Strengthening Leadership Preparation to Meet the Challenge of Leading for Learning in the Digital Age: Recommendations from Alumni

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This study surveys graduates of a west-coast university regarding their perception of how well their graduate degree programs prepared them to meet the challenge of leading for learning in the digital age, particularly in the areas of visionary leadership, student learning, organizational management, working with diverse families, ethics, and the social and legal aspects of using technology and learning networks. A two-phase mixed-methods research plan including phase-one surveys to collect data from alumni of the principal preparation masters and doctoral programs and phase-two face-to-face interviews of sitting principals was initiated. This paper is a report of the phase-one survey analysis.

As technology evolves at an ever increasing pace and we rely more and more on digital access to data, information, curriculum, and each other, researchers and educators agree that technology leadership is important, and educational leadership preparation programs must continue to seek ways to better serve the next generation of leaders (Andersen & Dexter, 2005). Greenlinger (2013) warns us that the "millennial" principals have a different needs set than past generations and require program supports that will prepare them to lead the learning for student achievement while successfully integrating digital technology. Students growing up in a digital world, known as the "net generation" also have different needs and will require principals who speak their language (Tapsott (2009) as cited in English, Papa, Mullen, & Creighton, 2011, p.26).

The study presented in this paper investigates graduates of a west-coast university regarding their perception of how well their graduate program helped them to meet the challenge of leading for learning in the digital age. A two-phase mixed-methods research strategy is planned, which includes phase-one electronic surveys to collect data from alumni of the principal preparation (masters) and doctoral programs and phase-two face-to-face interviews of sitting principals who are graduates of these programs. This paper is a report of the phase-one survey analysis.

Researchers put together a survey based, in part, on the International Society for Technology in Education's Standards for Administrators (ISTE Standards-A), and, in part, on the California Commission on Teacher Credentialing (CCTC) Preliminary Administrative Services Credential: Standards of Candidate Competence and Performance (CCTC, 2004; ISTE, 2009).

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Utilizing these standards as a framework, the survey questions were designed to decipher whether or not the principal preparation program at this university is and has been providing future administrators with the foundational leadership skills to be leaders who can adapt to an ever changing workplace where digital technology continues to evolve and continues to change the teaching and learning and leading environment.

Review of the Literature

Technology infrastructure, including software, hardware, and Internet access, as well as professional development for teachers and availability of technical support staff, are all important parts of a school technology plan, but technology leadership is the key, the most important factor, in using technology in schools to improve student achievement (Anderson & Dexter, 2005). In reviewing the standards as outlined above, many of the skills that make a principal a strong school leader are the same skills that make a principal a strong school technology leader (CCTC, 2004; ISTE, 2009). In their research, Anderson & Dexter (2005) found that school leaders should "provide administrative oversight for educational technology, provide access to equipment for staff, establish an ongoing budget for technology, learn how to operate technology and use it whenever possible for carrying out their own duties" (p. 51-54). School leaders must also "provide professional development opportunities to teachers, work to see technology support the needs of students' learning and teachers' instruction, and assess and evaluate the role of academic and administrative uses of technology and make decisions from those data" (Anderson & Dexter, 2005, p. 51-54).

Additionally, school administrators have an obligation to keep up with the rapidly evolving advances in information technology and determine the significance of the latest technological tools on the school community. "Unfortunately, too often, administrators appear to be less capable in technology than the students they serve," and this can undermine the perception of the principal as the leader of school technology (Donlevy, 2004, p.213).

Internet use and online social networking in and outside of school gives additional responsibilities to the school principal. While connectivity to the outside world may bring many advantages to classroom learning, online dangers and cyberbullying are growing, and educational leaders must protect students from misuse of digital media and implement "digital citizenship" rules and regulations (Ribble & Miller, 2003).

Traditional leadership roles are changing and expanding, and "expertise in technology has become an essential administrative prerequisite" (Donlevy, 2004, p.214). School districts and independent schools rely on university principal preparation programs to train and develop the next generation of school leaders, indeed, "the responsibility for leadership preparation falls squarely on the shoulders of higher education" (Young & Brewer, 2008, p. 106). Expectations for a preparation program are that new leaders will be prepared in all areas of school leadership, especially including, in today's schools, technology leadership. In a study of university and college professors of educational leadership in programs across the United States, Hayashi and Fisher-Adams (2013) found that professors' personal use of technology, use of technology to teach courses, use of technology to interact with students, and actual teaching about technology in educational leadership programs were often self-determined and not an integrated part of the established coursework. While some programs included a specified "technology course," many did not address technology in other areas of the leadership curriculum. For example, legal issues such as First Amendment freedom of speech on the Internet inside and outside of school, new

state cyberbullying statutes, and Fourth Amendment search and seizure issues involving digital data on cellphones and tablets were not uniformly or comprehensively taught in most university programs (Hayashi & Fisher-Adams, 2013). Additionally, while a professor's proficiency in the use of digital tools for personal use generally led to more use in the classroom and as part of curriculum content, professors often reported a lack of professional development, equipment, and/or incentives provided at the university level (Hayashi & Fisher-Adams, 2013).

