involved in ATI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Web Accessibility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.002</td>
<td>.134</td>
<td>-.075</td>
<td>.128</td>
<td>-.120</td>
<td>.094</td>
<td>.112</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.989</td>
<td>.317</td>
<td>.577</td>
<td>.342</td>
<td>.369</td>
<td>.486</td>
<td>.402</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>57</td>
<td>58</td>
<td>57</td>
<td>58</td>
</tr>
<tr>
<td><strong>Instructional Materials Accessibility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.028</td>
<td>-.012</td>
<td>-.272*</td>
<td>-.156</td>
<td>-.187</td>
<td>-.294*</td>
<td>-.298*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.837</td>
<td>.930</td>
<td>.039</td>
<td>.246</td>
<td>.160</td>
<td>.027</td>
<td>.023</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>57</td>
<td>58</td>
<td>57</td>
<td>58</td>
</tr>
<tr>
<td><strong>Procurement Accessibility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.004</td>
<td>-.036</td>
<td>-.166</td>
<td>.014</td>
<td>-.231</td>
<td>.056</td>
<td>-.067</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.979</td>
<td>.791</td>
<td>.213</td>
<td>.918</td>
<td>.082</td>
<td>.681</td>
<td>.616</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>57</td>
<td>58</td>
<td>57</td>
<td>58</td>
</tr>
</tbody>
</table>

Note: * Statistically significant at p≤.05 ** Statistically significant at p≤.01.
**Campus variables.** Correlations were also calculated between the three aforementioned levels of ATI implementation and campus related variables (i.e. campus size, campus climate, Section 508 compliance, campus executive sponsor placement, executive sponsor position, and resources). See Table 32 for correlations among ATI implementation levels and campus variables.

Table 32

_Correlations Among ATI Implementation Levels and Campus Variables_

<table>
<thead>
<tr>
<th></th>
<th>Campus size</th>
<th>Campus climate</th>
<th>Section 508 Compliance</th>
<th>Policy Type</th>
<th>Executive Sponsor position</th>
<th>Executive Sponsor placement</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Web Accessibility</strong></td>
<td>-.057</td>
<td><strong>.368</strong></td>
<td><strong>.446</strong></td>
<td><strong>-.397</strong></td>
<td>-.133</td>
<td>.117</td>
<td>.027</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.673</td>
<td>.004</td>
<td>.000</td>
<td>.002</td>
<td>.320</td>
<td>.396</td>
<td>.843</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>55</td>
<td>58</td>
</tr>
<tr>
<td><strong>Instructional Materials Accessibility</strong></td>
<td>.266*</td>
<td>.321*</td>
<td><strong>.567</strong></td>
<td>-.131</td>
<td>.138</td>
<td>.062</td>
<td>-.135</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.044</td>
<td>.014</td>
<td>.000</td>
<td>.327</td>
<td>.302</td>
<td>.652</td>
<td>.312</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>55</td>
<td>58</td>
</tr>
<tr>
<td><strong>Procurement Accessibility</strong></td>
<td>.221</td>
<td><strong>.278</strong></td>
<td><strong>.347</strong></td>
<td>-.214</td>
<td>.032</td>
<td>.148</td>
<td>-.002</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.095</td>
<td>.035</td>
<td>.008</td>
<td>.107</td>
<td>.812</td>
<td>.282</td>
<td>.989</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>55</td>
<td>58</td>
</tr>
</tbody>
</table>

*Note: * Statistically significant at p≤.05  ** Statistically significant at p≤.01

The results of the correlational analyses presented in Tables 31 and 32 show that 11 out of the 42 correlations were statistically significant. The researcher found significant negative correlations between age and instructional materials accessibility (r= -.272, p=.04), familiarity with Section 508 and instructional materials accessibility (r= -.294, p=.027) and active involvement with instructional materials accessibility (r = -.298,
p= .023). In general, the results suggest that if participants were older, more familiar with Section 508 and more actively involved in ATI, they tended to state that instructional materials accessibility levels were lower. Likewise, the researcher found significant, positive correlations between campus size and instructional materials accessibility (r=.266, p=.044), campus climate and web accessibility (r=.368, p=.004), campus climate and instructional materials accessibility (r=.321, p=.014), and campus climate and procurement accessibility (r=.278, p=.035) at the .05 level. Section 508 compliance and web accessibility (r=.446, p=.000), Section 508 compliance and instructional materials accessibility (r=.567, p=.000), Section 508 compliance and procurement accessibility (r=.347, p =.008) and type of policy and web accessibility (r=.397, p=.002) at the specified .01 level. The results suggest that participants who stated that their campus climates were more inclusive also tended to state that the web accessibility and instructional materials accessibility levels were higher. Likewise, results suggest that participants who stated that their campus was more compliant with Section 508 tended to indicate that web accessibility, procurement accessibility and instructional materials accessibility levels were higher. Results also indicate that policy type may have a strong correlation with web accessibility implementation levels reported. Also, participants who stated that their campus size was larger tended to state that instructional materials accessibility levels were higher.

**Testing Leadership Inventories for Reliability**

The Nevarez and Wood (2011) leadership inventories that were adapted and used in this survey were previously tested for reliability to establish internal consistency of the
inventories. Four questions from each of the specified Nevarez and Wood leadership inventories were used in this study to meet the needs of this research study. To confirm the level of internal consistency associated with the original leadership inventories, the researcher reviewed the coefficient alpha analyses that were already conducted for each leadership inventory. The reliability of the original inventories was found to be satisfactory (Nevarez, Wood & Penrose, 2013). See Table 33 for the coefficient alpha reliability analyses from the original Nevarez and Wood (2011a, 2011b, 2011c, 2011d, & 2011e) leadership inventories, as cited in Nevarez, Wood and Penrose (2013).

Table 33

Nevarez and Wood Leadership Inventories – Coefficient Alpha Analyses

<table>
<thead>
<tr>
<th>Leadership Style</th>
<th>Number of Original Variables</th>
<th>Coefficient Alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformative</td>
<td>8</td>
<td>.90</td>
</tr>
<tr>
<td>Bureaucratic</td>
<td>16</td>
<td>.88</td>
</tr>
<tr>
<td>Democratic</td>
<td>10</td>
<td>.88</td>
</tr>
<tr>
<td>Political</td>
<td>10</td>
<td>.92</td>
</tr>
<tr>
<td>Transformational</td>
<td>15</td>
<td>.94</td>
</tr>
</tbody>
</table>


Summary of Quantitative Findings

The quantitative findings from the survey presented frequencies, percentages and trends for the variables included in the survey on ATI implementation, including barriers and factors facilitating success. In addition, the findings provided data on leadership utilizing five adapted leadership inventories. Results indicated significant positive correlations between average democratic leadership score and web accessibility and between average bureaucratic leadership score and web accessibility and significant
negative correlations between average political leadership score and procurement accessibility, along with other correlations between ATI implementation levels and campus and participant variables. These results will be further discussed in Chapter 5.

**Overview of Qualitative Data**

Qualitative data collection through both the document review and open-ended comments on the online survey provided insights into the quantitative findings derived from the online survey. Open-ended survey questions explored participants’ perceptions of leadership, adoption of innovations, and the implementation of accessible technology initiatives. The qualitative component of the study also explored barriers that inhibit and factors that support successful adoption of the innovation of accessible technology and associated culture change.

**Document Review**

This section provides an explanation of how the document data were organized. The researcher mined the Internet for documents that could tell the story of ATI implementation on each campus and in the CSU. These documents were organized by type of document and campus. Table 34 below summarizes the documents obtained from the document review from each campus (designated as a-w). Policy guiding documents collected included the campus ATI web pages, implementation plans, audit reports and annual reports, ATI related policies and policy statements, messages and communications about ATI, and ATI related images or logos. Campuses are not required to post implementation plans, annual reports, and other ATI policy guiding documents, so not all documents were publicly available for all campuses. Campus size, based on California
State University (CSU) Full Time Equivalent Student (FTES) enrollment (CSU, 2012), was also noted. Accessibility was tested for each campus’ selected ATI web page using the Mozilla Firefox web accessibility evaluation tool (WAVE) (n.d.). This tool allowed the researcher to run a free accessibility test of specific web pages using the Firefox Internet browser. The WAVE tool was limited in that it could not verify if the web content was fully accessible to a person with a disability, but it did help the researcher evaluate the general accessibility of the selected web pages (WAVE, n.d.).

The researcher located campus policies based on a cursory review of the campus’ public websites. The researcher then categorized the policy types based on the descriptions of policy types from Thompson et al. (2013), as described in Chapter 2: formal standalone, formal incorporated, statement, and guidelines. Several campuses had multiple policies; therefore only the primary policy types were noted.

Table 34

<table>
<thead>
<tr>
<th>Summary of Campus Document Review Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documents reviewed</td>
</tr>
<tr>
<td>ATI web page</td>
</tr>
<tr>
<td>ATI policy*</td>
</tr>
<tr>
<td>Accessibility (WAVE)**</td>
</tr>
<tr>
<td>Campus size ***</td>
</tr>
<tr>
<td>Campus plan</td>
</tr>
<tr>
<td>Letter</td>
</tr>
<tr>
<td>Annual/audit report</td>
</tr>
<tr>
<td>Image</td>
</tr>
</tbody>
</table>

| Note. * F=formal standalone, I=formal incorporated, G=guidelines, S=statement; ** number of errors found when using WAVE web accessibility tool on ATI web page; *** 1=1,000-10,000 FTES, 2=10,001-20,000 FTES, 3=20,001-30,000 FTES, 4=30,0001+ FTES |
The document review findings suggested some possible patterns. First, the researcher noticed that the campuses with no accessibility errors (n=9) on the selected ATI web pages (according to the WAVE accessibility reports) tended to be smaller campuses; for example, 44% of campuses with no errors (n=4) were smaller campuses (0-10,000 students) and 56% of campuses with no errors (n=5) were medium sized campuses (10,001-20,000). However, none of the larger sized campuses (i.e. 20,001 or larger) had zero accessibility errors noted. This descriptive data can be contrasted with the previously mentioned survey correlation results, which suggested that campus size was correlated with perceived instructional materials accessibility levels.

In addition, the researcher noticed that those campuses with formal standalone or formal incorporated policies discovered on their public web pages tended to have fewer accessibility errors noted on the selected ATI web pages compared with the other policy types (statement and guidelines). For example, of the 17 campuses with formal incorporated policies and formal standalone policies, 82% had one accessibility error or less and 18% had two or more accessibility errors. However, of the six campuses with statements or guidelines, 67% had one error or less and 33% had two or more errors. The survey correlation results discussed earlier also suggested that there was a statistically significant relationship between policy type and reported web accessibility implementation level.

Besides policies, plans, reports, and web pages, the researcher also discovered symbolic content. For example, the researcher found ATI related images or logos on about half of the campuses’ public ATI related web pages (see Figure 12 for an example
of one these images, which was also used by the CSU Office of the Chancellor to enhance awareness of ATI). Several campuses had signature messages or letters from Presidents posted on the campus ATI websites as well. Further content of the actual documents found will be further reviewed in the Qualitative Analysis section.


Qualitative Survey

The document review phase of the study informed variables such as reported barriers and success facilitators and was used to generate survey questions; the researcher also referred to previous literature, theoretical frameworks and research questions in developing survey questions. The survey was constructed with five sections, including consent, introduction, background/demographics, ATI implementation, and leadership sections. Open-ended qualitative questions on the online survey asked about successfully implementing ATI and promoting culture change and primary reasons for adopting or not adopting the innovation of accessible technology. Participants were also asked about
barriers as well as facilitators to accessible technology implementation. An additional open-ended question in the leadership section of the online survey was related to leadership and advocacy experiences. Examples of the open-ended survey questions are outlined below. The full survey can be found in Appendix C.

1. Please relate a story you would like to tell describing your experience with successfully implementing ATI or changing culture on your campus related to accessible technology.

2. Please indicate which of the following are factors that facilitate successful accessible technology implementation on your campus: Other (please specify)

3. Please indicate which of the following are barriers to accessible technology implementation on your campus: Other (please specify)

4. Answer one of the following questions regarding the innovation of accessible technology:
   - If you have not yet adopted this innovation, what is your primary reason?
   - If you have adopted this innovation, what is your primary reason?

5. Is there anything else you would like to add about leading accessible technology initiatives and advocating for a culture of access and inclusion in the CSU?

By analyzing the survey participant responses, the researcher looked for themes and trends and noted how leaders from various campuses and positions implemented
accessible technology initiatives and experienced culture change on campuses. The full online survey instrument and informed consent can be found in Appendix C.

**Qualitative Data Analysis**

The qualitative document review and survey data are presented in an integrated format organized around themes that emerged from the study as well as themes that specifically address the research questions and theoretical frameworks. The content analysis method, as described by Merriam (2009), was used to develop rich, thick descriptions of the content of documents, with data drawn from different sources (e.g. surveys, web pages, campus policies, images, reports, images, letters, and plans). The content analysis technique is inductive and “[although] categories and ‘variables’ initially guide the study, others are allowed and expected to emerge throughout the study” (Altheide, 1987, p.68 as cited in Merriam (2009)). In this study, multiple campus web sites and open-ended survey comments were analyzed qualitatively for themes based on frequency and variety of themes. The data were analyzed using a qualitative analysis program, QSR NVivo version 10 or “NVivo” (QSR, 2015). Using NVivo, the researcher transferred ATI related public web pages, documents and images from the 23 campuses along with the open-ended survey comments into NVivo. The software enabled the researcher to code the raw data, organize the codes into hierarchies, and explore the codes more closely in the context of the documents and comments. NVivo also allowed the researcher to query large chunks of qualitative data for word frequencies, word relationships, and word clouds. This provided the researcher with an opportunity to
explore complex ideas and analyze text more quickly. See Figure 13 for an example of a word frequency cloud in NVivo.

![Word frequency cloud from NVivo](image)

*Figure 13. Sample of word frequency cloud from NVivo.*

Furthermore, by reviewing the list of the most common words generated from the word frequency reports, the researcher was able to get a broad perspective of the documents and comments and themes began to emerge. For example, as shown in Table 35, the top ten list of words that were found most frequently in the documents included the word “faculty” but did not include the word “student” or “staff”. This was interesting to note, since students and universally designed learning environments are at the heart of the initiative (CSU, 2013b) and staff play a critical role in supporting accessible technology initiatives too. Some of the other words that rose to the top of the list included...
the words “committee,” “process,” “information,” “web” and “work”; these words may reflect a bureaucratic leadership approach (Nevarez, Wood & Penrose, 2013).

