CULTURALLY RESPONSIVE EDUCATIONAL TECHNOLOGY

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI‘I AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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By

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This dissertation is an outcome of the doctoral program in Professional Educational Practice which was launched at the University of Hawai‘i-Mānoa in 2011. I entered the program with a career that included over a decade of teaching and leadership experience; this was a logical next step in my professional development. This degree offered me a holistic and experiential approach to resolving problems, providing opportunities to gain skills and information which I could apply to analyzing, articulating, and addressing challenges in the field. This doctoral program catalyzed a crystallization of an authentic professional practice grounded in Pā’å Taotaotano’ (Chamoru ways) manifested within the context of western organizations and resonates with my Chamoru heritage because it promotes learning that can be applied to helping others, a cultural imperative. I hope to convey some of the positive spirit of this doctoral program in this work and am honored to have been a member of the first cohort.

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ABSTRACT

Teacher education programs have long acknowledged the importance of cultural competence as well as technology proficiency in practitioners. It is generally accepted that improvements to learning occur when educators are skilled in addressing both domains; in the United States, National Educational Technology Standards have been adopted by all states. In 2011, UNESCO's Institute for Information Technologies in Education recommended policy structures and initiatives to empower Indigenous peoples, calling for “educators who are competent in using information and communication technologies in culturally responsive ways.” Culture is recognized as an essential factor, yet its relationship to educational technology practices has not been explored. Graduation requirements of teacher education programs include coursework in multicultural education and educational technology; these fields represent two separate but essential strands in most programs. There is a paucity of information on "culturally responsive uses of information and communication technologies" in texts used in multicultural education and educational technology courses. This is also an issue for in-service faculty at all levels. Professional development opportunities address culture-based teaching and technology integration as disconnected topics.

This dissertation explores how and why these two currently-distinct strands should converge and be interwoven; to intersect and add depth, color and strength to the fabric of the praxis of educators. The overarching question of this study is, "What can we learn about indigenizing educational technology by examining the experiences of technology-using Indigenous educators?" This question was addressed though a qualitative action research study using focus group interviews embracing a research design and methodologies that honor
Indigenous ways of being, ways of knowing and values. Participants described their views of learning and teaching in a manner consistent with this framework and identified characteristics of education consistent with Indigenous Learning Theory. They identified ways that technology can be used to support Indigenous learners, concerns around inappropriate uses of technology and reflected on their own work, sharing aspirations about technology. This work can promote a deeper understanding of Indigenous cultures of the US-affiliated Pacific Islands and advance educational technology practices that create harmonious learning experiences for Indigenous students and educators at all levels.
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CHAPTER 1. INTRODUCTION

Instructional Technologies and Indigenous Peoples

Teacher education programs have long acknowledged the importance of cultural competence as well as technology proficiency in practitioners. It is generally accepted that improvements to learning occur when educators are skilled in addressing both domains, and in the United States (US), national educational technology standards for digital age teaching developed by the International Society for Technology in Education (ISTE), have been adopted by all states (Appendix 1). In pre-service teacher education programs, graduation requirements include coursework in multicultural education and educational technology; these fields represent two separate but essential strands in most programs. This action research dissertation explores how and why these two strands should converge and be interwoven, as warp and weft\(^1\); to intersect and add depth, color, and strength to the fabric of the praxis of American educators.

In 2011, UNESCO's Institute for Information Technologies in Education recommended policy structures and initiatives to empower Indigenous culture and education by providing Indigenous peoples and schools with equitable access to:

- Digital devices and broadband connectivity to the Internet
- High quality, culturally appropriate digital learning resources
- Educators who are competent in using information and communication technologies (ICTs) in culturally responsive ways

\(^1\) In weaving the weft is the term for the thread or yarn which is drawn through the warp yarns to create cloth. Warp is the lengthwise or longitudinal thread in a roll, while weft is the transverse thread. The expression "warp and weft" is used metaphorically as one might similarly use "fabric" and as a metaphor for the underlying structure on which something is built.
• Use of ICTs for preserving and revitalizing indigenous languages and for the creation or sharing of culturally-based knowledge and content (UNESCO, 2011, p. 2).