Similarly, in an earlier 2007 study, Hess & Kelly took a national sample of 31 university principal preparation programs to determine what aspiring principals were being taught. They consistently found that principals were receiving limited training in the use of technology… in the instructional content of their coursework. Upon completion of the study, the question still remained as to whether preparation is "well matched to the contemporary world of schooling" (Hess & Kelly, 2007).

Finally, an internal study at a state university in Kansas began by asking the question, "what technology content and skills do our faculty and principal candidates need to know and be able to do and how do we integrate the technology content and skills into the new program?"(Dale, Moody, Slattery &Wieland, 2007, p.42). Resulting actions were the development and implementation of an online program and the determination that program change does not happen overnight; it is an ongoing process that will continually evolve, and new technologies are created and changing daily (Dale, Moody, Slattery & Wieland, 2007).

Today technology evolves rapidly, and "as technology changes, the standards, curricula, and support must change" (Woelfel, Murray, &Hambright, 2004). This is the subject and purpose of the research presented here.

Methodology

Synthesis of the Standards

In 2001, the Technology Standards for School Administrators Collaborative produced the original six ISTE National Education Technology Standards for Administrators (NETS-A) to define what principals need to know in leading the effective use of technology in schools (Creighton, 2003; ISTE, 2002). The standards were revised in 2009, now known as the ISTE Standards for Administrators (ISTE Standards-A), to evaluate "the skills and knowledge school administrators and leaders need to support digital age learning, implement technology and transform the education landscape" (https://www.iste.org/standards/standards-for-administrators). (See Appendix A). These standards have become widely accepted as a way to evaluate how well school leaders are using technology in schools (Creighton, 2003; Redish & Chan, 2007; Schrum, Galizio, & Ledesma, 2011; Sincar, 2013; Woelfel, Murray, & Hambright, 2004).

The California Commission on Teacher Credentialing (CCTC) standards apply to the California Preliminary Administrative Services Credential, and have been used as program standards in the university programs explored in this study. While, under current revision by the state at the time of this writing, these standards were adopted in 2003 and have been in place during the tenure of the target alumni and graduate students surveyed (California Commission on Teacher Credentialing, 2004). (See Appendix B). The CCTC standards are additionally closely aligned with the national Interstate School Leaders Licensure Consortium (ISLLC) standards (CCTC, 2004; Council of Chief State School Officers, 2008).

The technology aspects of leadership are addressed in several of the supporting elements of the CCTC Standards, such as:

"3) Organizational Management of Student Learning:

> 12(i) Each candidate is able to effectively evaluate and use a wide range of technologies, including assistive technologies when appropriate, to support instruction and effective school administration; and
>
> 12(j) Each candidate is able to effectively use technology to manage multiple types of databases within a school and to use data to improve instruction" (California Commission on Teacher Credentialing, 2004, p.55).

"5) Personal Ethics and Leadership Capacity

> 14(d) Each candidate is able to utilize technology to foster effective and timely communication" (California Commission on Teacher Credentialing, 2004, p.57).

To broaden the focus of the survey to general leadership as well as technology leadership, the researchers aligned the ISTE Standards-A with the CCTC standards. As discussed below, seven areas of focus were chosen as the basis of the survey.

However, in choosing to base the survey instrument on a combination of both the ISTE Standards-A and the CCTC Preliminary Administrative Services Credential: Standards of Candidate Competence and Performance, the researchers acknowledge that, at the time of their graduation, most administrative candidates were not assessed on comprehensive technology integration and, indeed, many of the earlier graduates could and do argue that the digital age had not yet permeated their schools, i.e. the ubiquitous use of social networking.

Design of the Survey

The California Commission on Teacher Credentialing (CCTC) is in the process of updating the Preliminary (Tier I) and Clear (Tier II) Administrative Services Credential standards. As this will result in principal preparation program revisions, it is timely to gather feedback and commentary from program alumni to inform decision-making and determine ways to infuse digital age leadership practices in all areas of the curriculum.

Using the ISTE Standards –A and the CCTC Administrative Standards as a base, the researchers developed a survey to determine educational leadership program alumni proficiency in seven areas: vision of learning, student learning, staff professional growth and development, management of the organization, school and community relations, personal and professional ethics, and political, social, economic, and legal contexts of technology and school leadership

The respondents were asked to rate on a Likert scale whether they strongly agreed, agreed, somewhat agreed, somewhat disagreed, disagreed, or strongly disagreed whether their Educational Leadership & Policy Studies (ELPS) Program provided them with the foundational leadership skills to:

1. Develop and articulate a shared vision for comprehensive integration of technology and the use of digital age resources to support effective instructional practice and to promote the success of all students.
2. Advocate and sustain a digital age learning culture and instructional program conducive to student learning and meeting the diverse needs of all learners.
3. Advocate and sustain a digital age learning culture that supports long-term staff professional growth and development in technology fluency and integration.
4. Improve the management of the organization, operation, and resources for a safe and effective learning environment through the appropriate use of technology.