Table 35

*Word Frequency Query from NVivo: 20 Most Frequent Words*

<table>
<thead>
<tr>
<th>Word</th>
<th>Length</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>campus</td>
<td>6</td>
<td>2405</td>
</tr>
<tr>
<td>university</td>
<td>10</td>
<td>1799</td>
</tr>
<tr>
<td>web</td>
<td>3</td>
<td>1789</td>
</tr>
<tr>
<td>faculty</td>
<td>7</td>
<td>1670</td>
</tr>
<tr>
<td>accessibility</td>
<td>13</td>
<td>1559</td>
</tr>
<tr>
<td>ATI</td>
<td>3</td>
<td>1503</td>
</tr>
<tr>
<td>accessible</td>
<td>10</td>
<td>1191</td>
</tr>
<tr>
<td>committee</td>
<td>9</td>
<td>1190</td>
</tr>
<tr>
<td>process</td>
<td>7</td>
<td>1150</td>
</tr>
<tr>
<td>academic</td>
<td>8</td>
<td>1075</td>
</tr>
<tr>
<td>technology</td>
<td>10</td>
<td>1062</td>
</tr>
<tr>
<td>established</td>
<td>11</td>
<td>1050</td>
</tr>
<tr>
<td>state</td>
<td>5</td>
<td>966</td>
</tr>
<tr>
<td>information</td>
<td>11</td>
<td>933</td>
</tr>
<tr>
<td>work</td>
<td>4</td>
<td>916</td>
</tr>
<tr>
<td>students</td>
<td>8</td>
<td>864</td>
</tr>
<tr>
<td>year</td>
<td>4</td>
<td>857</td>
</tr>
<tr>
<td>level</td>
<td>5</td>
<td>816</td>
</tr>
<tr>
<td>training</td>
<td>8</td>
<td>793</td>
</tr>
<tr>
<td>materials</td>
<td>9</td>
<td>779</td>
</tr>
</tbody>
</table>

To study ATI implementation in more depth, the researcher reviewed the hundreds of documents and survey comments and open coded key ideas, including words and phrases that described leadership approaches, barriers, facilitators, and organizational change. Then the researcher grouped similar codes into overarching themes and noticed those themes that were relevant because of their frequency or salience (Merriam, 2009). Because the researcher was studying themes while sifting through multiple documents,
the researcher referred to the open coding process outlined by Lilly (2001) in which the researcher “...alternated between data management and data analysis... began noting patterns and themes, then clustering patterns and themes by conceptual grouping” (p.56). For example, patterns emerged that related to challenges and structures that might constrain the implementation of policy (e.g. lack of training, lack of resources, demanding tasks, poor accountability, etc.) and these concepts were grouped together as “Institutional Barriers”.

The overall themes that emerged from the qualitative analysis of the public documents and open-ended survey comments to support the researcher’s questions were as follows:

- **Theme #1: Critical Support**: Theme that relates to factors and activities that support the adoption and implementation of accessible technology policy, including laws, tools, resources, work, and accountability.

- **Theme #2: Critical Relationships**: Theme that describes collaborations and key relationships involved in facilitating accessibility, including shared commitments, teamwork, and responsibility.

- **Theme #3: Leadership Capacity**: Theme of building capacity and communications through leadership, awareness, passion and professional development.

- **Theme #4: Institutional Barriers**: Theme related to prominent economic, emotional, social, technical, and other barriers to successful implementation of accessible technology initiatives.
• **Theme #5: Cultural Inclusion**: Theme that concerns advocating for a culture of accessibility and excellence and universal design to support e-quality for all.

**Theme #1: Critical Support**

Qualitative data from the open-ended survey comments and public document analyses highlighted critical activities, tools, structures, commitment and other factors that can support individuals and campuses engaged in accessible technology policy implementation efforts. As mentioned earlier, the survey asked participants to reflect on their experiences with successfully implementing ATI and changing culture on their campuses. The survey also asked participants for reasons for adopting the innovation of accessible technology and factors for successful implementation, including those factors listed in the survey (e.g. lack of faculty buy in, awareness, time, funding, and training). Several participants cited the *law or policy* as reasons for adopting the innovation of accessible technology. For example, one participant said “Ensuring that technology is accessible to everyone is not only required by law, but it is the right thing to do (ethically)” (Participant #3). Another participant noted “It is the law (508), CSU Policy (AA-2013-03), and because it’s the right thing to do” (Participant #41). Several participants stated that it was “mandated by the Chancellor’s Office” (Participant #13) or “The Chancellor’s Office Accessible Technology Initiative and ATI Audits” (Participant #4). This language was echoed in the documents reviewed as well. The word “chancellor” was repeated over 150 times in the documents.

Some survey participants implied that they were motivated to adopt accessible technology due to their *work*. The word “work” appeared over 900 times in the document
analysis as well. When asked for a reason for adopting accessible technology, one survey participant said that “It was my job, I was passionate about it” (Participant #34). Another participant indicated it “related to my job which involves access for students” (Participant #1). Another participant stated: “My position in course reserves requires that all content is accessible to all at the same time” (Participant #62). However, some participants implied that accessibility needed to be required as part of faculty jobs:

Faculty need to know that it is their responsibility to make sure course materials are accessible for all students and be held accountable for not making them accessible. Accessibility should be part of the RTP [reappointment, tenure and promotion] process and the Colleges/Departments should be required to document their levels of compliance. (Participant #86)

Some reported successes and improvements in accessibility on campuses may have been generated by campus policies. For example, one participant reported “Formal Accessible Syllabus policy, 85% adherence to the Text Book Adoption deadline, Formalized Captioning Policy, Significant improvement in accessible instructional materials” (Participant #41). Several of the campus websites reviewed for document analysis referred to the need to make textbook decisions early and move toward accessibility of instructional materials. For example, Campus V’s website featured a professor making the following comment: “We should move as rapidly as possible to full accessibility of instructional media, not simply because 'it is the law,' but because access to higher education is the very purpose of public systems such as ours” (Campus V, n.d.).
Participants also suggested that technology and tools can assist with accessible technology policy implementation efforts. For example survey participants commented as follows:

- We have been providing accessible textbooks for years. We have built a database for both short materials such as handouts, powerpoints, etc. and another for books. This helps us track the turn-around time of producing alternative media. (Participant #9)

- The new report template came out this week. We will meet and continue the managed assignments we have around accessibility. Having worked hard over the last 10 years our campus is now able to enjoy seeing the work integrated and implemented around accessibility within departments. (Participant #34)

Likewise, Participant #18 stated that tools like “Service Now” software and other systems were available for tracking ATI service requests, reporting inaccessibility and managing VPATs (voluntary product accessibility templates):

We actively provide outreach and education to the campus community, attend ATI meetings, and are currently initiating an application in SERVICE NOW to answer ATI prioritization questions to assist campus community to track response time and priority of ATI requests. Our campus has also implemented "Report of Campus Inaccessibility" for anyone to report any campus inaccessibility issue. We are also automating the VPAT process to use in the campus marketplace system. (Participant #18)
Technology resources were also brought up in light of disability. For example, one President’s letter noted that “[Campus H] has an ongoing commitment to provide full access to information and technology resources to people with disabilities” (Campus H, n.d.). Participant #47 indicated that “Understanding of technology capabilities and limitations; understanding of the various emphases of various campus [entities] (e.g., deaf emphasis, etc.)” were factors for facilitating success. Other participants mentioned the use of technologies (e.g. captioning) for delivering or designing accessible instruction specifically for students with disabilities. For example, one participant wrote that “Captioning for deaf/hard of hearing students occurs daily to help with lectures/videos related to the course” (Participant #44). Another participant used technologies such as JAWS (Job Access with Speech, a screen reader for people with blindness) when creating instructional materials and went a step further by promoting and publishing findings:

I have always used closed captioning and JAWS capability when creating tutorials for my classes and, with a colleague, I wrote an article comparing tutorial software for a scholarly peer reviewed journal. That article was promoted on campus, along with the findings. (Participant #30)

Resources were also mentioned in participants’ comments. For example, one participant noted “I requested and received funding for three ATI positions for instructional materials, Web accessibility and procurement” (Participant #10). Another participant noted “I know there are resources in place although I haven't technically used them” (Participant #65). The use of resources was also indicated in several of the Presidents’ communications to campus communities regarding the initiative. For
example, one President noted “To achieve effective and timely attention to these important requirements, [Campus T] has committed existing human and financial resources and is preparing a detailed plan to facilitate and support campus compliance.” (Campus T, 2007). However, other participants suggested that resources, plans, and policies were not enough and that the university needed to be held accountable for implementing accessibility effectively:

   We use "policies" to hide ourselves from actually "doing it". It is a bunch of shit. What has to happen is the university needs to be randomly tested and penalized for failure to meet the Sec 508 requirements. It's simple. All the rest is just nonsense, talk, salary, waste of money. It just has to be done, period. (Participant #49)

   In sum, qualitative data obtained from the surveys and documents indicated various factors that could support the success of accessible technology initiatives, such as legal requirements, work requirements, technologies, resources, and accountability for meeting accessibility requirements. The implications of these findings will be further discussed in Chapter 5.

**Theme #2: Critical Relationships**

   One of the other themes that emerged from the data was the importance of relationships and building bridges around campus wide initiatives. This theme reflects a democratic leadership approach (Choi, 2007), with collaboration, teamwork, interactions and shared commitment at the heart of the theme. For example, Participant #61 said “Volunteers from across campus worked together to make web sites accessible on a
variety of devices for all. Students were exposed to the challenges that certain disabilities introduce towards obtaining an education.” (Participant #61).

A shared commitment and the importance of working together as a team to achieve the goal of accessibility was also discovered in the document data. For example, one President’s letter stated “As we move forward toward our goal as a campus of excellence, I urge each of you to do your part in ensuring that all students have equitable access in their educational experience.” (Campus A, 2007). Other participants worked together with committees and campus partners to promote accessibility:

- We now have an active ATI Committee that meets regularly. A couple of years ago, the ATI Committee met very infrequently and there was no ongoing dialogue about ATI. (Participant #13)
- Back in around 2001-2002 time, I was part of our first formal campus Webcomm, a small committee that was chartered to corral all of the campus websites into a standardized template, with accessibility the main push for the initiative. (Participant #49)

This shared commitment to accessibility also expanded beyond the campus. For example, Participant #48 stated that they:

Successfully worked with a classroom projector [manufacturer]... to request they integrate a closed-caption decoder into all their projectors. Now most all brands of projectors offer this feature. (Participant #48)

Faculty effort to encourage success in the classroom for all students was another theme noted by participants and gathered from the document analysis. For example, one
campus website featured a faculty member who “believes that providing accessible instructional materials isn't offering something extra to students with disabilities, but it gives all students a pathway to success” (Campus W, n.d.). Other individuals referred to the idea of focusing on “one thing” to make classes more accessible for all students. For example, Participant #47 suggested:

We have many things--we have a "change one thing" initiative to help faculty just adjust one thing in their pedagogy delivery value chain and other interactions with students.” (Participant #47)

Meanwhile, Participant #33 noted the emphasis on captioning in the classroom: “Given the focus, a dedication to captioning video in the classrooms” (Participant #33). On the other hand, some participants suggested that the initiative had not made any impact on creating a campus culture of accessibility. Some comments suggested that accessible technology issues were still referred back to the campus disability services department and treated in a reactive manner rather than treated proactively as a shared campus responsibility. For example, Participant #32 stated that “Response to most communications and activities is ‘It is someone else's responsibility, ask SSD [Services for Students with Disabilities]’” (Participant #32). Similarly, Participant #7 indicated “Text book orders are required fairly early on, but that is about the only policy that we have other than those that affect the Disability Resource Center” (Participant #7).

In contrast, other participants’ comments and document text suggested that the disability services department was a primary resource, but that shared campus responsibility for accessibility was also evident. For example, one ATI web site
discovered during the document review described the following partnerships: “Faculty and staff will continue to work with Student Disability Resources and [academic technology] to provide accommodations for students with disabilities” (Campus L, n.d.). Similarly, survey Participant #34 noted that “Success was won because we had buy in from academic technology, procurement and IT services all willing to work with the disability office.” (Participant #34)

Overall, qualitative data from the survey comments and document review outlined various examples of shared relationships which were viewed as essential for promoting organizational change and meeting accessibility requirements. The survey participants’ and documents’ focus on relationships, responsibility, and shared commitment was a noteworthy finding to be further discussed in Chapter 5.

**Theme #3: Leadership Capacity**

Another predominant theme that emerged from the comments from surveys and document text was the importance of leadership, awareness, communications, and professional development to empower individuals to improve accessibility. The theme focused on a strong vision and clear plans for change. The type of leadership approach most reflected in this theme was transformational leadership, described as “the act of empowering individuals to fulfill their contractual obligations, meet the needs of the organization, and go beyond the call of duty for the betterment of the institution” (Nevarez & Wood, 2010, p.59). Transformational leaders of the ATI guided institutional partners to greater awareness with support and inspiration.
Campus awareness and promotion of ATI were brought up by several participants as factors that facilitated success of ATI policy implementation efforts. For example, Participant #44 mentioned that “Marketing of resources that use ATI” was a factor that facilitated success. Meanwhile, Participant #61 indicated that “Grassroots awareness-real change occurs when students want it or lawsuit awards demand it” (Participant #61). Other survey participants outlined the need for awareness efforts using a planned top down approach:

The CO needs to make sure the Presidents are aware of the ATI plans/activities on their campus. They need to set campus priorities and make sure those priorities are fully funded and are being implemented. (Participant #86)

Awareness efforts were also diffused at the grassroots level on campuses. In order to educate campus affiliates, leaders shared examples of awareness efforts that emerged in meetings and through workshops:

I have tried to champion the cause [within] Student Affairs departments through examples and reminders whenever I attend meetings/committees, etc. I have also taught a few workshops on making accessible documents. (Participant #77)

This approach was also reflected in an annual report from the document review which noted that a new sub-committee of ATI was formed to work on campuswide communication and ATI awareness. According to the report, “The ATI Communication Subcommittee will draft plan for coordinated communication [and] outreach to faculty to be developed after Senate passage and presidential approval of the Policy on Faculty Responsibility for Accessible Instructional Materials” (Campus F, 2013, p.4).
“Individuals’ passion to see it through” (Participant #32) was cited as another reason to adopt accessible technology. This *passion to make improvements* in the accessibility of technology may have been inspired by *personal experience* working with people with disabilities or learning about the impacts of inaccessible technology on students with disabilities. For example, one participant stated “I have witnessed first hand (by listening to someone having to use JAWS) how frustrating this can be, and believe that everyone should have equal access to information delivered electronically.” (Participant #77). Another participant noted:

At one of my faculty workshops I demonstrated Jaws attempting to read an illegible courseraeder, the faculty in attendance were actually shocked that the materials they were providing were impacting students so profoundly. At the same workshop I showed a flow chart of how long it takes to convert a text book to accessible formats and a faculty member actually responded. If I only knew I wouldn’t wait so long to adopt. The following term I had so many more faculty proactively working with me to make their course material accessible. It was amazing. (Participant #84)

These comments suggest that observing the impact of inaccessible technology on individuals with disabilities could influence faculty, staff, and administrators to adopt accessible technology.