Significant progress has been made in addressing most of these recommendations; technology infrastructures and inventories of digital devices are expanding and there exist many instances of high quality, culturally appropriate learning materials, virtual environments, learning objects, linguistic and other cultural resources to honor, sustain, promote, and invigorate Indigenous cultures, including curricular guides to facilitate culturally responsive teaching for specific Indigenous groups. Examples include the Ontario Ministry of Education’s Teacher’s Toolkit, Alaska Native Knowledge Network, Kutturan Chamoru Foundation, Pacific Resources for Education and Learning (PREL), Pacific Network, and Teaching Truly: A Curriculum to Indigenize Mainstream Education, to name a few.

Despite these advances, very little has been done to address the third recommendation that is predicated on a concept, i.e., "culturally responsive uses of information and communication technologies," that is not even present in our teacher education curricula. The five national ISTE (2008) standards and twenty performance indicators do not reflect culturally responsive pedagogies and only one performance indicator has a direct link to culture: Standard 4: Promote and model digital citizenship and responsibility. Performance Indicator: Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools (p.2).

There is a paucity of information in texts used in both multicultural education and educational technology courses offered by the two institutions, with which I am affiliated -- the University of Hawai'i at Mānoa (UHM) and Kapi'olani Community College (KCC). This is also
an issue for in-service faculty at all levels. Professional development opportunities address culture-based teaching and technology integration as separate and distinct topics.

Culture is recognized as an essential factor in education, yet its relationship to educational technology practices has not been explored and a much-needed convergence has yet to occur. This action research project seeks to address this deficit by examining the technology-related experiences of Indigenous educators and using learning from those experiences to suggest culturally responsive educational technology practices.

**An Exploration of Experiences as a Vehicle for Learning**

Action research is a process in which knowledge stems from direct lived experiences (McNiff, 2013); therefore, we will explore the experiences of Indigenous educators who are familiar with instructional technologies. This examination will involve identifying and reflecting on instances of dissonance and resonance between technology integration and Indigenous learning orientations. We will ground our exploration in Indigenous epistemologies\(^2\), ontologies\(^3\), and axiologies\(^4\) as these are central to an understanding of Indigenous learning.

Traditional Indigenous educational systems are holistic, with pedagogies and learning orientations informed by integrative ways of being and knowing that promote and are rooted in core cultural values. The western philosophical constructs of ontology, epistemology and axiology, while very “un-Indigenous” in their reductionism, are used here as building blocks or scaffolds to facilitate comprehension and provide a springboard for cross-cultural discourse among educators - the primary audience of this paper.

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\(^2\) Ways of knowing; epistemology inquires into the nature of knowledge and truth (Chilisa, 2012, p.21).

\(^3\) Ways of being, the nature of reality.

\(^4\) Value systems; axiology deals with the nature of ethics and spirituality and their role in the construction of knowledge (Chilisa, 2012, pp. 21-22).
Using Lived Experiences of Practitioners to Inform Improvement

Indigenous educators have sought to reform the curriculum in an effort to create more harmonious learning experiences for their people. Through this study, participants will provide suggestions for improvements to practice in the form of specific recommendations for culturally responsive educational technology pedagogies.

Given Hawai‘i's multicultural environment and my institution's (KCC) commitment to becoming a leading indigenous-serving educational institution, our exploration of culturally responsive educational technology will be embedded in the context of Indigenous Peoples. A review of the literature indicates that culturally responsive pedagogies facilitate success for Indigenous and can also support success of non-Indigenous students.

Who Are Indigenous Peoples?

The term 'Indigenous peoples' has no single universally-accepted definition. For the purposes of this paper, we will use statements from the United Nations' paper, "The Concept of Indigenous Peoples" by the Secretariat of the Permanent Forum on Indigenous Issues (2004) who wrote:

Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their
continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system. (p.2)

Additional descriptors from this UN report will be presented in the next chapter.