5. Collaborate with families and community members to meet diverse needs, mobilize community resources, and effectively communicate information about the school through the use of technology and digital media.
6. Model a personal and professional code of ethics and fairness related to digital culture, such as ensuring equitable access to digital resources, and responsible social media interaction.
7. Promote the success of all students by understanding and responding to the larger political, social, economic, legal and cultural context by establishing policies for the legal and safe use of digital information and technology.

A list of alumni from the Educational Leadership and Policy Studies Department's Educational Administration Masters Degree and California Preliminary Administrative Services Credential program from 2003-2013, and of the Doctoral (Ed.D.) in Educational Leadership program from its inception in 2008 to 2013, was procured from the university internal records department. The survey was administered electronically to all persons on the procured list of alumni, and the data was collected using an online survey provider.

Findings

Tables 1, 2, and 3 reflect the demographics of the subjects. Participants were queried on age, gender, year of graduation, program, years as a teacher, years as a principal, school level of teaching or administrative assignment, type of school, and current position.

Generally, there were 275 respondents, mostly female, aged 35-54, with Educational Administration Masters level graduate degrees obtained from 2007-2012. Most respondents identified themselves as teachers (general and special education) or administrators from public schools, at the pre-kindergarten through twelfth grade level. Many of the respondents in the category "other" identified themselves as being in other leadership positions such as program specialists, coordinators, or instructional coaches.

Table 1. Age, Gender, Graduation

AGE	% Respondents
21-34	15.7%
35-44	43.1%
45-54	24.5%
55-64	15.3%
65-74	1.5%
75+	0.0%
GENDER	% Respondents
FEMALE	69.0%
MALE	31.0%
MASTERS GRADUATION YEAR	% Respondents
NA	2.2%
2003	2.6%
2004	1.8%
2005	4.4%
2006	7.7%
2007	15.3%
2008	13.9%
2009	13.1%
2010	11.3%
2011	7.3%
2012	11.7%
2013	8.4%
2014	0.4%

Table 2. Professional Position

CURRENT PROFESSIONAL POSITION	% Respondents
General Education Teacher	36.1%
Special Education Teacher	6.6%
Counselor	1.5%
Nurse	0.7%
PK-12 Administrator	16.4%
Central Office Personnel	4.4%
College Instructor/Lecturer	1.5%
College Professor	2.9%
College Administrator	4.0%
Other	25.9%

Table 3. Years in Teaching/Administration and Where

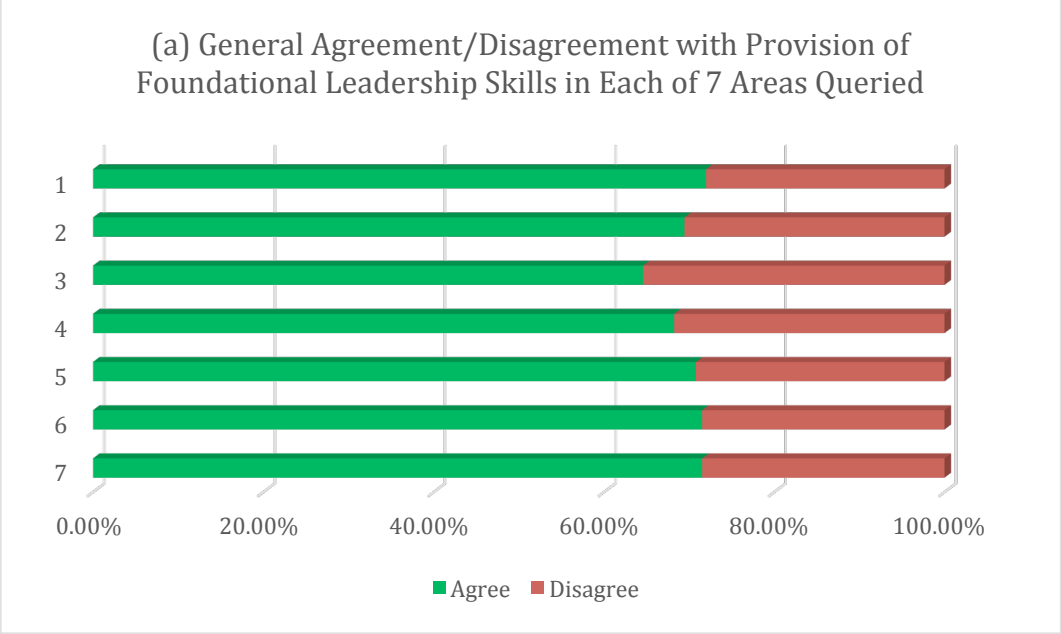
YEARS AS EDUCATOR PK-12 OR HIGHER EDUCATION	% Respondents
Less than 5 years	1.1%
5-10 years	20.5%
11-20 years	55.7%
21-30 years	16.5%
31 or more years	3.3%
Not Applicable	2.9%