*Education* and knowledge of innovations were noted in the literature as important components of diffusing innovations (Rogers, 1995; Hoover, 2003) such as accessible technology. Likewise, education was mentioned by survey participants as helpful
strategies for ATI implementation. Participant #65 stated “Campus initiatives have been very strong in working to educate faculty on best practices when working with technologies to become more accessible” (Participant #65). An implementation plan gathered in the document review discussed a training model as follows:

Because most faculty currently lack the expertise in both instructional design and web-based delivery of instructional materials (the areas in which most revision will need to occur to make instructional materials fully accessible), the following training model is being adopted. The University will hire two support professionals who will have primary responsibility for faculty training during ATI implementation. (Campus J, 2008)

In addition, some campuses featured images and logos that reflected a vision for an accessible learning environment as part of their education efforts. For example the “Think B4U” logo (CSU, 2015) featured a symbol of a wheelchair with the words “Think B4U Teach, Buy, Design” (see Figure 12); this image suggests the idea of being proactive and considering the needs of persons with disabilities before teaching with instructional materials, processing information technology procurements, and designing web pages. Other logos and images found on campus websites featured symbols of abilities, technology, connections, and students, perhaps to reflect some of the main themes of the ATI. As noted earlier, campuses which featured images to represent ATI tended to have few accessibility errors on their selected web pages.

Recognition and professional development were additional best practices noted by participants. For instance, survey Participant #21 stated that “[We] provide accessibility
as service to instructional materials with the option of training certificates and recognition” (Participant #21). Recognizing the efforts of faculty also came up from the document review. For example, one campus featured an “ATI Superstars” story to highlight faculty support for accessibility on their campus (Campus W, n.d.). In contrast, another participant noted that “There is no incentive or requirement to create accessible materials” (Participant #53). Further barriers to implementation of accessible technologies will be discussed in the next theme. The relevance of awareness, communications, professional development, passion, vision, recognition and other findings from the qualitative data will be discussed in Chapter 5.

**Theme #4: Institutional Barriers**

Qualitative data from the document review and quotes from survey participants suggested that many barriers to culture change and ATI policy implementation still exist on campuses. The following table (Table 36) includes first-hand accounts of barriers to implementation of accessible technology initiatives offered by survey participants. These accounts indicated various operational barriers such as economic, technical, educational, social, and cultural barriers may have been impacting successful implementation of ATI. Despite legal and policy mandates, some participants indicated that they did not adopt accessible technology and that accessibility was seemingly not really “required” or “needed” by their particular staff. Furthermore, some participants suggested that accessible technology was not prioritized, as indicated by the comments regarding budget decisions, time and cost.
Table 36

Selected Barriers to Implementation of ATI Noted from Survey Comments

<table>
<thead>
<tr>
<th>Sub-Theme</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Accountability</td>
<td>- <strong>No one checks</strong> to see if you’ve redone your materials - so why spend that time on the front end - <strong>I do the work when it is needed</strong>...</td>
</tr>
<tr>
<td></td>
<td>- No one cares until there is a problem, so we are totally reactive. Until there are penalties for failure to be compliant there will be huge gaps in compliance.</td>
</tr>
<tr>
<td>Lack of Funding</td>
<td>- It’s a gambit from the administration; doing captioning, for example, for lecture capture is expensive, so I think the ATI executive sponsors would actually <strong>prefer an order by the DoE</strong> [Department of Education] or <strong>DoJ</strong> [Department of Justice] (because then it would get funded by the CO)</td>
</tr>
<tr>
<td></td>
<td>- <strong>Money is short.</strong> Therefore, most faculty and staff are basing their decisions off of what comes first mentality. Accessible technology or students in classrooms.</td>
</tr>
<tr>
<td></td>
<td>- Funding is the biggest barrier. Funding goes to staffing, training, and assisting implementation of ATI priorities.</td>
</tr>
<tr>
<td>Faculty buy in</td>
<td>- <strong>Serious issues still exist with faculty</strong> and their use of legacy documents that are not accessible.</td>
</tr>
<tr>
<td></td>
<td>- Faculty member independence</td>
</tr>
<tr>
<td></td>
<td>- It’s <strong>very difficult to even effectively influence faculty use</strong> of instructional materials.</td>
</tr>
<tr>
<td></td>
<td>- IMAP [instructional materials accessibility plan] and the &quot;<strong>buy in</strong> from faculty is extremely difficult on my campus.&quot;</td>
</tr>
<tr>
<td>Lack of Rewards</td>
<td>- Executive [management] or provost do not stress faculty to create accessible materials. There is <strong>no incentive or requirement</strong> to create accessible materials</td>
</tr>
<tr>
<td>Perceived Lack of Need</td>
<td>- I do not have staff that require ATI</td>
</tr>
<tr>
<td></td>
<td>- Haven’t <strong>had the need</strong> and the requirement is difficult to achieve</td>
</tr>
<tr>
<td>Time Constraints</td>
<td>- <strong>It is tedious work.</strong> In general, people want to do the right thing, but they don’t know how to do it and they don’t realize how much <strong>extra time they should have budgeted</strong> to actually make things accessible. It is a shock.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Time availability</strong></td>
</tr>
<tr>
<td>Lack of Skills</td>
<td>- I think we should have people just making websites and documents accessible. Not forcing them to test their sites for compliance and making them fix it [themselves], especially when they don’t have the skill.</td>
</tr>
<tr>
<td></td>
<td>- There are some <strong>technical standards which I don’t know</strong> most likely so I may fall short in some areas</td>
</tr>
</tbody>
</table>

The document review indicated that the word “priority” was often used in discussing the ATI. For example, one campus noted the communication to campus would
address commitment to all three ATI priorities (web, instructional materials and procurement): “Develop and disseminate official communication from the campus president addressing campus commitment to implement all three priorities.” (Campus G, n.d.). Furthermore, despite publicly listing the ATI priorities on websites, many campuses had information that was outdated (e.g. the original timelines published back in 2007 were still listed), and most campus implementation plans were not posted. It was also clear overall that there was a possible disconnect between campus’ stated priorities and actual resources and accountability for meeting these priorities, based on participant comments. These findings will be further discussed in Chapter 5.

Theme #5: Cultural Inclusion

The quantitative section of the study suggests that some participants did not feel that their campus climates were fully inclusive. The qualitative findings from the study confirmed this trend. Moreover, the qualitative data from the survey suggests that adopting a culture of accessibility and inclusion requires advocacy, awareness, and a sense of obligation to do the right thing. Participants in the study seemed to act as change agents to promote equity and inclusion on their campuses. This form of leadership, through critical conversations and advocacy for equity, suggests the critical transformative leadership approach (Santamaria & Santamaria, 2011). Participants reported that they were concerned about accessibility not just to comply with legal mandates but because “it’s the right thing to do” (Participants #25, #28, and #10). The qualitative data also focused on how shifting a campus culture to one of inclusion is about changing mindsets: “These issues must become integrated into a mindset that
requires generations of adoption” (Participant #61). However, without shared accountability, responsibility and support from administration, change agents could not alone change the culture of the campus. For example, Participant #86 noted:

We have been unsuccessful in changing the culture on our campus. Generally, faculty do not think it is their responsibility to make content accessible and direction needs to come from top down. We processed 4000+ documents (Word and PDF) during Spring 2014 with 2 full-time staff and 3 part-time students. This just is not feasible. We need administrative direction to make ATI part of our culture to serve ALL students and not wait until someone is identified.

(Participant #86)

Participant responses to the survey suggest that some individuals emphasized students with disabilities or accessibility concerns in building a culture of inclusion. For example, one participant stated that the primary reason for adopting the innovation of accessible technology was “Interest in serving persons with disabilities” (Participant #32). Another survey participant responded “Students with accessibility issues have major challenges to learning. Anything we can do to help is an improvement” (Participant #30). One participant suggested, “[I want] to accommodate as many students as possible” (Participant #86). Other participants didn’t mention disability and simply referred to all users: “Remove barriers to success for everyone” (Participant #54) and “It benefits all users and maintainers regardless of ability” (Participant #61). Another participant stated “inclusivity, raising awareness to the breadth of diversity” (Participant #21) was a primary reason for adopting accessible technology.
Several participants applied the principles of universal design for learning (CAST, 2011) when they referred to the benefits of adoption of accessible technology “To support accessibility for everyone using ATI and principles of UDL” (Participant #5) and “Support students and faculty universal access to IT hardware and software” (Participant #48). Another participant indicated that accessibility benefits English language learners as well: “Many of my students speak two languages and often their first language is not English. By using video in the classrooms with closed caption, it has greatly enhanced the ability for my students to comprehend…” (Participant #36). One participant sums up the theme of cultural inclusion well: “It’s the right thing to do and [there] are more benefits to all students” (Participant #33).

Overall, comments from participants and text from documents suggested that having leaders advocate for a culture of inclusion and excellence for all students was an important driver of the initiative. These findings will be further discussed in Chapter 5.

Conclusion

This chapter described the results of the mixed methods research study, including findings from the quantitative data from the online survey and the qualitative data from the open-ended survey questions and document review. Various statistical methods were utilized to analyze the quantitative data. The qualitative data from the study included overarching themes that were drawn from the survey comments and document review: critical support, critical relationships, leadership capacity, institutional barriers, and cultural inclusion. A summary of the findings, recommendations for action, limitations, and suggestions for further study will be discussed in Chapter 5.
Chapter 5
SUMMARY AND RECOMMENDATIONS

Overview of the Study

The purpose of this study was to explore how higher education leaders can support accessible technology policy implementation and the organizational change involved in fostering a culture of access and inclusion on campuses in a multiple campus higher education system. By analyzing policy guiding documents and survey responses from faculty, staff, administrators and students from the California State University (CSU) who are involved in implementing accessible technology initiatives (ATI), the researcher was able to discover findings and identify recommendations related to policy, leadership and organizational change. The study also investigated barriers that interfere with implementation of accessible technology policy and factors that enhance support of accessible technology policy. In addition, the study examined leadership and organizational change strategies for supporting accessible technology policy from the perspectives of Critical Transformational Leadership, Diffusion of Innovations, and Emergent Change theoretical frameworks.

This study answered several questions related to leading accessible technology initiatives. The findings from this exploratory study helped to address the following research questions:

- **Question 1**: How do California State University (CSU) campus leaders support the implementation of accessible technology initiatives (ATI),
institution-wide change associated with accessible technology, and a culture that promotes access and inclusion?

- **Question 1a:** Is there a significant relationship between perceived leadership style and levels of implementation of accessible technology initiatives in the CSU?

- **Question 2:** What cultural, emotional, social, and other barriers do faculty and administrative leaders experience in implementing accessible technology initiatives and promoting culture change in the CSU?

- **Question 3:** What are the factors that contribute to successful implementation of accessible technology policy and culture change in the CSU?

This chapter presents a summary of the findings and interprets them through the theoretical frameworks of Critical Transformative Leadership (CTL) Theory, Diffusion of Innovation (DOI) Theory and Emergent Change (EC) framework. In general, the surveys and documents suggest that there were significant relationships between several perceived levels of implementation of ATI and leadership styles, along with other factors. Additionally, a number of themes for supporting implementation of policy and diffusion of change related to accessible technology were suggested by the findings: critical support, critical relationships, leadership capacity, awareness of institutional barriers, and cultural inclusion. Finally, barriers to implementation and culture change and emergent factors facilitating success of accessible technology initiatives were reported. In addition to presenting interpretations of quantitative and qualitative findings grounded in theoretical frameworks, this chapter provides recommendations for policy and leadership
Interpretation of Findings

The researcher investigated implementation of accessible technology initiatives (ATI) and associated culture change in a multi-campus university system using a mixed-methods research study. There is minimal research on leadership, organizational change and policy related to accessible technology initiatives in higher education. This project addressed these gaps by exploring various campus perspectives through analyses of surveys and policy guiding documents. Furthermore, the study elaborated on knowledge related to Critical Transformative Leadership, Diffusion of Innovations, and Emergent Change theoretical frameworks by applying them to accessible technology policy implementation. Through the analysis of data described in Chapter 4, the researcher investigated how leaders support accessible technology initiatives (ATI) and associated culture change and identified factors that support and inhibit ATI implementation and culture change. Although the findings are not universal, this study involved multiple CSU campuses, so the findings can indicate how different individuals and campuses throughout the CSU might sustain further adoption of accessible technology and foster a culture of access. The analysis of findings assisted the researcher in answering three research questions.

Summary of Findings Addressing Research Question 1

The following section describes how the quantitative and qualitative components of the study address Question #1, “How do CSU campus leaders support the
implementation of accessible technology initiatives (ATI), institution-wide change associated with accessible technology, and a culture that promotes access and inclusion?”

Implementation of ATI. The survey data quantified how various CSU leaders felt their campuses were doing in supporting the three priorities of ATI implementation (i.e. Web Accessibility, Instructional Materials Accessibility, and Procurement Accessibility). The findings revealed that the participants’ perceived levels of ATI implementation were mixed. Out of a rating scale of 1–6 (with 1 being rated lowest or “strongly disagree” and 6 being rated highest or “strongly agree”) the mean Web Accessibility rating was 4.57, the mean Instructional Materials Accessibility rating was 3.91, and the mean Procurement Accessibility rating was 4.33, suggesting that these implementation levels were established, but still needed improvement. This is consistent with the systemwide levels of implementation derived from the annual reports. See Figure 14 for mean levels of implementation for Web Accessibility, Instructional Materials Accessibility, and Procurement Accessibility from this study. The data clearly illustrate that the perceived Web Accessibility implementation levels and Procurement Accessibility levels were higher than the perceived Instructional Materials implementation levels. Furthermore, qualitative comments echoed that instructional materials were a major challenge, with some commenting that “buy in” from faculty was extremely difficult.
In addition to quantitative survey data, Research Question #1 was also addressed by qualitative data from online survey comments and from online content from the document review. These comments and contents revealed the support, communications, advocacy, collaborations and other ways and reasons various leaders and campuses implemented accessible technology policy and fostered culture change on their campuses. The themes that emerged from the qualitative data are listed in Figure 15 below.
Documents and participants in the study expressed critical support or various strategies, tools and methods of support and drivers for successfully implementing accessible technology; the participants also reported institutional barriers, or major challenges faced by their institutions, such as lack of accountability, funding, buy in, time, skills, and persuasion of need. The researcher also found that critical relationships, collaboration, awareness, communication and leadership capacity were instrumental in addressing some of these challenges. At the heart of the study was cultural inclusion and an ethical motivation to “do the right thing” and advocate for equality and a culture of inclusion; overall the participants’ reflections offered hope that institutions can continue to move forward towards this vision, with critical support and funding.