This study focuses on experiences of the Indigenous Peoples of the Pacific Islands, primarily those in U.S.-affiliated islands of Polynesia and Micronesia (refer to Appendix 2 for a map of this region); those in the latter group represent a rapidly-growing population in Hawai‘i and other parts of the U.S. but their experiences have not been well-documented. This paper is a contribution to the body of information about this group. This work represents what Cree-Saltaux researcher Margaret Kovach (2010) calls "entry points for Indigenous knowledges to come through" (Prologue, para. 13). It provides a forum for Indigenous educators to explore issues of disconnects and disharmony between our educational praxis and our cultures, and to suggest improvements vis-à-vis culturally responsive educational technology.

This could be transformative research not only for the participants, but for other educators and their students. As McNiff and Whitehead (2010) note, "Perhaps the most powerful aspect of action research is that practitioners become aware of their capacity to influence the future, especially in relation to new forms of social and cultural practices" (p. 23). On a broader level, it enables appreciation for diversity in education as Bruner (1996) advocated: “The objective of skilled agency and collaboration in the study of the human condition is to achieve not unanimity, but more consciousness. And more consciousness always implies more diversity” (p. 97).

This information from Indigenous practitioners may lead to a re-conceptualizing of classrooms both physical and virtual, which integrate educational technologies in a culturally responsive manner. The findings of this study may also guide professional development
programs for College staff - instructional and counseling faculty and other student services professionals - with the aim to improve learning. On a personal level, my aspiration is to facilitate conceptual bridges between Indigenous and Euro-American spaces, offering explanations and constructs that support mutual understanding, respect and appreciation between Indigenous and non-Indigenous people.

**Personal and Professional Contexts**

I am from the island of Guam or Guåhan and of Chamoru and Japanese heritage. The word 'Chamoru' refers to the people and language indigenous to Guåhan and Sankattan Siha Na Islas Mariånas (the northern islands of the Marianas). Together these islands comprise a single chain but have distinct political statuses. Guåhan is an unincorporated territory of the United States of America (US); Sankattan Siha Na Islas Mariånas, the Commonwealth of the Northern Mariana Islands (CNMI) is also a political entity of the US. Refer to Appendix 2 for a map of this region.

First ceded by Spain to the US in 1898 and then made a territory in 1948, Guåhan's systems of education and government are American. The culture is distinctly Chamoru and the language is a vital component of that culture. In the writing of this paper, I will use Chamoru terms followed by English translations provided parenthetically rather than follow the standard practice of italicizing the Indigenous word; a convention that privileges the colonial language (English).

Chamoru ontology prioritizes a communal, place-based identity; Chamoru axiology honors relationship and reciprocal care. The ethos underlying Chamoru epistemology, ontology, and axiology is known as inafa' maolek (to make good), a holistic philosophy which promotes harmonic interdependence among all beings living and non-living, human and non-human, and
events in the past, present, and future. It is an ethos of direct, lived experiences in our spaces (ordinary and non-ordinary, natural and super-natural), practicing harmonious relationships and reciprocal actions for the well-being of the whole rather than the individual (Perez-Iyechad, 2009). In this Indigenous framework, American concepts such as individuality, competition, singular achievement, and accumulation of possessions are discordant with Chamoru ways and customs.