YEARS AS PRINCIPAL OR ADMINISTRATOR PK-12 OR HIGHER	% Respondents
Less than 5 years	31.1%
5-10 years	15.2%
11-20 years	2.6%
21-30 years	0.4%
31 or more years	0.4%
Not Applicable	50.4%
LEVEL OF SCHOOL WHERE CURRENTLY WORKING	**% Respondents**
Preschool	1.1%
Elementary School	36.1%
Middle School	16.8%
High School	21.9%
Adult School	0.4%
Higher Education	12.4%
Not Currently Working in a School	11.3%
TYPE OF SCHOOL WHERE CURRENTLY WORKING	**% Respondents**
Public School or University	79.6%
Public Charter School	7.7%
Private School or University	3.3%
Parochial/Religious School	1.1%
Not Currently Working in a School or University	8.4%

Table 4 provides a general overview of the results of the survey, with part (a) highlighting the percentage of agreement or disagreement participants held regarding the provision of foundational leadership skills in each of the seven areas of query. Table 4(b) provides a summary of the Likert results for each of the areas queried. In general, the majority of respondents felt that the ELPS program had adequately equipped them with the foundational leadership skills in each of the above areas. The averages of the Likert survey results indicated that most respondents were somewhat in agreement, consistent with the overall percentages.

Table 4. (a) Percentage Agreement/Disagreement with whether or not the ELPS Program adequately provided foundational leadership skills in each of the seven areas queried. (b) Likert analyses.

1. Develop and articulate a shared vision for comprehensive integration of technology and the use of digital age resources to support effective instructional practice and to promote the success of all students.
2. Advocate and sustain a digital age learning culture and instructional program conducive to student learning and meeting the diverse needs of all learners.
3. Advocate and sustain a digital age learning culture that supports long-term staff professional growth and development in technology fluency and integration.
4. Improve the management of the organization, operation, and resources for a safe and effective learning environment through the appropriate use of technology.
5. Collaborate with families and community members to meet diverse needs, mobilize community resources, and effectively communicate information about the school through the use of technology and digital media.
6. Model a personal and professional code of ethics and fairness related to digital culture, such as ensuring equitable access to digital resources, and responsible social media interaction.
7. Promote the success of all students by understanding and responding to the larger political, social, economic, legal and cultural context by establishing policies for the legal and safe use of digital information and technology.



(b) Likert Results for Each of the 7 Areas Queried

Scale: 6=Strongly Agree; 5=Agree; 4=Somewhat Agree, 3=Somewhat Disagree; 2=Disagree; 1= Strongly Disagree

	1	2	3	4	5	6	7
Strongly Agree	49	40	41	45	42	52	50
Agree	76	76	62	72	69	73	75
Somewhat Agree	73	75	74	70	83	71	71
Somewhat Disagree	32	39	40	41	38	32	33
Disagree	32	34	42	34	32	33	32
Strongly Disagree	13	11	15	12	10	13	13
Avg	**4.14**	**4.06**	**3.91**	**4.06**	**4.08**	**4.15**	**4.14**
STD Dev	**1.41**	**1.36**	**1.44**	**1.40**	**1.34**	**1.43**	**1.42**

In addition to the overall analysis of data, several comparisons of data were examined. Comparisons of responses with regard to preparation in each of the seven areas listed above were performed for (1) respondents identifying themselves as current teachers (general or specialized education) versus respondents identifying themselves as current administrators; (2) respondents receiving masters degrees versus doctors of education; and (3) respondents graduating between 2003 and 2007 versus respondents graduating between 2008 and 2014.

Comparison of data from respondents identifying themselves as teachers versus administrators showed very little variation between these populations. In general, greater than 70% of the respondents in both these categories agreed that they had been adequately prepared in each of the seven areas, and all the averaged Likert scores varied little and ranged from 4.1 to 4.4 (see Table 5).