**Active involvement in ATI and other factors.** Another perspective that emerged from the study was that the majority (60.3%) of participants surveyed were actively or
very actively involved in ATI efforts on their campuses. Moreover, over half of the participants (58.6%) were engaging in efforts with their campus ATI steering committees. Further results from this study illustrate a possible connection between active involvement in accessible technology initiatives and one of the measures of ATI implementation levels.

Surprisingly, the Pearson correlation analyses found that active involvement with ATI, along with age and familiarity with Section 508, all had significant negative correlations with instructional materials accessibility. That is, participants who were actively involved in ATI efforts themselves reported lower ATI implementation levels for the campus for instructional materials accessibility. In addition, campus climate and Section 508 compliance had significant positive correlations with average instructional materials accessibility, web accessibility and procurement accessibility scores; campus size had significant positive correlations with instructional materials accessibility and policy type had significant negative correlations with web accessibility as well. See the correlation results in Table 37 below.
Table 37

*Significant Correlations with Accessible Technology Initiative Implementation Levels*

<table>
<thead>
<tr>
<th>ATI Implementation Level</th>
<th>Variable</th>
<th>r</th>
<th>Effect size</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Materials Accessibility</td>
<td>Age</td>
<td>-.272</td>
<td>Small</td>
<td>.039</td>
</tr>
<tr>
<td></td>
<td>Familiarity with Section 508</td>
<td>-.294</td>
<td>Small</td>
<td>.027</td>
</tr>
<tr>
<td></td>
<td>Active Involvement with ATI</td>
<td>-.298</td>
<td>Small</td>
<td>.023</td>
</tr>
<tr>
<td></td>
<td>Campus Size</td>
<td>.266</td>
<td>Small</td>
<td>.044</td>
</tr>
<tr>
<td></td>
<td>Campus Climate</td>
<td>.321</td>
<td>Medium</td>
<td>.014</td>
</tr>
<tr>
<td></td>
<td>Section 508 Compliance</td>
<td>.567</td>
<td>Large</td>
<td>.000</td>
</tr>
<tr>
<td>Procurement Accessibility</td>
<td>Campus Climate</td>
<td>.278</td>
<td>Small</td>
<td>.035</td>
</tr>
<tr>
<td></td>
<td>Section 508 Compliance</td>
<td>.347</td>
<td>Medium</td>
<td>.008</td>
</tr>
<tr>
<td>Web Accessibility</td>
<td>Campus Climate</td>
<td>.368</td>
<td>Medium</td>
<td>.044</td>
</tr>
<tr>
<td></td>
<td>Section 508 Compliance</td>
<td>.446</td>
<td>Medium</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Policy Type</td>
<td>-.397</td>
<td>Medium</td>
<td>.002</td>
</tr>
</tbody>
</table>

In general, the results suggest that if participants were older, more familiar with Section 508, more actively involved in ATI, and had more informal policy types they tended to state that ATI implementation levels for accessibility were lower. This suggests that participants with knowledge of the laws and processes involved in ATI policy implementation and more experience in life possibly tended to give lower, more realistic assessments of accessibility implementation levels for instructional materials. Not surprisingly, those individuals who reported policy types that were more informal tended to report web accessibility levels as lower as well. This finding converged with the results from the document review part of the study, which found that campuses with more formal policies tended to have higher web accessibility levels, based on the automated WAVE web accessibility tool assessment.

The correlation findings also suggest that campuses with larger sizes may be more inclined to report higher instructional materials accessibility levels. This finding
conflicted with the document review data which suggested that campuses that were smaller tended to have higher web accessibility levels (based on assessment of a selected web page using the automated WAVE accessibility tool). The correlation results also suggest that participants who stated that their campus climates were more inclusive also tended to state that the web accessibility, instructional materials accessibility and procurement accessibility levels were higher. Likewise, results suggest that participants who stated that their campuses were more compliant with the law (Section 508) tended to indicate that web accessibility, procurement accessibility and instructional materials accessibility levels were higher.

Although the indicators of ATI implementation levels, Section 508 compliance, and other variables were self-reported, this study can elucidate how ATI is being implemented on campuses and various campus variables with possible significant relationships with implementation of ATI in an exploratory fashion. The corresponding recommendations for action and other limitations will be addressed later in this chapter.

**Change associated with accessible technology.** The survey also asked participants to identify what stages they identified themselves with in terms of adoption of change associated with accessible technology. In other words, the survey asked if the participants as individuals were adopting the innovation of accessible technology and associated institution-wide change. According to the quantitative analysis of the survey results, the vast majority of survey participants (87.9%) reported that they have implemented or plan to continue implementing accessible technology; this level of adoption of accessible technology would be considered Innovator or Early Adopter status.
according to the Diffusion of Innovation Theory (Rogers, 2003). Further discussion of these findings grounded in the Diffusion of Innovation Theory and other theoretical frameworks will be discussed later in the chapter.

**Culture of access and inclusion.** Quantitative results also suggest that the majority of survey participants perceived that their campuses were embracing a “culture of access”; that is, 56.1% of participants agreed or strongly agreed that their campus climates were currently respectful and inclusive. Thus the majority of survey participants reported that they agreed or strongly agreed that the general campus climate was inclusive and respectful towards people with disabilities, and that there was an emphasis on developing appreciation for a diverse society on campus. See Figure 16 for a line graph showing the distribution of results for campus climate, which suggests that a “culture of access” was diffusing to some extent on the campuses. More than half of the participants said that they agreed that the campus was an inclusive and respectful climate.

![Figure 16](image)

Figure 16. Campus climate is inclusive and respectful towards people with disabilities.
On the other hand, these quantitative results can be compared with the qualitative data, which suggest a possible disconnect between the vision of the ATI “to create a culture of access for an inclusive learning and working environment” (CSU, 2013a) and the actual implementation of accessible technology by all members of the campus community. That is, despite the legal and policy mandates driving the accessible technology initiatives and adoption by some individual participants, qualitative data and comments from participants also suggest that other faculty/staff were still not adopting accessible technology. Also, quantitative data and results from the ATI accessibility implementation levels mentioned above imply that the campus virtual environments are not fully accessible. Additional qualitative and quantitative data point to the missing organizational slack or “cushion of actual or potential resources which allows an organization to adapt successfully” (Lawson, 2001) to successfully implement organizational change such as the accessible technology initiative. As one participant said, “Without funding efforts to implement 508 standards, the university will not succeed, and without upper management allocating resource, you have little leverage” (Participant #9). It is unclear how a campus climate can be perceived by participants as inclusive and respectful towards individuals with disabilities when technology is still not being made fully accessible for all students and employees and resources are still not being allocated to support accessibility. In other words, the ATI vision of a “culture of access” is not necessarily reflected in the actual implementation of the accessible technology initiatives and allocation of resources. Policy recommendations related to these findings will be provided later in this chapter.
Summary of Findings Addressing Research Sub-Question 1A

To recap, Question #1A asked, “Is there a significant relationship between perceived leadership style and levels of implementation of accessible technology initiatives in the CSU?” The results from this quantitative component of the study indicated that there was a statistically significant relationship between perceived leadership style and levels of implementation of accessible technology initiatives. Leadership styles analyzed for the purpose of this study included bureaucratic leadership, democratic leadership, political leadership, (critical) transformative leadership, and transformational leadership. Moreover, results from the Pearson’s product moment correlation component of the study indicated statistically significant relationships between the leadership styles and implementation variables listed in Table 38.

Table 38

Leadership Styles with Significant Correlations with ATI Implementation Levels

<table>
<thead>
<tr>
<th>Leadership style</th>
<th>Level of ATI implementation</th>
<th>Correlation</th>
<th>Effect size</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Democratic Leadership Score</td>
<td>Web Accessibility</td>
<td>r = 0.301</td>
<td>Medium</td>
<td>p = .044</td>
</tr>
<tr>
<td>Average Bureaucratic Leadership Score</td>
<td>Web Accessibility</td>
<td>r = 0.497</td>
<td>Medium</td>
<td>p = .001</td>
</tr>
<tr>
<td>Average Political Leadership Score</td>
<td>Procurement Accessibility</td>
<td>r = -0.298</td>
<td>Medium</td>
<td>p = .044</td>
</tr>
</tbody>
</table>

These findings suggest that the bureaucratic and democratic leadership approaches might be related to higher reported web accessibility levels. In other words as average bureaucratic and democratic leadership scores increased, so did the reported ATI implementation levels for web accessibility. The results also suggest that leaders who
reported higher web accessibility levels may have been more inclined to prefer bureaucratic and democratic leadership behaviors, perhaps due to the legal and collaborative nature of the Accessible Technology Initiative. Average political leadership scores also appeared to have a negative correlation with reported procurement accessibility levels; this suggests that as the reported score for political leadership increased, the reported level of implementation for procurement accessibility tended to decrease. Likewise, leaders who reported higher procurement accessibility scores may have been less inclined to adopt political leadership skills.

Interestingly, transformative leadership and transformational leadership styles were not found to have a statistically significant relationship with any of the perceived ATI implementation levels (i.e. web accessibility, instructional materials accessibility and procurement accessibility). However, transformative and transformational leadership rose to the top in terms of mean scores for participants, just after democratic leadership (as stated in Chapter 4, the mean average democratic leadership score was 5.31; the mean average transformative leadership score was 5.10; the mean average transformational leadership score was 4.76; the mean average bureaucratic leadership score was 4.57; and the mean average political leadership score was 3.99. Scores were out of a rating scale of 1–6, with 1 being rated lowest or “strongly disagree” and 6 being rated highest or “strongly agree”). This data suggests that leaders involved in accessible technology initiatives may be less aligned with the political leadership style, which tends to focus on negotiating for resources and gaining power (Nevarez & Wood, 2010). Maneuvering people and resources for ATI purposes may not factor into many campus’ leaders’
implementation efforts. In addition, the survey data suggest that other leadership styles were preferred to the political leadership style. However, leaders should intensify their efforts to politically maneuver people and resources to implement ATI. Furthermore, literature suggests that leaders implementing organizational change benefit from utilizing more than one style of leadership to be effective (Bolman & Deal, 2008; Nevarez, Wood & Penrose, 2013) Further implications of leadership styles will be discussed later in this chapter when theoretical frameworks are revisited. Further leadership recommendations will also be discussed later in this chapter.

**Summary of Findings Addressing Research Question 2**

The following section describes how the quantitative and qualitative components of the study addressed Question #2, “What cultural, emotional, social, and other barriers do faculty and administrative leaders experience in implementing accessible technology initiatives and promoting culture change in the CSU?” According to the survey, some of the barriers noted by participants included those factors noted in Figure 17. The open-ended comments allowed the participants to further reflect upon their own experiences of barriers implementing accessible technology and supporting culture change.
The barriers that might be holding campuses back from fully implementing accessible technology and realizing culture change include economic, social/emotional, cultural, educational, technical, and other barriers as shown in Figure 17. In the quantitative survey results, participants reported that lack of buy in from faculty and staff, lack of awareness, lack of training, lack of time, lack of funding, and lack of staffing were major barriers to implementation. It appears that economic barriers, including funding and incentives to ensure greater accountability are the types of barriers that rose to the top. These barriers were also echoed in the personal responses of participants, who described the barriers and gaps in accessibility, assessment, and administrative support with emotion.
It was clear from the quantitative data and participant comments overall that there was a lack of alignment between campus’ stated priorities to make technology accessible and the allocated resources to do so. When only 51% of survey participants reported that their campuses provided any financial resources to support the accessible technology initiatives, the emotional, cultural and economic barriers are significant. With technology, there are also steep learning curves, especially since laws, disability issues and the Section 508 technical accessibility standards are highly complex and technical. Furthermore, technology barriers such as complexity of the technology, infrastructure issues, and vendor issues suggest that both universities and technology organizations in general may not be educated on accessible technology standards or have technology that adequately meets the accessibility needs. To help to address these barriers some suggested recommendations for action for policy and leadership will be described later in this chapter. Meanwhile, data on factors that facilitate successful adoption of accessible technology policy suggest that parallel factors can help to mitigate the barriers.

**Summary of Findings Addressing Research Question 3**

The third question asked, “What are the factors that contribute to successful implementation of accessible technology policy and culture change in the CSU?” and can be addressed both quantitatively as well as qualitatively. A summary of the quantitative results from the survey related to this research question can be found in Figure 18. In addition, these factors are substantiated by the participants’ survey comments, including the open-ended responses to the survey question regarding first-hand experiences in successfully implementing accessible technology.
Figure 18. Some factors that contribute to successful implementation of accessible technology policy and culture change.

According to the survey results, training, support from administration, user support, assessment of progress, and collaboration between programs were indicated by the majority of survey participants as important factors facilitating successful accessible technology initiatives. Surprisingly, although economic factors such as sufficient resources, funding and policies were listed by some individuals as factors facilitating success, they did not rise to the top as the educational, social and cultural factors did on
this part of the survey. Likewise, based on the qualitative data analysis, the survey participants made it clear that while funding, resources, legal requirements, work, and technologies were essential factors for supporting accessible technology efforts, follow through on assessment and actual accountability for meeting accessibility requirements may have been even more critical. The concept of shared responsibility is also one of the components featured prominently in the findings and reflects a social exchange, where “....each of the stakeholders involved must continue to work in consensus in order to produce optimum success” (Moffatt, 2015, p.162).

As noted in Chapter 4, comments from survey participants suggested that leaders’ advocating together for a culture of inclusion and excellence for all students was also an important driver of the initiative. The qualitative findings under the theme of cultural inclusion highlighted that ethical responsibility, an emphasis on students’ needs and experiences, universal design for learning, and doing the right thing were apparently guiding the leaders’ behaviors. However, the overall word frequencies queried from the document review suggest that the focus of the policy guiding documents was not on students, but more so on policies, information, procedures, faculty and bureaucratic processes. Further recommendations for action for policy and leadership will be described later in this chapter.
Restatement of Theoretical Frameworks

Three theoretical frameworks guided this study: Critical Transformative Leadership (CTL) Theory, Diffusion of Innovations (DOI) Theory, and Emergent Change (EC) framework. Based on the results, the researcher found that Critical Transformative Leadership Theory, Emergent Change, and Diffusion of Innovation applied to the study and can help to explain accessible technology policy implementation and culture change in a higher education system. Figure 19 captures each theoretical framework and evidence from the study in a visual diagram to show some of the mixed methods study findings in context of the theories.