One of nine children, I was blessed with singularly nerdy parents – dad a geophysicist, mathematician, and amateur photographer and mom a successful executive secretary who, like generations before her, embraced modern technologies as tools to improve efficiency and enrich her professional life. She continually encouraged us to let technology make our work easier and more productive. My siblings and I grew up surrounded by technology in our home and in our parents' office buildings. Seismographs, adding machines, manual and electric typewriters, Dictaphone, abacuses, electronic calculators, analog and digital clocks, meters, cameras, a darkroom filled with photo processing/developing equipment, telescopes, oscilloscopes, short wave and CB radios, and some of the first commercial home computers and game systems like the Commodore 64, TRS-80, Atari VCS, and KayPro II. In the early 1980s, as a teenager, I discovered a new form of empowerment and creative expression when I learned to write BASIC computer programs on the TRS-80 and the Apple II computers. The logical order of prescribed flow and control structures gave rise to seemingly endless low-cost, low-risk opportunities for original expression and creation through experimentation, combinations of forms, organizing and reorganizing, deconstructing problems and constructing solutions, variations of input, and multi-sensory experiences. I discovered an affinity not only for writing computer programs, but for teaching others to do so and started teaching computer programming shortly after graduating.
from high school, to groups of students at my alma mater and at Damien Memorial High School on the island of O'ahu in the state of Hawai'i.

I pursued this interest in technology throughout college, taking Engineering and Computer Science courses as electives while I studied my primary passion – Teaching. I helped my parents fund my undergraduate education by working as a student employee at my university, providing clerical and technical support for a large student services office. A major project included writing a program in Pascal to track academic actions taken by the university for students making insufficient academic progress; thousands of records were reviewed at the end of each term, necessitating a plethora of letters, mailing labels, and lists. I would later supplement that position with another campus job, editing research reports produced by engineers and computer scientists at the UHM's ALOHAnet laboratory, originator of the first wireless packet-switched network directed by Professor Norman Abramson.

I earned a baccalaureate degree and Professional Diploma in Education with a focus on Secondary Social Studies and concentration in Pacific Islands History, then went on to complete a Master's degree in Educational Technology. During my post-baccalaureate studies, I was employed by student support services units at UHM providing a variety of technology support and management services for students, faculty, and staff. I held positions as an Educational Specialist, Computer Specialist, and Specialist Faculty (Academic Advisor). In the early 1990s, I started teaching at the tertiary level in the academic disciplines of Information Technology, Computer Science and Educational Technology and continue to do so now.

Currently, my primary role is manager of technology services at KCC, a role I have held since 2005; my secondary function is teaching on-line courses for KCC’s pre-service education program and UHM's graduate degree program, the Certificate in Online Learning and Teaching.
I also provide professional development leadership and support for employees including development of skills in the area of using technology to support student engagement, learning, and achievement.

As an Indigenous person experiencing educational technologies as both a student and teacher, and as a teacher of pre-service educators and in-service college faculty, I have and continue to experience what McNiff & Whitehead (2010) aptly label "a living contradiction in which one's values are denied in one's practice as a clear starting point for action enquiry; that is, episodes when you experience dissonance between your values and beliefs and your actions" (p. 93). In promoting traditional western principles of Educational Technology, I have participated in denying my own cultural values and have not adjusted to be a culturally responsive practitioner and promoter of culturally responsive uses of educational technologies. A product of a western educational system that has little awareness of and no commitment to culturally responsive technology pedagogies, I have engaged in teaching P-20 educators to integrate technology into the curriculum following Euro-American principles and values, all the while, ignoring any ways that those practices may contradict my own and other Indigenous ways, beliefs and values.

This action research dissertation is a footstep on my path to inafa' maolek (to make things good or right). The action research model is ideal here given its holistic approach of critically examined actions (Herr & Anderson, 2005) and the practice of identifying what we want to achieve in terms of the values we hold, and offering justification for the action we take (McNiff & Whitehead, 2010).
This work also represents part of my own ongoing, dialogical process of professional growth that I hope contributes to the development of others, in a spirit described so eloquently by McNiff (2013)

Action researchers regard learning and experience as processes that enable individuals and groups to negotiate choices about who they are and how they are together. They do not aim for consensus or harmony, but try to create spaces of understanding for negotiating differences. Therefore, reflection on action, an idea popularised by Schön (1983, 1995) becomes a core assumption. However, this makes sense only when practice is seen as in relation with others, a process of dialogue and encounter (Buber 2002), which may also be understood as a form of spirituality (not necessarily to do with religious belief, although it can be). Capra et al. (1992) believe that relation means belonging. We are all connected in deep ways, and, because we are made of the same stuff as the stars (Feynman 1999), we are also connected with the whole of creation. We belong to one another and therefore to the universe (pp. 30-31).