Table 5. Comparison of the Averages of the Likert Scores for Teachers versus Administrators in each of the Seven Areas Queried. (Scale: 6=Strongly Agree; 5=Agree; 4=Somewhat Agree, 3=Somewhat Disagree; 2=Disagree; 1= Strongly Disagree)

	Teachers	Administrators
1	4.40	4.23
2	4.23	4.3
3	4.11	4.16
4	4.19	4.2
5	4.13	4.21
6	4.26	4.23
7	4.27	4.21

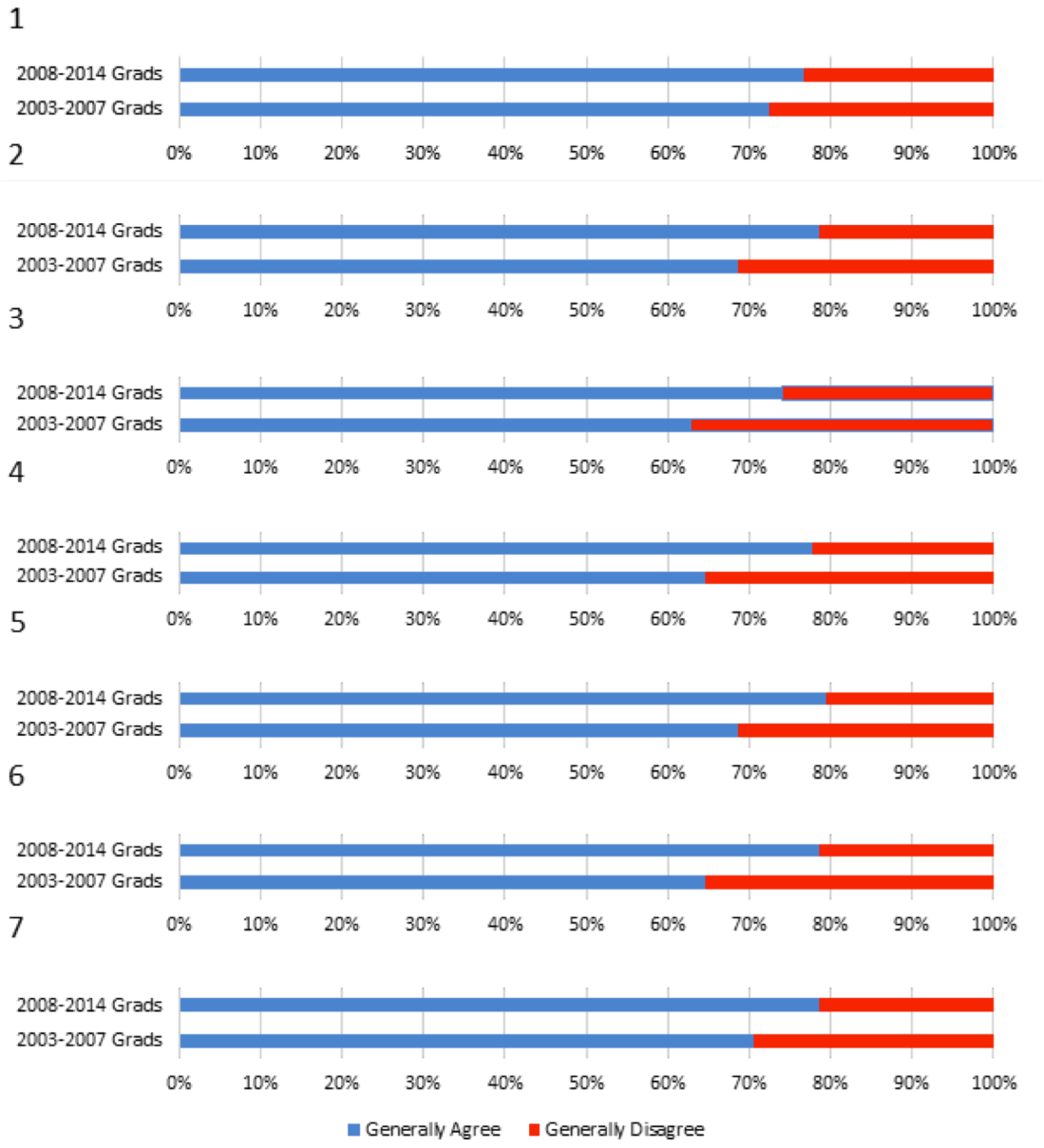
Due to the very low numbers of doctoral recipients responding to the survey, the comparison of the respondents receiving masters degrees versus doctoral degrees was not possible. This result is due in part because the first doctoral alumni graduated in 2011, providing a pool of only three cohorts total rather than the numerous numbers of masters degree cohorts graduating each year.

The final comparison, analyzing data from respondents graduating from ELPS programs prior to 2008 versus after did provide some insight. The year 2008 was chosen as this was the year the social media power, Facebook, had its membership exceed 100 million members

(www.facebook.com/notes/facebook/our-first-100-million/28111272130). In 2003-2004, social media was only beginning to appear, so it is anticipated that graduates prior to the social media explosion might feel less prepared that those coming after the boom. As you can see in Table 6, the earlier graduates, while still indicating that they were, generally, well prepared, tended to indicate in all seven of the areas that they had less preparation than the later graduates. Note that, with the exception of areas 1 and 7, at least 10% more of the early graduates indicated that they did not agree that they were well prepared in these areas. This is accentuated by the frequent comment from these early graduates that, "Integration of technology into instruction was not an emphasis in the program [when I was a student]."