**Figure 19.** Evidence of each theoretical framework from the study.

**Critical transformative leadership.** The results identified via quantitative analysis suggest that Critical Transformative Leadership (CTL) was the second highest
rated leadership style. Moreover, evidence from the surveys indicated that cultural inclusion was a major theme of both the surveys and document analysis, and this is consistent with the CTL theory, which suggests that leaders should advocate powerfully for equity and inclusion to adequately address the needs of all students. For example, survey participants spoke of their role in advocating for persons with disabilities: “[I] work towards the goal of providing equal access to technology resources to the entire campus community” (Participant #15). Likewise, quantitative data suggest that campus climates that in general were more inclusive and equitable towards people with disabilities may be related to higher accessibility implementation levels. Leaders should use social justice and critical transformative leadership skills to look for culturally responsive ways to emphasize ideas and hold critical conversations to inspire change and support an inclusive campus climate (Santamaria & Santamaria, 2011). For example, one participant suggested:

Students and faculty need to insist on incorporating ATIs as a fundamental ethical responsibility and moral responsibility that ultimately improves everyone's job and quality of life. (Participant #61)

Besides CTL, other leadership theories were also evident in implementing the ATI, including democratic and bureaucratic approaches. The quantitative results and qualitative comments suggest that using multiple frames of leadership could greatly enhance the success of the initiative in implementing accessibility. The findings suggest that democratic leadership approaches, including collaboration, team building, working with faculty, and shared governance processes, were also important practical leadership
approaches that were useful for transformative leaders advocating for a culture of access. In order to inspire change to benefit all students equitably, transformative leaders must involve and leverage the knowledge, support, and buy-in of multiple stakeholders. At the same time, leaders can draw from the transformational leadership style and use symbols and communication actions to complement the ATI vision of “a culture of access” and communicate how stakeholders will be affected by accessible technology initiatives. CTL can also be complemented by a bureaucratic approach, with its emphasis on procedures, policies, mandates, and responsibilities, as well. By combining the CTL leadership style with bureaucratic approaches, “[critical transformative] leaders can enact new models, realities, policies and structures that address the inequalities plaguing institutions” (Nevarez, Wood, & Penrose, 2013, p.154). Likewise, although the political leadership approach was found to be negatively correlated with procurement accessibility implementation levels, political leadership approaches used in tandem with CTL leadership style could be enlisted by leaders to advocate more strongly for resources and policies needed to support equity and access or e-quality for all.

**Diffusion of innovations.** The quantitative and qualitative results also suggest that Rogers’ (2003) Diffusion of Innovations Theory applies to the study of ATI implementation. See Figure 20 below for a comparison between the percentages for different levels of adoption of innovations in general based on the theory (i.e. innovator, early adopter, early majority, late majority and laggard) and the actual reported percentages and adoption stages indicated by participants in the survey (i.e. I plan to continue implementing or maintaining accessibility (innovator); I have actually
implemented accessible technology (early adopter), I intend to implement accessible technology (early majority), I am in the process of gathering more information (early majority), I have some understanding of what’s involved in implementing (late majority), I have not heard of the innovation (laggard)).

Figure 20. Adoption of innovation from theory and survey. Adapted from Rogers (2003).

This survey result is in line with Rogers’ (2003) assertion that innovations supported by policy requirements should show a higher rate of adoption by participants
than usual. Thus the curves in the graphs appear to be opposite of one another. However, these results do not reflect the status of all CSU stakeholders. In fact, based on the Diffusion of Innovations Theory, several critical stages must occur to get faculty, students, administrators and staff to adopt and reinforce innovations such as accessible technologies: 1) awareness/knowledge, 2) persuasion, 3) evaluation/decision, 4) implementation and 5) confirmation/reinforcement (Rogers, 2003).

According to the literature on Diffusion of Innovations (Rogers, 2003), individuals need knowledge of accessible technology and some understanding of how it functions before they move to the stage of persuasion to form an opinion about accessible technology. Further, individuals need persuasion to become familiar with accessible technology’s benefits and challenges before they can make a decision to use or implement the innovation. In the case of individuals who are deeply involved in diffusing the innovation of accessible technology on their campuses, they must gain experience in implementation before they can reinforce the innovation to others through the stage of confirmation. The data from this study suggests that education and persuasion have assisted with decisions and implementations of the innovation of accessible technology on some campuses; as one participant put it “…they feel they don't fall under ATI until you explain to them what it really means and then the lights go on.” (Participant #58).

The document review revealed many examples of procedures, policies, plans, reports and other information that can assist in diffusing the accessible technology initiative as well. These strategic planning tools again reflect the importance of
knowledge and persuasion in adopting the innovation of accessible technology. However, just posting the materials online is not sufficient for diffusion to occur; evidence from the survey suggests that more awareness and professional development are needed to help campus stakeholders gain more awareness of the functionality, benefits and challenges of the innovation of accessible technology. In addition, more incentives are still needed to assist individuals on the CSU campuses in adopting the innovation of accessible technology institution-wide. This is an especially salient point since some participants noted that implementation of accessibility was not being required by top level administration, assessed for compliance or being consistently required for all departments. However, the “… goal is for accessible technology to be second nature to all where it is factored in all of our processes regardless of department” (Participant #62). Moreover, without incentives (and disincentives such as penalties for non-compliance) and funding to support training, awareness activities, and personnel, further buy-in and adoption of accessible technology and culture change are extremely difficult.

**Emergent change.** The qualitative results also speak to the Emergent Change framework and the importance of grassroots innovation. Many survey responses were consistent with this theory. For example, many individuals noted that working in collaboration with other offices was an important factor that facilitated the success of accessible technology change initiatives on their campuses, as evidenced by frequency statistics for this factor. The quantitative data also revealed significant correlations between average scores in democratic leadership (a participatory and collaborative leadership style which encourages grassroots emergent change through shared decision
making) with web accessibility. As for qualitative data, several participants who were already adapting to the change of accessible technology mentioned personal experiences and connections to others as issues at the heart of the initiative and stated that serving students was one of the reasons for adoption of accessible technology.

Another component of the Emergent Change strategy is that a “critical mass” of support for organizational change effort is recommended (Brown & Eisenhardt, 1998). Building relationships and shared responsibility and support were repeated themes based on survey comments. For example, teamwork and collaboration were frequently mentioned: “We have a great team on our campus and we work closely with the Diversity Officer and Student Diversity Center” (Participant #18). Additionally, the topic of accessible technology policy implementation was clearly emotional to some participants, especially faculty and staff who continually advocate for social justice and support but run into roadblocks and inconsistencies:

*All* areas of campus life need to be accessible, including high-visibility areas such as athletics. When one or two areas appear to not have to follow the guidelines, this friction causes other units much hardship (both logistical and emotional). (Participant #47)

The Emergent Change framework suggests that if patterns of disconnection begin to emerge, leaders need to take different approaches to motivate teams and blend old and new ways of thinking (Brown & Eisenhardt, 1998). Although a deliberate planned change framework was reflected in the systemwide accessible technology initiative launched from the Office of the Chancellor (as evidenced by policy guiding documents),
the Emergent Change framework is indicated as a complementary strategy for implementation at the campus level. The results of the survey suggest that campus stakeholders should work together and cultivate critical partnerships and relationships to implement accessible technology initiatives through the notion of “collaborative innovation” (Wilcox and Ray, 2015). In other words, the findings suggest that instead of just communicating requirements and policies from a top down approach or a deliberate planned approach, campus leaders should also practice co-intentional leadership (Freire, 1993) and co-construct reality through critical dialogue and communication with diverse stakeholders. This collaborative Emergent Change approach can also apply to working with other campuses. Wilcox and Ray (2015) assert that collaborating across campuses and “Being open about what hasn't worked at one institution can be enormously helpful to another one facing similar challenges…” (para 13). Further recommendations on how campuses can learn from each other about successfully implementing accessible technology initiatives and addressing challenges will be provided later in this chapter in the Recommendations for Action section.

Revisiting the model. Figure 21 presents the three selected leadership and organizational change theories as a cohesive unit, grounded in the themes that emerged from the study. After gathering the qualitative and quantitative data, a new model was born: the Critical Collaborative Innovation for Accessibility (CCIA) model. This new model can be contrasted with the original illustrations at the beginning of this study (see Figure 1 in Chapter 1 and Figure 5 in Chapter 2), which had the theories separated from one another and from the components of the Accessible Technology Initiative. The new
adjusted overlay of theories with Accessible Technology Initiative components also emphasizes some of the significant findings that grew out of the study. Furthermore, the model emphasizes the essential connections to stakeholders needed to advance change, sustain a culture of access and support collaboration to implement ATI. The initiative and policy can continue to grow despite barriers, and these barriers can be mitigated by strong transformative leadership capacity, cultural inclusion, critical support and relationships.

Figure 21. Theoretical frameworks revisited. Model of critical collaborative innovation for accessibility (CCIA).
Recommendations for Action

The hope of the researcher is that this study can inform policy and leadership practices for students, faculty, staff, and administrative leaders involved in implementing technology initiatives and policy changes. The results of this study can be shared with campus leaders such as ATI executive sponsors, disability services directors, faculty development leaders, the CSU Office of the Chancellor, CSU ATI communities of practice, the Academic Senate, and other policy implementers interested in technology or accessibility related policy issues in the CSU system and higher education.

Based on the analyses, participants indicated that various campus’ accessible technology initiatives have shown many promising practices after more than seven years but that organizational change is still not as advanced or diffused as it could be overall. Survey results reported that adoption of the innovation of accessible technology was variable, and that despite the shared nature of the initiative and passionate individuals adopting the innovation, the perceived diffusion or implementation of accessible technology may still be in the nascent stages on many campuses, with faculty/staff buy in and resources still lacking. Several leadership styles (i.e. democratic and bureaucratic leadership) were found to have significant positive correlations with reported ATI implementation levels (web accessibility) and one leadership style (political leadership) showed a significant negative correlation with reported ATI implementation levels (procurement accessibility). Five overall themes were found from the study, including critical support, critical relationships, leadership capacity, institutional barriers, and
cultural inclusion. Furthermore, barriers to implementation helped the researcher understand how to strengthen supports and illuminated factors that can facilitate success.

Several recommendations emerged from the findings of this study that may be useful for higher education leaders involved in supporting technology, accessibility and e-quality for all:

1. Define roles and responsibilities for all stakeholders involved in implementing accessible technology and encourage them to critically and collaboratively innovate. Many roles are already codified in the ATI policy guiding documents.

2. Account for different understandings of ATI requirements among stakeholders. Be clear in the expectations of Section 508 accessibility and how it differs from Section 504 accommodations. (Having staff with disabilities is not a prerequisite).

3. Re-establish accessibility and inclusion as important values at the institution and in the CSU. Include accessibility in campus strategic plans and update regularly. Reframe accessible technology as being critical for student success.

4. Understand that implementation of accessible technology may be influenced by campus culture, campus size, type of policy and other variables.

5. Leverage hiring opportunities of future faculty and staff who have technical fluency and expertise in designing instruction for diverse student populations.

6. Address complex ATI policy and leadership issues through multidimensional leadership approaches, including the critical transformative leadership style.
7. Advocate for incentives and prioritize resources for accessibility. All new CSU competitive resources and grants should incorporate an equity requirement, just as many federal grants do.

8. Elevate ATI activities and compliance requirements to the attention of top level executives, including Presidents and the CSU Chancellor.

9. Develop or share tools, user support, and faculty/staff trainings that account for complex technical requirements and make personal connections to accessibility issues.

10. Maintain the integrity of reporting processes through enforcement, simplification and visibility to top level executives and Presidents. Simplify the assessments being used as accountability measures. Consider emulating the CSU student success dashboards and how they report progress to Presidents.

11. Interconnect a broad set of stakeholders across the campus with both formal planned processes and emergent, informal social connections. Seek a critical mass of motivated ATI stakeholders on campus.

12. Maintain ongoing contact with other CSU campuses experiencing successes and challenges in implementing ATI and engage in critical conversations.

13. Ensure that content on ATI related web pages is kept up to date and post simplified plans and reports in an easily accessible location.

The researcher can disseminate these policy and leadership recommendations through publishing this dissertation; facilitating formal presentations to CSU campuses, the Office of the Chancellor and at community of practice meetings; and sharing the
results with other higher education technology and accessibility leaders through conferences and organizations such as EDUCAUSE and the Association of Higher Education and Disability (AHEAD).

Limitations

There are several limitations to this exploratory study. First, the sample size was small due to the nature of the study and the purposeful sample. However, this limited the types of statistical correlation tests that could be run to assess the relationships between leadership style and accessibility implementation levels. For example, multiple regression analyses and other statistical tests could have further explored relationships, including predictability of variables, if there were larger numbers of participants in the sample. In addition, a larger sample would have included more diverse demographics.

Another limitation of the study was that some individuals entered the survey and consented to participate, but failed to complete the survey; the researcher believes that individuals may have tested the survey for accessibility or reviewed the questions before deciding to participate. Although the researcher pilot tested the survey and used peer debriefing with a colleague familiar with student accessibility issues and research methods prior to the final survey, the revised survey may still have needed some adjustments based on the missing responses and reported accessibility errors. However, alternate formats were available if individuals requested assistance and the researcher also contacted the survey software vendor to escalate concerns about the accessibility of the software.
Furthermore, the survey’s use of self-report measures and the document review’s use of an automated accessibility evaluation tool had limitations as well; for example accessibility issues that might be experienced by a person with a disability (e.g. color contrast) might not get picked up by the automated tool. However, time and resources were limited and the study still provided useful insights on implementation of accessible technology initiatives. Furthermore, the use of multiple data sources for triangulation helped to mitigate these issues. However, since the campus and individual names were anonymous to protect confidentiality, the data from the campus document reviews could not be triangulated with all of the survey data (e.g. accessibility evaluations could not be validated against self-reported accessibility levels).

The use of pre-existing leadership inventories was a strategy to enhance reliability but it also could have been another limitation since the wording of some of the questions might have been confusing to some participants. For example, although the inventories were used to assess leadership style, some individuals skipped these questions because they thought they were only for leaders in management positions. For example, one participant commented that “This last part is asking questions as if anyone filling it out is a manager. How could these questions be formed to be inclusive of staff working on accessibility, but not managing people?” (Participant #34). Another participant stated, “I am not a supervisor, so I cannot respond to the leadership questions” (Participant #3).

An additional limitation was that some CSU campus Institutional Review Boards had policies that stated they did not honor other campus IRB approvals or allow external investigator agreements or reciprocity without a full IRB review by their campus IRB and
a faculty sponsor from their campus. Due to the limited time frame of the study, it was not possible for the researcher to locate external faculty sponsors and complete a full IRB for these other campuses, so the researcher could not specifically recruit participants from those campuses. Nonetheless, the researcher’s exempt IRB status was accepted on most CSU campuses. In addition, the researcher completed external investigator agreements to satisfy additional requirements.

Finally, the researcher’s experiences in the field of accessibility and technology and involvement in accessible technology initiatives may have introduced bias. This is one of the reasons why the researcher chose to use SPSS and NVivo software to conduct data analysis. The researcher also had a second reviewer read and review the findings and themes to ensure the results were plausible based on the aggregated survey results and archival data. In addition, the researcher bracketed her experience and let the perspectives of the participants and content of the documents be the voices that “spoke” to address the research questions.