Chamoru people have long understood cross-cultural negotiations, connection and belonging. Our culture is grounded in timeless concepts and values but as a result of centuries of interaction with foreigners, is dynamic and highly adaptive, and we recognize the reflexivity that occurs when the Chamoru parts of ourselves and our society interact with the non-Chamoru parts – we know that we are all changed in that interaction and reflection. There are points of tension between cultures, but there are many more points of rich intersection wherein the interplay between those cultures produces highly effective strategies, some of which I hope to bring to bear in this dissertation. Through this study which is being conducted to fulfill degree requirements of an American institution, I hope to honor my heritage by adapting traditional
western academic constructs in ways that are compatible with and supportive of my Indigenous values; ways that lead to achievement of Indigenous educational aspirations. The mindset and habits of Oceanic peoples are woven throughout my work, with purposes, participants, theoretical frameworks, and data collection methods that resonate with my native culture. This work can promote a deeper understanding of Indigenous cultures of the US-affiliated Pacific Islands and advance educational technology practices that create harmonious learning experiences for Indigenous students and educators at all levels. These statements by McNiff (2013) parallel the holistic approach to the problem being studied:

Questions therefore arise about what action researchers do, and how and why they do it. These are questions to do with how we view ourselves (ontology), how we come to know (epistemology), how we do things (methodology) and what we hope to achieve (socio-political intent). These aspects are always interrelated and mutually reciprocal" (p. 25).

This study is also rooted in prior work of Indigenous scholars to whom I owe a debt of gratitude for the powerful examples and inspirational contributions they provide, especially for novice researchers like me. I hope to honor these role models with this humble work and acknowledge that as a newcomer to this path, my journey has been made easier by these ground-breaking Indigenous scholars and other scholars of issues relevant to Indigenous peoples: Linda Tuhiwai Smith (2002), Anne Perez Hattori (2004), Manulani Aluli Meyer (2004), Four Arrows (2008, 2013), Marie Iding (2008), Joakim Peter (2008), James Skouge (2008), L. James Barber (2009), Shawn Wilson (2009), Margaret Kovach (2010), Vicente Diaz (2010), Lola Quan Bautista (2010), Lorri J. Santamaría (2011), Timote Vaioleti (2011), Margaret Hattori-Uchima (2013), Greg Cajete (2013).
Background to the Research

Kapi'olani Community College (KCC) is the largest of the seven community colleges in the University of Hawai‘i Community College (UHCC) system. It is an urban institution offering comprehensive liberal arts, natural sciences and 21st century career programs. The campus enrolls approximately 9,000 students a semester; 20% are Indigenous Pacific islanders (Hawaiian, part-Hawaiian, and Pacific Islanders). One of the College's six major goals is to become a leading Indigenous serving tertiary institution (Kapi'olani Community College Strategic Plan: 2008-2015).

Despite this commitment to lead the way for Indigenous serving institutions, knowledge of Indigenous epistemologies, ontologies, axiologies, or Indigenous learning theory is minimal among College faculty and staff who serve these students. Technology integration is high and increasing, yet it is based on American standards and not on any information about what might be culturally appropriate for Indigenous students. Faculty professional development
opportunities in the area of culturally responsive education are limited to one small community of practice (five to a dozen faculty) meeting informally to discuss Hawaiian values and Hawaiian pedagogies. In Spring 2014, one professional development institute was hosted by this faculty group using a native Hawaiian place-based, culture-based model for curriculum development. There is an awareness that "identities are highly salient for students' experiences in school; they make the classroom a different place for different students” (Moya, p. 96), but without a clear understanding of identities and related aspects of Indigenous students, College faculty may create learning environments that are incompatible with these students' cultural norms, thus negatively impacting student success.