Table 6. Percentage Agreement/Disagreement with whether or not the ELPS Program adequately provided foundational leadership skills in each of the seven areas queried for early masters graduates (2003-2007) versus later masters graduates (2008-2014).

General Agreement/Disagreement with Provision of Foundational Leadership Skills in Each of 7 Areas Queried in Masters Graduates 2003-2007 vs. 2008-2014



Discussion of Results

Although the Lickert scale responses, percentages, and statistics are clearly enumerated above, each of the seven areas of query also allowed for comments from the respondents. From many of these comments the researchers could glean recommendations for program improvement from the alumni, themselves. For example, several of the comments were similar to the following:

"Did the program give me skills to create a vision and implement them? I believe it did. While we did not necessarily discuss each one of the topics from the above questions, much of this was implied; ethical conduct, educating all types of learners, inclusion of family, community and stakeholders, etc. [For each of] the specific questions though, I have [indicated that I] disagree because the topics, such as the use of technology to sustain digital age learning, were not specifically taught."

This qualified statement summarizes the findings of this study fairly well. While the ELPS program has provided good leadership foundations, there is an implicit recommendation that the program needs to do a better job integrating technology throughout the curriculum. However, the program has not been completely remiss in the area of digital learning, as the data show that technology has gradually become more integrated within the coursework over the years. This is evidenced by more recent participants in the program who, when compared to earlier graduating classes, are in slightly higher agreement that the programs prepared them for the digital age.

A number of other comments from the survey may provide further insight and suggestions from alumni:

Under the first query, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to develop and articulate a shared vision for comprehensive integration of technology and the use of digital age resources to support effective instructional practice and to promote the success of all students?, one respondent provided the following comment: "Lack of resources decrease[s] opportunities for tech integration within the program. Fantastic program in general, but limited in the area of tech integration. Because of the steep learning curve in this innovative area, I feel that through the efforts of the graduate students themselves, articulation has become stronger in tech use. This includes utilizing technology resources for teachers/administrators to streamline data, [using] resources to support diversified learning, and integration of technological tools like PowerPoint, email, sending attachments, and sharing files." Similarly, a number of other respondents commented on the lack of resources, trouble with wifi connections, and other access issues.

To address the question, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to advocate and sustain a digital age learning culture and instructional program conducive to student learning and meeting the diverse needs of all learners?, a couple of respondents commented: "The program taught me how to be an advocate and how to sustain a culture of learning to meet the needs of diverse learners. This could be applied to digital age learning; it isn't framed by technology alone," and "the coursework I took was mainly based on theory and practical application of administrative situations. From the time I took the course to now, there has been such an

increase in digital age learning. A focus on this is a must for today's administrators." These were common themes in that a number of respondents were satisfied with the foundational skills and knowledge provided by the program but felt that technology was advancing so rapidly that a preparation course would be challenged to address new technologies at a fast enough pace to keep up with the changes. The strong leadership foundation, therefore, remains critical.

Under the third query, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to advocate and sustain a digital age learning culture that supports long-term staff professional growth and development in technology fluency and integration?, respondents said: "Although I answered somewhat agree, I feel that I gained much more from the program. The digital portion of the program was minimal, but the lessons learned were invaluable to my work as an administrator. The digital portion is easy to learn with basic knowledge," and "even still, technology is evolving so fast, once cohorts finish their 18 month program, the technology becomes obsolete." Similar to Query 2, most respondents received foundational skills but acknowledge that the program did not directly address digital age learning issues.

The fourth question, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to improve the management of the organization, operation, and resources for a safe and effective learning environment through the appropriate use of technology?, resulted in comments such as: "Ongoing additional networking supports and resources will continue to be needed to complement and grow previously acquired foundational leadership skills developed given the impermanence of technological innovation,"
and "the program taught me how to be an advocate and how to work toward management of the organization, operations, and resources for a safe and effective learning environment; it isn't framed by technology alone." Although only by a slight variation, this area scored lowest in the Likert scaled section of the survey- indicating that participants generally felt least prepared in this critical area. Today's technology leaders must be well prepared in digital age leadership and management skills to achieve student success.

Under the fifth query, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to, collaborate with families and community members to meet diverse needs, mobilize community resources, and effectively communicate information about the school through the use of technology and digital media? Here is a comment: "Although we discussed communication theoretically, analyzing actual digital communication and setting priorities for my school's digital communication through study would have been beneficial." Communicating with school stakeholders is an area where school leaders can readily use technology and model its use to teachers and staff and parents.

To address the sixth question, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to model a personal and professional code of ethics and fairness related to digital culture, such as ensuring equitable access to digital resources, and responsible social media interaction?, alumni responded, "Not specific to new demands in the digital age." Again, it is clear that the program must directly address the issues relevant to the digital age of teaching and learning.