**Recommendations for Further Study**

Based on the results, limitations and recommendations for action, the researcher suggests several recommendations for further study. This study focused on leaders in various roles involved in the implementation of accessible technology initiatives and culture change. A larger random sample of students, faculty, staff and administrators would expand the perspectives on the policy. Studies should be conducted that focus on the role of faculty in implementing accessible technology initiatives and that examine motivation for faculty to help determine best practices for training, buy-in, and
professional development. Further studies should also shed light on the real-lived experiences of students with disabilities to more accurately assess instructional materials accessibility from a technical, educational and emotional perspective. This study could be quasi-experimental and involve actual assessment of instructional materials by users with disabilities (not just automated tools). Longitudinal data on students who use alternative formats and the challenges they experience would help to further evaluate successful implementation of accessible technology initiatives as well.

Interviews of various stakeholders involved in ATI efforts would also provide richer, more nuanced information. Also, since the study did not have a large response rate and could not include all campuses, expanding the study to additional CSU campuses and inclusion of other university systems as an extension of this study are also recommended. The results of this systemwide study could be compared with other universities engaged in accessible technology initiatives (Raths, 2015). A multi-site case study comparing several campuses that are recognized as being advanced in their implementation of accessible technology policy with those that are just in the initial adoption phases would further illuminate barriers and factors that can lead to successful implementation of accessible technology initiatives.

**Conclusion and Reflection**

The Accessible Technology Initiative is a systemwide policy effort that has spurred campuses in the CSU to demand change and ensure equal access to technology and information for individuals with disabilities. This study provided a unique opportunity for staff, faculty, administrators, and students engaged in these efforts to
share insights and strategies used by leaders to support success; likewise barriers to implementation and culture change were also explored. The CSU has done a noteworthy job of working toward technology accessibility and building a culture of access and inclusion, but there are still several issues to resolve, such as lack of resources, faculty buy-in, accountability, motivation and training, along with inconsistencies and disconnects. The perceived leadership styles of bureaucratic, democratic, and political leadership along with campus climate and other factors were shown to significantly relate to reported accessibility implementation levels. All of the findings led to the development of a conceptual model called the Critical Collaborative Innovation for Accessibility (CCIA) model, which incorporates themes that emerged from the study, components of accessible technology initiatives, and the three selected theoretical frameworks: Critical Transformative Leadership, Diffusion of Innovations, and Emergent Change. This research study was exploratory, so further study in this area is recommended.

The researcher found this study to be inspirational as well as frustrating. The participants in this study offered their candid wisdom and provided insights that the researcher hopes will help to reinvigorate the CSU accessible technology initiatives (ATI) as the ATI enters a time of transition and the next phase. The collective practices that led to successful implementation of accessible technology policy on CSU campuses could serve as a model for other university systems engaged in similar change initiatives. The study allowed the researcher to ask questions she has wondered about as a practitioner involved in ATI and to obtain evidence that might be used by leaders throughout the CSU to change campus practices and culture related to accessible
technology. The themes which resonated most with the researcher through the process of studying the documents and survey responses were cultural inclusion and institutional barriers. Many of the same barriers mentioned by participants were familiar to the researcher, so this study provided affirmation that the researcher was not alone in some of her experiences advocating for accessible technology and equity. Moreover, some of the emotion and passion involved in fighting for social justice and equity really came through from the voices of the participants. However, it was disheartening to learn that the initiatives and technology accessibility were often underfunded and pushed back to the disability services office rather than treated as a shared commitment and inclusive responsibility as the vision of the ATI intended. Instead, both top-down administrative support and grassroots faculty/staff buy in, along with funding and professional development, are needed to facilitate broader diffusion of change.

The researcher reflected that the heart of this initiative is the people with disabilities who attend school or work in the CSU and need their campuses to innovate to adopt accessible technology and foster culture change. It is for these students and employees with disabilities that the staff, faculty, students and administrators must work in partnership to make organizational changes needed to innovate and strive towards greater e-quality as use of technology and online learning continue to expand in the CSU system.
APPENDICES
Appendix A

Section 508 Standards for Electronic and Information Technology
Section 508 Standards for Electronic and Information Technology


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Authority: 29 U.S.C. 794d.

Subpart A — General

§ 1194.1 Purpose.

The purpose of this part is to implement section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d). Section 508 requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, Federal employees with disabilities have access to and use of information and data that is comparable to the
access and use by Federal employees who are not individuals with disabilities, unless an undue burden would be imposed on the agency. Section 508 also requires that individuals with disabilities, who are members of the public seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency.

§ 1194.2 Application.

(a) Products covered by this part shall comply with all applicable provisions of this part. When developing, procuring, maintaining, or using electronic and information technology, each agency shall ensure that the products comply with the applicable provisions of this part, unless an undue burden would be imposed on the agency.

(1) When compliance with the provisions of this part imposes an undue burden, agencies shall provide individuals with disabilities with the information and data involved by an alternative means of access that allows the individual to use the information and data.

(2) When procuring a product, if an agency determines that compliance with any provision of this part imposes an undue burden, the documentation by the agency supporting the procurement shall explain why, and to what extent, compliance with each such provision creates an undue burden.

(b) When procuring a product, each agency shall procure products which comply with the provisions in this part when such products are available in the commercial marketplace or when such products are developed in response to a Government solicitation. Agencies cannot claim a product as a whole is not commercially available because no product in the marketplace meets all the standards. If products are commercially available that meet some but not all of the standards, the agency must procure the product that best meets the standards.

(c) Except as provided by §1194.3(b), this part applies to electronic and information technology developed, procured, maintained, or used by agencies directly or used by a contractor under a contract with an agency which requires the use of such product, or requires the use, to a significant extent, of such product in the performance of a service or the furnishing of a product.

§ 1194.3 General exceptions.

(a) This part does not apply to any electronic and information technology operated by agencies, the function, operation, or use of which involves intelligence activities, cryptologic activities related to national security, command and control of military forces,
equipment that is an integral part of a weapon or weapons system, or systems which are
critical to the direct fulfillment of military or intelligence missions. Systems which are
critical to the direct fulfillment of military or intelligence missions do not include a
system that is to be used for routine administrative and business applications (including
payroll, finance, logistics, and personnel management applications).

(b) This part does not apply to electronic and information technology that is acquired by a
contractor incidental to a contract.

(c) Except as required to comply with the provisions in this part, this part does not require
the installation of specific accessibility-related software or the attachment of an assistive
technology device at a workstation of a Federal employee who is not an individual with a
disability.

(d) When agencies provide access to the public to information or data through electronic
and information technology, agencies are not required to make products owned by the
agency available for access and use by individuals with disabilities at a location other
than that where the electronic and information technology is provided to the public, or to
purchase products for access and use by individuals with disabilities at a location other
than that where the electronic and information technology is provided to the public.

(e) This part shall not be construed to require a fundamental alteration in the nature of a
product or its components.

(f) Products located in spaces frequented only by service personnel for maintenance,
repair, or occasional monitoring of equipment are not required to comply with this part.

§ 1194.4 Definitions.

The following definitions apply to this part:

*Agency.* Any Federal department or agency, including the United States Postal Service.

*Alternate formats.* Alternate formats usable by people with disabilities may include, but
are not limited to, Braille, ASCII text, large print, recorded audio, and electronic formats
that comply with this part.

*Alternate methods.* Different means of providing information, including product
documentation, to people with disabilities. Alternate methods may include, but are not
limited to, voice, fax, relay service, TTY, Internet posting, captioning, text-to-speech
synthesis, and audio description.
**Assistive technology.** Any item, piece of equipment, or system, whether acquired commercially, modified, or customized, that is commonly used to increase, maintain, or improve functional capabilities of individuals with disabilities.

**Electronic and information technology.** Includes information technology and any equipment or interconnected system or subsystem of equipment, that is used in the creation, conversion, or duplication of data or information. The term electronic and information technology includes, but is not limited to, telecommunications products (such as telephones), information kiosks and transaction machines, World Wide Web sites, multimedia, and office equipment such as copiers and fax machines. The term does not include any equipment that contains embedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. For example, HVAC (heating, ventilation, and air conditioning) equipment such as thermostats or temperature control devices, and medical equipment where information technology is integral to its operation, are not information technology.

**Information technology.** Any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term information technology includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources.

**Operable controls.** A component of a product that requires physical contact for normal operation. Operable controls include, but are not limited to, mechanically operated controls, input and output trays, card slots, keyboards, or keypads.

**Product.** Electronic and information technology.

**Self Contained, Closed Products.** Products that generally have embedded software and are commonly designed in such a fashion that a user cannot easily attach or install assistive technology. These products include, but are not limited to, information kiosks and information transaction machines, copiers, printers, calculators, fax machines, and other similar types of products.

**Telecommunications.** The transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received.

**TTY.** An abbreviation for teletypewriter. Machinery or equipment that employs interactive text based communications through the transmission of coded signals across the telephone network. TTYs may include, for example, devices known as TDDs
(telecommunication display devices or telecommunication devices for deaf persons) or computers with special modems. TTYs are also called text telephones.

**Undue burden.** Undue burden means significant difficulty or expense. In determining whether an action would result in an undue burden, an agency shall consider all agency resources available to the program or component for which the product is being developed, procured, maintained, or used.

§ 1194.5 **Equivalent facilitation.**

Nothing in this part is intended to prevent the use of designs or technologies as alternatives to those prescribed in this part provided they result in substantially equivalent or greater access to and use of a product for people with disabilities.

**Subpart B — Technical Standards**

§ 1194.21 **Software applications and operating systems.**

(a) When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually.

(b) Applications shall not disrupt or disable activated features of other products that are identified as accessibility features, where those features are developed and documented according to industry standards. Applications also shall not disrupt or disable activated features of any operating system that are identified as accessibility features where the application programming interface for those accessibility features has been documented by the manufacturer of the operating system and is available to the product developer.

(c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes.

(d) Sufficient information about a user interface element including the identity, operation and state of the element shall be available to assistive technology. When an image represents a program element, the information conveyed by the image must also be available in text.

(e) When bitmap images are used to identify controls, status indicators, or other programmatic elements, the meaning assigned to those images shall be consistent throughout an application’s performance.
(f) Textual information shall be provided through operating system functions for displaying text. The minimum information that shall be made available is text content, text input caret location, and text attributes.

(g) Applications shall not override user selected contrast and color selections and other individual display attributes.

(h) When animation is displayed, the information shall be displayable in at least one non-animated presentation mode at the option of the user.

(i) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

(j) When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided.

(k) Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2 Hz and lower than 55 Hz.

(l) When electronic forms are used, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

§ 1194.22 Web-based intranet and internet information and applications.

(a) A text equivalent for every non-text element shall be provided (e.g., via “alt”, “longdesc”, or in element content).

(b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.

(c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.

(d) Documents shall be organized so they are readable without requiring an associated style sheet.

(e) Redundant text links shall be provided for each active region of a server-side image map.

(f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
(g) Row and column headers shall be identified for data tables.

(h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.

(i) Frames shall be titled with text that facilitates frame identification and navigation.

(j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

(k) A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.

(l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.

(m) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).

(n) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

(o) A method shall be provided that permits users to skip repetitive navigation links.

(p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

Note to §1194.22: 1. The Board interprets paragraphs (a) through (k) of this section as consistent with the following priority 1 Checkpoints of the Web Content Accessibility Guidelines 1.0 (WCAG 1.0) (May 5, 1999) published by the Web Accessibility Initiative of the World Wide Web Consortium:

Section 1194.22 Paragraph WCAG 1.0 Checkpoint
(a) 1.1
(b) 1.4
(c) 2.1
(d) 6.1
Section 1194.22 Paragraph WCAG 1.0 Checkpoint

(e) 1.2
(f) 9.1
(g) 5.1
(h) 5.2
(i) 12.1
(j) 7.1
(k) 11.4

2. Paragraphs (l), (m), (n), (o), and (p) of this section are different from WCAG 1.0. Web pages that conform to WCAG 1.0, level A (*i.e.*, all priority 1 checkpoints) must also meet paragraphs (l), (m), (n), (o), and (p) of this section to comply with this section. WCAG 1.0 is available at http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505

§ 1194.23 Telecommunications products.

(a) Telecommunications products or systems which provide a function allowing voice communication and which do not themselves provide a TTY functionality shall provide a standard non-acoustic connection point for TTYs. Microphones shall be capable of being turned on and off to allow the user to intermix speech with TTY use.

(b) Telecommunications products which include voice communication functionality shall support all commonly used cross-manufacturer non-proprietary standard TTY signal protocols.

(c) Voice mail, auto-attendant, and interactive voice response telecommunications systems shall be usable by TTY users with their TTYs.

(d) Voice mail, messaging, auto-attendant, and interactive voice response telecommunications systems that require a response from a user within a time interval, shall give an alert when the time interval is about to run out, and shall provide sufficient time for the user to indicate more time is required.

(e) Where provided, caller identification and similar telecommunications functions shall also be available for users of TTYs, and for users who cannot see displays.

(f) For transmitted voice signals, telecommunications products shall provide a gain adjustable up to a minimum of 20 dB. For incremental volume control, at least one intermediate step of 12 dB of gain shall be provided.
(g) If the telecommunications product allows a user to adjust the receive volume, a function shall be provided to automatically reset the volume to the default level after every use.

(h) Where a telecommunications product delivers output by an audio transducer which is normally held up to the ear, a means for effective magnetic wireless coupling to hearing technologies shall be provided.

(i) Interference to hearing technologies (including hearing aids, cochlear implants, and assistive listening devices) shall be reduced to the lowest possible level that allows a user of hearing technologies to utilize the telecommunications product.

(j) Products that transmit or conduct information or communication, shall pass through cross-manufacturer, non-proprietary, industry-standard codes, translation protocols, formats or other information necessary to provide the information or communication in a usable format. Technologies which use encoding, signal compression, format transformation, or similar techniques shall not remove information needed for access or shall restore it upon delivery.

(k) Products which have mechanically operated controls or keys, shall comply with the following:

1. Controls and keys shall be tactiley discernible without activating the controls or keys.

2. Controls and keys shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls and keys shall be 5 lbs. (22.2 N) maximum.

3. If key repeat is supported, the delay before repeat shall be adjustable to at least 2 seconds. Key repeat rate shall be adjustable to 2 seconds per character.

4. The status of all locking or toggle controls or keys shall be visually discernible, and discernible either through touch or sound.

§ 1194.24 Video and multimedia products.