Data from the Community College Survey of Student Engagement (CCSSE) for 2012 shows that technology usage is very high among KCC students, with 75.5% of respondents using the Internet or Instant messaging to work on an assignment often or very often, 82.9% using computers in academic work quite a bit or very much, and 66.6% using computing and information technology quite a bit or very much. See Table 1.

**Table 1: CCSSE Technology Questions**

<table>
<thead>
<tr>
<th>Community College Survey of Student Engagement (CCSSE)</th>
<th>Survey Year</th>
<th>2010</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>43. j. Used the Internet or instant messaging to work on an assignment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Often</td>
<td></td>
<td>46.10</td>
<td></td>
</tr>
<tr>
<td>Often</td>
<td></td>
<td>29.40</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td></td>
<td>19.30</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td>5.30</td>
<td></td>
</tr>
<tr>
<td>44. k. Using computers in academic work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Much</td>
<td></td>
<td>50.30</td>
<td></td>
</tr>
<tr>
<td>Quite a Bit</td>
<td></td>
<td>32.40</td>
<td></td>
</tr>
<tr>
<td>Some</td>
<td></td>
<td>13.30</td>
<td></td>
</tr>
<tr>
<td>Very Little</td>
<td></td>
<td>3.70</td>
<td></td>
</tr>
<tr>
<td>45. l. Using computing and information technology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Much</td>
<td></td>
<td>32.30</td>
<td></td>
</tr>
<tr>
<td>Quite a Bit</td>
<td></td>
<td>34.30</td>
<td></td>
</tr>
<tr>
<td>Some</td>
<td></td>
<td>23.50</td>
<td></td>
</tr>
<tr>
<td>Very Little</td>
<td></td>
<td>9.80</td>
<td></td>
</tr>
</tbody>
</table>
Faculty and staff regularly use computers in the execution of their primary duties to support student achievement and success, as shown in the following two tables.

**Table 2: Faculty and Staff Technology Use**

<table>
<thead>
<tr>
<th>Question 30. How much do you need the following equipment in your primary duty to promote student learning/success? (III.B.)</th>
<th>Absolutely</th>
<th>Very much</th>
<th>Somewhat</th>
<th>A little</th>
<th>No need</th>
<th>Total Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Device</strong></td>
<td>Absolutes</td>
<td>Very much</td>
<td>Somewhat</td>
<td>A little</td>
<td>No need</td>
<td>Total Response Count</td>
</tr>
<tr>
<td>1) Clickers</td>
<td>All</td>
<td>18</td>
<td>6.9%</td>
<td>22</td>
<td>8.4%</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>16</td>
<td>7.4%</td>
<td>22</td>
<td>10.2%</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>2</td>
<td>4.3%</td>
<td>0</td>
<td>0.0%</td>
<td>4</td>
</tr>
<tr>
<td>2) Copier</td>
<td>All</td>
<td>174</td>
<td>64.9%</td>
<td>51</td>
<td>19.0%</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>137</td>
<td>62.0%</td>
<td>46</td>
<td>20.8%</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>37</td>
<td>78.7%</td>
<td>5</td>
<td>10.6%</td>
<td>2</td>
</tr>
<tr>
<td>3) Desktop computer (with DVD playing capacity)</td>
<td>All</td>
<td>193</td>
<td>71.2%</td>
<td>33</td>
<td>12.2%</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>160</td>
<td>71.7%</td>
<td>27</td>
<td>12.1%</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>33</td>
<td>68.8%</td>
<td>6</td>
<td>12.5%</td>
<td>4</td>
</tr>
<tr>
<td>4) Document camera (to project non-transparent document or video)</td>
<td>All</td>
<td>39</td>
<td>15.3%</td>
<td>35</td>
<td>13.7%</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>32</td>
<td>15.2%</td>
<td>31</td>
<td>14.7%</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>7</td>
<td>15.9%</td>
<td>4</td>
<td>9.1%</td>
<td>13</td>
</tr>
<tr>
<td>5) DVD player</td>
<td>All</td>
<td>81</td>
<td>30.8%</td>
<td>45</td>
<td>17.1%</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>75</td>
<td>34.4%</td>
<td>39</td>
<td>17.9%</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>6</td>
<td>13.3%</td>
<td>6</td>
<td>13.3%</td>
<td>9</td>
</tr>
<tr>
<td>6) iPad or equivalent</td>
<td>All</td>
<td>40</td>
<td>15.4%</td>
<td>45</td>
<td>17.4%</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>34</td>
<td>15.8%</td>
<td>39</td>
<td>18.1%</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>6</td>
<td>13.6%</td>
<td>6</td>
<td>13.6%</td>
<td>8</td>
</tr>
<tr>
<td>7) Laptop computer</td>
<td>All</td>
<td>164</td>
<td>61.2%</td>
<td>38</td>
<td>14.2%</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>139</td>
<td>62.9%</td>
<td>32</td>
<td>14.5%</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>25</td>
<td>53.2%</td>
<td>6</td>
<td>12.8%</td>
<td>8</td>
</tr>
</tbody>
</table>
### Table 3: Faculty and Staff Technology Needs