Finally, under the seventh query, did the Educational Leadership & Policy Studies (ELPS) Program provide you with the foundational leadership skills to promote the success

of all students by understanding and responding to the larger political, social, economic, legal and cultural context by establishing policies for the legal and safe use of digital information and technology?, responses included: “digital information and technology wasn't a target of our classes” and “the law class especially helped in this area.” Future administrators must be informed regarding changes in the laws concerning freedom of speech, search and seizure, privacy, copyright, and other legal areas affected by the rapidly changing digital landscape.

In reviewing the responses to all seven queries, researchers found that, while alumni generally agreed that the ELPS program provided a solid leadership foundation and skills that can be applied to technology, additional preparation directly addressing technology integration in educational settings and curriculum is needed to best prepare 21st Century educational administrators.

Recommendations

There are several recommendations from the literature. McLeod, Bather, & Richardson (2011) suggest three areas of focus for principal preparation: 1) use digital technology, not just to enhance traditional educational leadership content delivery, but to transform the content itself; 2) train future school administrators not only to use digital tools but also how to better use digital technologies to improve course content to improve student achievement; and 3) prepare school administrators to become better technology leaders, focusing on the leadership itself as well as the technology tools.

Woelfel, Murray, & Hambright (2004) found three successful strategies to keep technology current in their educational leadership program. First, identify the national, state, and university standards; second, align the curriculum and the instruction; and, third, support technology for instructors and students.

The recommendations from alumni of the program were varied. The most common recommendations include: provide better resources and networking support, focus on and use technology to sustain digital age learning, keep a strong leadership foundation, emphasize leadership and management in technology, study school digital communication systems, and, most mentioned, integrate technology throughout the entire program, including pertinent content areas such as the law.

After reviewing all of the various recommendations and findings, it becomes clear that the status quo is not an option. The state standards are in revision and change is here. By listening to those who have completed educational leadership programs and are now practitioners within the community, we can infuse our administrative program with dynamic digital age learning opportunities and make sure technology is integrated into all facets of each course. A plan that aligns with both ISTE and state standards will provide a solid foundation to bring our programs into the digital age. Using the educational law course as an example, faculty can make sure to supplement textbooks and course materials with the latest statutes, caselaw, and regulations regarding legal technology issues, such as on and off-campus online speech, cyberbullying, student cell phone searches, teacher cell phone usage, acceptable use policies for use of school computer networks, and copyright issues. Faculty teaching the special education course might cover assistive technology and use of tablets as a curriculum tool. An online leadership instructor might use Moodle or another course management system to set up timed assessments, create online discussion forums, and connect students to another university through learning networks. Each course in the

curriculum would be scrutinized for technology integration and to ensure that principals are prepared to be technology leaders.

Upon implementation of the phase two portion of this study, involving face-to-face interviews of sitting principals to gather their perspective on technology leadership and principal readiness, additional recommendations are anticipated.

Conclusion

A survey of program alumni can provide valuable data in determining effective changes in the curriculum. While most alumni surveyed in this study gave positive ratings to the current Educational Leadership program, most alumni also identified a need for additional preparation that specifically addresses the role of the principal as technology leader. As standards change and programs are realigned to meet those standards, university principal preparation programs should take a hard look at where their programs excel and where they might be improved. Preparation for the principal as technology leader must be more than learning to use PowerPoint presentations and how to create an online course on Moodle. Proficiency in the use of technology tools is necessary but simply using digital technology to deliver traditional content in the classroom will not meet the needs of the "net generation" (English, Papa, Mullen & Creighton, 2012, p.26). Technology must be fully and comprehensively integrated into the content of every class, and universities need to provide professional development for instructors and network support in classrooms. Neither the "net generation" students nor the "millennial" administrators will tolerate a principal preparation program that does not integrate technology leadership into the course of study.

References

Anderson, R., & Dexter, S. (2005). School technology leadership: an empirical investigation of prevalence and effect. *Educational Administration Quarterly, 41*(1), 49-82.

California Commission on Teacher Credentialing (2004). *Standards of Quality and Effectiveness for Administrative Services Credentials*. Sacramento: California Department of Education.

Council of Chief State School Officers (CCSSO). (2008). *Interstate school leaders licensure consortium: Standards for school leaders.* Washington D.C.:Author.

Creighton, T. (2003). *The principal as technology leader.* Thousand Oaks: Corwin Press.

Dale, K., Moody, R., Slattery, M., & Wieland, R. (2007), The essential role of *integrating* technology content and skills into university principal preparation programs. *The Rural Educator,*42-47.

Davies, P.M. (2010). On school educational technology leadership. *Management in Education, 24*(2), 55-61.

Donlevy, J. (2004). Preparing future educational leaders: technology standards for school administrators. *International Journal of Instructional Media, 31*(3), 213-217.

English, F.W., Papa, R., Mullen, C.A., Creighton, T. (2012). *Educational Leadership at 2050.* Lanham: Rowan & Littlefield.