(a) All analog television displays 13 inches and larger, and computer equipment that includes analog television receiver or display circuitry, shall be equipped with caption decoder circuitry which appropriately receives, decodes, and displays closed captions from broadcast, cable, videotape, and DVD signals. As soon as practicable, but not later than July 1, 2002, widescreen digital television (DTV) displays measuring at least 7.8 inches vertically, DTV sets with conventional displays measuring at least 13 inches vertically, and stand-alone DTV tuners, whether or not they are marketed with display
screens, and computer equipment that includes DTV receiver or display circuitry, shall be equipped with caption decoder circuitry which appropriately receives, decodes, and displays closed captions from broadcast, cable, videotape, and DVD signals.

(b) Television tuners, including tuner cards for use in computers, shall be equipped with secondary audio program playback circuitry.

(c) All training and informational video and multimedia productions which support the agency’s mission, regardless of format, that contain speech or other audio information necessary for the comprehension of the content, shall be open or closed captioned.

(d) All training and informational video and multimedia productions which support the agency’s mission, regardless of format, that contain visual information necessary for the comprehension of the content, shall be audio described.

(e) Display or presentation of alternate text presentation or audio descriptions shall be user-selectable unless permanent.

§ 1194.25 Self contained, closed products.

(a) Self contained products shall be usable by people with disabilities without requiring an end-user to attach assistive technology to the product. Personal headsets for private listening are not assistive technology.

(b) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

(c) Where a product utilizes touchscreens or contact-sensitive controls, an input method shall be provided that complies with §1194.23 (k) (1) through (4).

(d) When biometric forms of user identification or control are used, an alternative form of identification or activation, which does not require the user to possess particular biological characteristics, shall also be provided.

(e) When products provide auditory output, the audio signal shall be provided at a standard signal level through an industry standard connector that will allow for private listening. The product must provide the ability to interrupt, pause, and restart the audio at anytime.

(f) When products deliver voice output in a public area, incremental volume control shall be provided with output amplification up to a level of at least 65 dB. Where the ambient noise level of the environment is above 45 dB, a volume gain of at least 20 dB above the
ambient level shall be user selectable. A function shall be provided to automatically reset the volume to the default level after every use.

(g) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

(h) When a product permits a user to adjust color and contrast settings, a range of color selections capable of producing a variety of contrast levels shall be provided.

(i) Products shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

(j) Products which are freestanding, non-portable, and intended to be used in one location and which have operable controls shall comply with the following:

(1) The position of any operable control shall be determined with respect to a vertical plane, which is 48 inches in length, centered on the operable control, and at the maximum protrusion of the product within the 48 inch length (see Figure 1 of this part).

![Diagram of Vertical Plane Relative to the Operable Control](image)

**Figure 1**

(2) Where any operable control is 10 inches or less behind the reference plane, the height shall be 54 inches maximum and 15 inches minimum above the floor.

(3) Where any operable control is more than 10 inches and not more than 24 inches behind the reference plane, the height shall be 46 inches maximum and 15 inches minimum above the floor.

(4) Operable controls shall not be more than 24 inches behind the reference plane (see Figure 2 of this part).
§ 1194.26 Desktop and portable computers.

(a) All mechanically operated controls and keys shall comply with §1194.23 (k) (1) through (4).

(b) If a product utilizes touchscreens or touch-operated controls, an input method shall be provided that complies with §1194.23 (k) (1) through (4).

(c) When biometric forms of user identification or control are used, an alternative form of identification or activation, which does not require the user to possess particular biological characteristics, shall also be provided.

(d) Where provided, at least one of each type of expansion slots, ports and connectors shall comply with publicly available industry standards.

Subpart C — Functional Performance Criteria

§ 1194.31 Functional performance criteria.

(a) At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for assistive technology used by people who are blind or visually impaired shall be provided.

(b) At least one mode of operation and information retrieval that does not require visual acuity greater than 20/70 shall be provided in audio and enlarged print output working
together or independently, or support for assistive technology used by people who are visually impaired shall be provided.

(c) At least one mode of operation and information retrieval that does not require user hearing shall be provided, or support for assistive technology used by people who are deaf or hard of hearing shall be provided.

(d) Where audio information is important for the use of a product, at least one mode of operation and information retrieval shall be provided in an enhanced auditory fashion, or support for assistive hearing devices shall be provided.

(e) At least one mode of operation and information retrieval that does not require user speech shall be provided, or support for assistive technology used by people with disabilities shall be provided.

(f) At least one mode of operation and information retrieval that does not require fine motor control or simultaneous actions and that is operable with limited reach and strength shall be provided.

Subpart D — Information, Documentation, and Support

§ 1194.41 Information, documentation, and support.

(a) Product support documentation provided to end-users shall be made available in alternate formats upon request, at no additional charge.

(b) End-users shall have access to a description of the accessibility and compatibility features of products in alternate formats or alternate methods upon request, at no additional charge.

(c) Support services for products shall accommodate the communication needs of end-users with disabilities.
Appendix B

Accessible Technology Initiative Goals/Status Levels
## Accessible Technology Initiative Goals/Success Indicators


<table>
<thead>
<tr>
<th><strong>Web Accessibility Goals</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.0 Evaluation Process</strong>: Identify and repair or replace inaccessible websites, web applications, and digital content.</td>
</tr>
<tr>
<td><strong>2.0 New Web Development</strong>: New website/web application and digital content development complies with all Section 508 accessibility guidelines.</td>
</tr>
<tr>
<td><strong>3.0 Monitoring Process</strong>: Updating and maintenance of websites/web applications and digital content comply with Section 508 Accessibility Standards.</td>
</tr>
<tr>
<td><strong>4.0 Exemptions Process</strong>: Documented non-compliant websites, web applications and digital content must be delivered in an equally effective alternate format and granted an exemption.</td>
</tr>
<tr>
<td><strong>5.0 Training Process</strong>: Professional development training has incorporated Section 508 accessibility guidelines into website and web applications development and digital content preparation.</td>
</tr>
<tr>
<td><strong>6.0 Communication</strong>: In general the campus community is aware of Section 508 guidelines to make web based information available to everyone (students, staff, faculty and the general public) regardless of disability.</td>
</tr>
<tr>
<td><strong>7.0 Administrative Process</strong>: Campus governance entities are aware of and kept informed about web accessibility.</td>
</tr>
</tbody>
</table>
### Instructional Materials Goals

<table>
<thead>
<tr>
<th><strong>1.0 Timely Adoption:</strong></th>
<th>The campus has implemented a comprehensive plan to ensure the timely adoption of textbooks and other instructional materials.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.0 Identification of IM for Late-Hire Faculty:</strong></td>
<td>The campus has implemented a comprehensive plan to ensure that textbooks have been identified for courses with late-hire faculty.</td>
</tr>
<tr>
<td><strong>3.0 Early Identification of Students with Disabilities:</strong></td>
<td>The campus has implemented a comprehensive plan to ensure that students with disabilities are identified and able to request alternate media materials in a timely manner.</td>
</tr>
<tr>
<td><strong>4.0 Faculty Use of LMS (or non-LMS) Course Websites:</strong></td>
<td>The campus has implemented policies and procedures to promote the posting of all required curricular and instructional resources (including print-based and multimedia materials) in a central, accessible electronic location.</td>
</tr>
<tr>
<td><strong>5.0 Accessibility Requirements for Multimedia:</strong></td>
<td>The campus has implemented policies and procedures to ensure that accessibility requirements have been incorporated into the adoption process for all multimedia-based instructional resources.</td>
</tr>
<tr>
<td><strong>6.0 Accessibility Requirements for Curricular Review and Approval:</strong></td>
<td>The campus has implemented policies and procedures to ensure that accessibility requirements have been incorporated into the curricular review process.</td>
</tr>
<tr>
<td><strong>7.0 Supporting Faculty Creation of Accessible IM:</strong></td>
<td>The campus has implemented policies and procedures to support faculty in selecting, authoring, and delivering accessible instructional materials.</td>
</tr>
<tr>
<td><strong>8.0 Communication Process and Training Plan:</strong></td>
<td>The campus has implemented a broad-based ATI awareness campaign, supported by a comprehensive training infrastructure to increase technological accessibility across the campus.</td>
</tr>
<tr>
<td><strong>9.0 Process Indicators:</strong></td>
<td>The campus IMAP committee has sufficient breadth, resources, and authority to effectively implement a comprehensive IMAP initiative.</td>
</tr>
</tbody>
</table>
### Procurement Goals

<table>
<thead>
<tr>
<th><strong>1.0 Procurement Procedures:</strong></th>
<th>An ATI Electronic and Information Technology (E&amp;IT) Procurement Plan, documents, forms, and other materials to support 508 procurements at the campus are created and published.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.0 Staffing or role definition:</strong></td>
<td>ATI procurement team is fully staffed with clearly defined roles for processing E&amp;IT procurements.</td>
</tr>
<tr>
<td><strong>3.0 Exemptions Process:</strong></td>
<td>A well-documented process has been established and is used for exemptions to E&amp;IT procurements.</td>
</tr>
<tr>
<td><strong>4.0 Equally Effective Access Plans:</strong></td>
<td>Equally Effective Access Plans are created for E&amp;IT products that are not fully 508 compliant.</td>
</tr>
<tr>
<td><strong>5.0 Training:</strong></td>
<td>All parties involved in E&amp;IT procurement have been trained, and a continual training program is in place.</td>
</tr>
<tr>
<td><strong>6.0 Outreach (Communications):</strong></td>
<td>All individuals on campus involved in the purchasing of goods are knowledgeable about Section 508 in the context of E&amp;IT procurement.</td>
</tr>
<tr>
<td><strong>7.0 Evaluation &amp; Monitoring:</strong></td>
<td>Campus has established a continual evaluation process with standard forms and procedures. Feedback from the process along with direction is provided to training, outreach, and other groups involved in E&amp;IT procurements.</td>
</tr>
<tr>
<td><strong>8.0 Experience/Implementation:</strong></td>
<td>Campuses have sufficient experience and expertise in completing E&amp;IT procurements.</td>
</tr>
</tbody>
</table>
## Status Level Descriptions

<table>
<thead>
<tr>
<th>Status Levels</th>
<th>Description for Procedures</th>
<th>Description for Documentation</th>
<th>Description for Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not Started</strong></td>
<td>No action has been taken yet.</td>
<td>No documentation has yet been generated.</td>
<td>No resources have yet been allocated.</td>
</tr>
<tr>
<td><strong>Initiated</strong></td>
<td>The campus has an ad hoc or developing practice. Procedures, if in place, are generally ad hoc.</td>
<td>Documentation is generally absent.</td>
<td>Resources have been tentatively identified but not yet allocated.</td>
</tr>
<tr>
<td><strong>Defined</strong></td>
<td>The campus has a common practice. Procedures, if in place, are consistent but informal.</td>
<td>Documentation, if present, is in working draft.</td>
<td>Resources have been firmly identified but not yet allocated.</td>
</tr>
<tr>
<td><strong>Established</strong></td>
<td>The campus has a standard practice. Procedures are consistent and formal.</td>
<td>Documentation is complete and fully reflects the standard practice.</td>
<td>Resources have been both identified and allocated.</td>
</tr>
<tr>
<td><strong>Managed</strong></td>
<td>The campus has a mature practice. Procedures are also in place to track and capture success indicators (milestones and measures of success).</td>
<td>Documentation is complete and fully reflects the standard practice.</td>
<td>Resources have been both identified and allocated.</td>
</tr>
<tr>
<td><strong>Optimized</strong></td>
<td>The campus has a mature practice. In addition, procedures are in place to conduct regular administrative reviews of success indicators to gauge effectiveness and implement improvements.</td>
<td>Documentation is continually revised to reflect the managed practice. Periodic administrative review of documentation is conducted.</td>
<td>Resources have been both identified and allocated. Periodic administrative review of resource allocations is conducted.</td>
</tr>
</tbody>
</table>
Appendix C

Online Consent Form and Survey
Online Survey

Survey URL: http://www.surveymonkey.com/r/atileader

1. Informed Consent

Dear Participant,

You are invited to participate in a research study which involves leadership in implementation of accessible technology initiatives and associated culture change. This study is being conducted as part of a dissertation requirement in the Doctorate in Educational Leadership Program at California State University, Sacramento. You were selected as a possible participant in this study because of your role as a faculty, staff, administrator, or student in the California State University (CSU) system who may have participated in accessible technology implementation efforts.

**Study Purpose:** The purpose of this research is to explore how higher education leaders can support accessible technology policy implementation and the organizational change involved in fostering a culture of access and inclusion in the CSU. If you decide to participate, you will be asked to take an online survey and answer questions related to the accessible technology initiative and leadership approaches. Your participation in this study is purely voluntary and you may withdraw or stop at any time with no penalty. If you decide to take part in this study, your participation in the survey will last about 30 minutes.

**Potential Risk:** There are minimal risks involved for participants. There is potential for minimal psychological stress since the study addresses issues related to social justice and disability access. Participants must share personal opinions and experiences encountered in implementing accessible technology initiatives. However, the probability and magnitude of harm or discomfort anticipated for participants are no greater than what might be encountered in daily life. The survey will ask basic demographic information (e.g. ethnicity, gender, and profession) but you will not be asked to place your name or campus name on the survey.

**Benefits:** There are also some benefits to this research, particularly that you will have the opportunity to win one of ten $25 Amazon gift cards after participating in this study. Your identity will remain completely confidential and your name will not be linked in any way to the survey. Another benefit is that you will be part of a study that will recommend practices that leaders can use in policy implementation to help them advocate for inclusive technology (e.g. accessible web pages, software, hardware, videos, and other technology) and equity for all students and employees. Comparing various postsecondary leaders’ approaches and barriers to accessible technology policy implementation also can provide insights on the differing needs of campuses. The
findings from the study will be published and made available at the conclusion of the dissertation process through the California State University, Sacramento library database.

Confidentiality: Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Measures to insure your confidentiality are: only the researcher and dissertation committee will have access to the data; all participant and campus names will remain unidentified for the protection of participants and the study; there will be no repercussions for honest responses or for exiting the survey or withdrawing from the study at any time; data from the survey will be contained in a password-protected account with the encrypted survey instrument and all results will be maintained in a secure password-protected file; results will only be reported in aggregate de-identified form and pseudonyms will be used; and the results obtained will be maintained in a safe, secure, locked location and will be destroyed after a period of three years after the study is completed.

Voluntary Participation: Your participation is entirely voluntary and your decision whether or not to participate will involve no penalty or loss of benefits to which you are otherwise entitled. If you decide to participate, you are free to discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. To address possible conflicts of interest, you will be excluded from the study if you are under the age of 18 years old, if the researcher is your supervisor with influence over work performance evaluations or if you are a student currently receiving services through Services for Students with Disabilities at California State University, Sacramento.

Questions: If you have any questions about the research at any time, please call me at 916-278-7821 or email repam@csus.edu, or contact my dissertation advisor, Dr. Frank Lilly, at 916-278-4120 or frlilly@csus.edu. If you need to request this information in alternate formats or have other reasonable accommodation requests, please contact me at 916-278-7821 or email repam@csus.edu. If you have any questions about your rights as a participant in a research project please call the Office of Research Affairs, California State University, Sacramento, 916-278-5674, or email irb@csus.edu.

IRB Approval Notice: This research study has been reviewed and approved by the California State University, Sacramento Institutional Review Board (IRB) (Protocol # 14-15-062).

By completing and submitting this survey you indicate that you have read and understand the information provided above, that you willingly agree to participate, that you know and understand that you may withdraw your consent at any time and discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled, that you can receive a copy of this form, and that you are not waiving any legal claims, rights or remedies.
Thank you for your assistance with this research project.

Melissa Repa, M.A.
Educational Leadership Doctorate Candidate
California State University, Sacramento
repam@csus.edu

Dissertation Chair: Frank Lilly, Ph.D Professor, College of Education
Co-Director, Accelerated College Entrance (ACE)
California State University, Sacramento
frlilly@csus.edu

1. I have read and fully understand this information and I am voluntarily willing to participate in this study.

☐ I Accept
☐ I Decline

2. Introduction

Thank you for taking part in this survey. The following questions will be asked to better understand how higher education leaders can support accessible technology policy implementation and the organizational change involved in fostering a culture of access and inclusion. Please feel free to forward this link (https://www.surveymonkey.com/r/atileader) to other faculty, staff, administrators and students in the California State University (CSU) system who can provide insight on this topic.

Before you begin this survey, please consider the following concepts:

Section 508 of the Rehabilitation Act of 1973, as amended in 1998, is a federal law which codifies accessibility standards for information technologies such as web pages, telecommunications, software, hardware, videos and other technologies that are developed or maintained by federal agencies and other governmental entities receiving federal funds. In 2003, the California State Legislature passed Senate Bill 302 to amend Section 11135 of the California Government Code to require the California State University to comply with Section 508 regulations for the purposes of the accessibility of persons with disabilities to electronic or information technology.

The CSU Accessible Technology Initiative (ATI) was launched in 2006 by the CSU Office of the Chancellor to support CSU campuses in making technology and courses equally accessible to all students and employees, regardless of disability status. The
vision of the initiative is “to create a culture of access for an inclusive learning and working environment” (www.calstate.edu/accessibility).

Thank you again. To request this survey in an alternate format, please contact repam@csus.edu. To begin, select the "Next" button.

3. Background Information

No data gathered will be connected to any specific respondent or location.

1. What region of California is your institution located?
   - □ Northern California
   - □ Central California
   - □ Southern California

2. To your knowledge, how many total students attend your campus?
   - □ 1,000-5,000
   - □ 5,001-10,000
   - □ 10,001-20,000
   - □ 20,001-30,000
   - □ 30,001+

3. What is your position on your campus?
   - □ Faculty
   - □ Staff
   - □ Student
   - □ Administrator
   - □ Other (please specify)

4. How many years have you been on your campus?
   - □ 0-1 year
   - □ 2-4 years
   - □ 5-10 years
   - □ Over 10 years

5. Please indicate your gender
   - □ Female
   - □ Male

6. Please indicate your age
   - □ 18-30
7. Please indicate your race/ethnicity.
   - African American
   - Asian
   - Caucasian
   - Latino/Hispanic
   - Native American
   - Pacific Islander
   - Other (please specify)

4. Accessible Technology Initiative Implementation

1. Had you heard of the Accessible Technology Initiative (ATI) prior to receiving this survey?
   - Yes
   - No

2. How familiar are you with Section 508 of the Rehabilitation Act?
   - I did not hear of this law prior to taking the survey.
   - I am somewhat familiar with this law.
   - I am familiar with this law.
   - I am very familiar with this law.

3. Do you participate on the ATI Steering Committee on your campus?
   - Yes
   - No

4. How actively are you involved in implementing accessible technology on your campus?
   - Not at all active
   - Somewhat active
   - Active
   - Very active

5. Does your campus have an accessible technology policy?
   - Yes
   - No
   - Unsure
6. What type of policy is it?
   - □ Formal standalone policy that addresses accessible technology or web accessibility
   - □ Formal policy but accessible technology is incorporated in a policy along with other issues such as security or discrimination
   - □ General statement only
   - □ Guidelines or standards but no formal requirement
   - □ Unsure

7. To your knowledge, where does the ATI Executive Sponsor on your campus work?
   - □ Academic Affairs
   - □ Administrative and Business Affairs
   - □ Disability Services
   - □ Human Resources
   - □ Information Technology
   - □ Student Affairs
   - □ Unsure
   - □ Other (please specify)

8. To your knowledge, what position is the ATI Executive Sponsor?
   - □ Associate Vice President
   - □ Chief Information Officer
   - □ Dean
   - □ Director or Program Coordinator
   - □ Faculty
   - □ President
   - □ Provost
   - □ Vice President
   - □ Unsure
   - □ Other (please specify)

9. To your knowledge, are financial resources allocated to support ATI on your campus?
   - □ Yes
   - □ No
   - □ Unsure

10. Please relate a story you would like to tell describing your experience with successfully implementing ATI or changing culture on your campus related to accessible technology.
11. Please indicate how strongly you agree or disagree with the following statement regarding compliance on your campus: Based on my knowledge of Section 508, I feel there is compliance with Section 508 on my campus.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Somewhat Disagree
- [ ] Somewhat Agree
- [ ] Agree
- [ ] Strongly Agree

12. Please indicate which of the following are factors that facilitate successful accessible technology implementation on your campus:

- [ ] Training
- [ ] User support
- [ ] Hiring of key personnel
- [ ] A comprehensive accessible technology policy
- [ ] Adequate resources/funding
- [ ] A clear accessible technology implementation plan
- [ ] Sufficient time and effort allocated to personnel
- [ ] Assessing progress to make sure ATI is being implemented as intended
- [ ] Buy-in from faculty and staff
- [ ] Top level administrator support
- [ ] ATI committee support
- [ ] Involvement of students in the initiative
- [ ] Awareness and marketing efforts
- [ ] Collaboration between offices/programs
- [ ] Other (please specify)

13. Please indicate how strongly you agree or disagree with the following goals and statements regarding levels of accessible technology implementation on your campus.

A. Web Accessibility: Campus web pages generally comply with Section 508 Accessibility Standards.

- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Somewhat Disagree
- [ ] Somewhat Agree
- [ ] Agree
- [ ] Strongly Agree
B. Instructional Materials: The campus has implemented plans, policies and procedures to ensure that accessibility is incorporated into instructional resources.

☐ Strongly Disagree
☐ Disagree
☐ Somewhat Disagree
☐ Somewhat Agree
☐ Agree
☐ Strongly Agree

C. Procurement Accessibility: All individuals on campus involved in the purchasing of goods are knowledgeable about Section 508 in the context of Electronic and Information Technology (E&IT) procurement.

☐ Strongly Disagree
☐ Disagree
☐ Somewhat Disagree
☐ Somewhat Agree
☐ Agree
☐ Strongly Agree

14. Please indicate which of the following are barriers to accessible technology implementation on your campus:

☐ Lack of training
☐ Lack of awareness
☐ Lack of funding
☐ Lack of rewards (e.g. release time, incentives)
☐ Lack of staffing
☐ Attitudinal barriers/ableism
☐ The complexity of accessible technology
☐ Lack of time
☐ Confusion about different accessibility standards
☐ Vendor noncompliance
☐ Technology infrastructure issues (e.g. software or hardware issues, limited availability of technology)
☐ Lack of user support
☐ Lack of top level administrator support
☐ Lack of faculty/staff buy in
☐ Other (please specify)

15. Please indicate how strongly you agree or disagree with the following statement about
your campus climate: There is an emphasis on developing appreciation for a diverse society on campus and the general climate of the campus is respectful and inclusive towards people with disabilities.

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Somewhat Agree
- Agree
- Strongly Agree

16. Which statement best reflects your own stage with regard to adoption of the innovation of incorporating accessibility into technology or instructional materials?

- I have not heard of this innovation
- I have some understanding of what’s involved in implementing accessible technology
- I am in the process of gathering more information about implementing accessible technology
- I intend to implement accessible technology
- I have actually implemented accessible technology
- I plan to continue implementing or maintaining accessibility in technology

17. Answer one of the following questions regarding the innovation of accessible technology:

If you have not yet adopted this innovation, what is your primary reason?

If you have adopted this innovation, what is your primary reason?
5. Leadership Inventory

Instructions: Read the following statements and mark the appropriate response following your instincts; there are no right or wrong answers. Be sure to consider what your actions are, not what you would like them to be.

(These inventories are adapted and used with permission from the Nevarez-Wood Community College Leadership Institute. All rights reserved. Adapted from Nevarez, C. & Wood, J.L. (2011). Nevarez & Wood-Transformative Leadership Inventory (NW-TrLI), Nevarez & Wood-Bureacratic Leadership Inventory (NW-BLI), Nevarez & Wood-Democratic Leadership Inventory (NW-DLI), Nevarez & Wood-Political Leadership Inventory (NW-PLI) & Nevarez & Wood-Transformational Leadership Inventory (NW-TLI). Sacramento, CA: Nevarez-Wood Community College Leadership Institute.)

1. Transformative Leadership Inventory
   A. I am committed to social justice
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   B. I challenge the “status quo”
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   C. I advocate against marginalization
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree
D. I am concerned with inequities facing diverse student communities
   □ Strongly Disagree
   □ Disagree
   □ Somewhat Disagree
   □ Somewhat Agree
   □ Agree
   □ Strongly Agree

2. Bureaucratic Leadership Inventory
   A. Organizational success necessitates that processes and structures are efficient
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   B. Organizational success is achieved through the pursuit of productivity
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   C. Handbooks, frameworks, and organizational documents should clearly delineate each individual’s areas of responsibility
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   D. Policies drive organizational practices
3. Democratic Leadership Inventory
   A. I prefer/enjoy investing in the personal and professional development of my staff
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   B. I believe that collaboration (e.g. working in teams, committee-work) is vital to organizational success
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   C. I regularly provide and support learning and development opportunities for staff
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
      □ Somewhat Agree
      □ Agree
      □ Strongly Agree

   D. I value the experience, insight and knowledge of staff
      □ Strongly Disagree
      □ Disagree
      □ Somewhat Disagree
4. Political Leadership Inventory
   A. I contemplate my actions multiple steps in advance
      - [ ] Strongly Disagree
      - [ ] Disagree
      - [ ] Somewhat Disagree
      - [ ] Somewhat Agree
      - [ ] Agree
      - [ ] Strongly Agree

   B. I maneuver people and resources to meet my goals
      - [ ] Strongly Disagree
      - [ ] Disagree
      - [ ] Somewhat Disagree
      - [ ] Somewhat Agree
      - [ ] Agree
      - [ ] Strongly Agree

   C. I am adept in consolidating power
      - [ ] Strongly Disagree
      - [ ] Disagree
      - [ ] Somewhat Disagree
      - [ ] Somewhat Agree
      - [ ] Agree
      - [ ] Strongly Agree

   D. I develop coalitions to gain power and resources
      - [ ] Strongly Disagree
      - [ ] Disagree
      - [ ] Somewhat Disagree
      - [ ] Somewhat Agree
      - [ ] Agree
      - [ ] Strongly Agree
5. Transformational Leadership Inventory
   A. I am known for being a great communicator
      ■ Strongly Disagree
      ■ Disagree
      ■ Somewhat Disagree
      ■ Somewhat Agree
      ■ Agree
      ■ Strongly Agree

   B. I have established a clear vision and strategic plan
      ■ Strongly Disagree
      ■ Disagree
      ■ Somewhat Disagree
      ■ Somewhat Agree
      ■ Agree
      ■ Strongly Agree

   C. I have a high degree of socio-emotional intelligence
      ■ Strongly Disagree
      ■ Disagree
      ■ Somewhat Disagree
      ■ Somewhat Agree
      ■ Agree
      ■ Strongly Agree

   D. My staff regularly exceed established goals
      ■ Strongly Disagree
      ■ Disagree
      ■ Somewhat Disagree
      ■ Somewhat Agree
      ■ Agree
      ■ Strongly Agree

6. Is there anything else you would like to add about leading accessible technology initiatives and advocating for a culture of access and inclusion in the CSU?

After you complete the survey please select the following "Prize Drawing" link to enter a separate drawing to win a $25 Amazon gift card. Your prize drawing will not be associated with your survey responses.
Prize Drawing: https://www.surveymonkey.com/r/r/KS8ZJN3

If you have any further questions please contact the researcher at repam@csus.edu.

Thank you for your time.
Appendix D

Participant Recruitment Letter
Participant Recruitment Letter

Subject: Research Study on Accessible Technology Initiative (incentives included)

Dear CSU Colleagues,

I am working on my doctorate in Educational Leadership at California State University, Sacramento. I am ready to do my dissertation research and need your help.

My dissertation research project (IRB Protocol #14-15-062) is entitled *Leadership to Support E-Quality for All: A Study of a Systemwide Accessible Technology Policy Implementation* and includes a survey. If you choose to participate you will be part of a study that will recommend practices that leaders can use in policy implementation to help them advocate for inclusive technology and e-quality for all students and employees.

Comparing various postsecondary leaders’ approaches to accessible technology policy implementation and perceived barriers to integrating accessible technology change initiatives can provide insights on the differing needs of campuses. Understanding the factors affecting leaders may facilitate increased effectiveness of diffusion of the accessible technology change initiative. Based on results, campus leaders can improve local policies to be more inclusive of diverse students and employees as online learning and use of campus technology continues to expand.

The survey consists of short open- and closed-ended questions and will take around 30 minutes to complete. All participant and campus names will remain anonymous and unidentified for the protection of participants and the study. Any information that is obtained in connection with this study and that can be identified with you will remain confidential. Full information appears when you open the link. On the first page, participants will have the opportunity to accept or decline participation in the study. Participants may discontinue participation at any time. Alternative formats are available upon request.

**Survey Link:** [https://www.surveymonkey.com/r/atileader](https://www.surveymonkey.com/r/atileader)

Would you please help me by taking the confidential survey by **March 19, 2015**?

You are also encouraged to pass this survey request on to other faculty, staff, students, and administrators who are participating in accessible technology and instructional materials related efforts on California State University (CSU) campuses. I am looking for 100 respondents from a wide range of roles and CSU campuses. After completing the survey, participants will have the opportunity to enter a drawing to receive **one of ten $25 Amazon Gift Cards**.

Thank you for your support with this research project.
Melissa Repa, M.A.
Educational Leadership Doctoral Candidate
Co-Director, Services for Students with Disabilities
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REFERENCES


U.S. Const. amend. XIX.