Greenlinger, J. A. (2013). *Minding the gap: baby boomer superintendents' leadership and support of millennial principals* (doctoral dissertation). Retrieved on June 11, 2013, from http://hdl.handle.net/10211.2/3215.

Hayashi, C.A., & Fisher-Adams, G. (2013, August). *Leading the tweeting: a look at leadership preparation and legal issues in the social and learning digital networking arenas.* Paper presented at the Annual Meeting of the National Council of Professors of Educational Administration, Rutherford, New Jersey.

Hess, F.M., & Kelly, A.P. (2007). Learning to lead: what gets taught in principal preparation programs. *Teachers College Review, 109*(1), 244-274.

Hughes, J., McLeod, S., Dickers, A.G., Whiteside, A., Becker, J.D., Logan, J.P., Mayrose, J., & Quinn, D.M. (2005, April). *Building capacity for technology leadership in educational administration preparation programs.* Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Quebec

International Society of Technology in Education (2009). *ISTE Standards for Administrators.* Retrieved May 2, 2014, from https://www.iste.org/standards/standards-for-administrators.

Korach, S., & Agans, L.J. (2011). From ground to distance: the impact of advanced technologies on an innovative school leadership program. *Journal of Research on Leadership, 6*(5), 216-233.

Kowch, E.G. (2013). Wither thee, educational technology? Suggesting a critical expansion of our epistemology for emerging leaders. *Tech Trends, 57*(5), 25-34.

McLeod, S., Bathon. J.M., Richardson, J.W. (2011). Studies of technology tool usage are not enough: a response to the articles in this special issue. *Journal of Research on Leadership Education, 6*(5), 288-297.

Ottenbreit-Leftwich, A.T., Brush, T.A., Strycker, J., Gronseth, S., Roman, T., Abaci, S. vonLevsen, P., Shin. S., Easterling, W., & Plucker, J. (2012). Preparation versus practice: How do teacher education programs and practicing teachers align in their use of technology to support teaching and learning? *Computers and Education, 59*, 399-411.

Papa, R. (2011). *Technology leadership for school improvement.* Thousand Oaks, CA: Sage.

Redish, T., & Chan, T.C. (2007). Technology leadership: aspiring administrators' perceptions of their leadership preparation program. *Electronic Journal for the Integration of Technology in Education, 6*, 123-139.

Ribble, M,. & Miller, T.N. (2013). Educational leadership in an online world: connecting students to technology responsibly, safely, and ethically. *Journal of Asynchronous Learning, 17*(1), 135-143.

Schrum, L., Galizio, L.M., & Ledesma, P. (2011). Educational leadership and technology integration: an investigation into preparation, experiences, and roles. *Journal of School Leadership, 21*, 241-261.

Sincar, M. (2013). Challenges school principals are facing in the context of technology leadership. *Educational Sciences: Theory and Practice, 13*(2), 1273-1284.

Woelfel, K.D., Murray, K., & Hambright, A. (2004). Making sense of technology in educational leadership programs. *Tech Trends, 48*(5), 31-35.

Young, M.D., & Brewer, C. (2008). Fear and preparation of school leaders: the role of ambiguity, anxiety, and power in meaning making. *Educational Policy, 22*(1), 106-129.

Zuckerberg, M. (2008). Our first 100 million. (www.facebook.com/notes/facebook/our-first-100-million/28111272130)

Appendix A

The International Society for Technology in Education's Standards for Administrators (ISTE Standards-A):

1) Visionary Leadership: Educational administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization.
2) Digital Age Learning Culture: Educational administrators create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students.
3) Excellence in Professional Practice: Educational administrators promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources.
4) Systematic Improvement: Educational administrators provide digital age leadership and management to continuously improve the organization through the effective use of information and technology resources.
5) Digital Citizenship: Educational administrators model and facilitate understanding of social, ethical and legal issues and responsibilities related to an evolving digital culture. (https://www.iste.org/standards/standards-for-administrators).

Appendix B

The Preliminary Administrative Services Credential: Standards of Candidate Competence and Performance Standards:

1) Vision of Learning: Each candidate is able to promote the success of all students by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by the school community.
2) Student Learning and Professional Growth: Each candidate is able to promote the success of all students by advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional growth.
3) Organizational Management for Student Learning: Each candidate promotes the success of all students by ensuring management of the organization, operations, and resources for a safe, efficient, and effective learning environment.
4) Working with Diverse Families and Communities: Each candidate promotes the success of all students by collaborating with families and community members, responding to diverse community interests and needs, and mobilizing community resources.
5) Personal Ethics and Leadership Capacity: Each candidate promotes the success of all students by modeling a personal code of ethics and developing professional leadership capacity.
6) Political, Social, Economic, Legal and Cultural Understanding: Each candidate promotes the success of all students by understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context (California Commission on Teacher Credentialing, 2004, p.51-58)