<table>
<thead>
<tr>
<th>Question 31. Do you have access to the following equipment/supply when conducting your primary duty? (III.B.)</th>
<th>Yes</th>
<th>No</th>
<th>Total Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Answer Options</strong></td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
</tr>
<tr>
<td>1) Clickers</td>
<td>All</td>
<td>81</td>
<td>31.0%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>71</td>
<td>33.2%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>10</td>
<td>21.3%</td>
</tr>
<tr>
<td>2) Copier</td>
<td>All</td>
<td>266</td>
<td>96.7%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>219</td>
<td>96.9%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>47</td>
<td>95.9%</td>
</tr>
<tr>
<td>3) Desktop computer (with DVD playing capacity)</td>
<td>All</td>
<td>229</td>
<td>84.5%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>183</td>
<td>82.4%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>46</td>
<td>93.9%</td>
</tr>
<tr>
<td>4) Document camera (to project non-transparent document or video)</td>
<td>All</td>
<td>84</td>
<td>32.3%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>75</td>
<td>35.0%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>9</td>
<td>19.6%</td>
</tr>
<tr>
<td>5) DVD player</td>
<td>All</td>
<td>177</td>
<td>66.3%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>155</td>
<td>70.5%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>22</td>
<td>46.8%</td>
</tr>
<tr>
<td>6) iPad or equivalent</td>
<td>All</td>
<td>28</td>
<td>10.7%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>25</td>
<td>11.5%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>3</td>
<td>6.8%</td>
</tr>
<tr>
<td>7) Laptop computer</td>
<td>All</td>
<td>195</td>
<td>72.8%</td>
</tr>
<tr>
<td></td>
<td>Faculty</td>
<td>161</td>
<td>72.9%</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>34</td>
<td>72.3%</td>
</tr>
</tbody>
</table>
Kapi'olani Community College is developing a new ecology of learning that connects classrooms, labs and centers, campus, community, and cyberspace (Strategic Plan 2008-2015: Framework, Process, and Context, p. 15). Technology has allowed the College to extend its reach beyond its geographic service area through online and other distance education course and program offerings. A student at KCC can complete 50% or more of the course requirements for four degrees and seven certificates wholly through the College’s distance-delivered courses. The majority of the distance-delivered courses in these certificates and degrees are offered online and a smaller number of courses are offered via interactive or cable TV. Distance learning course offerings has grown from 57 courses in Fall 2006 to Spring 2007 to 425 classes in Fall 2012 to Spring 2013. The percentage of faculty and staff who have taught distance delivery courses is significant and expected to rise.

Table 4: KCC Faculty and Staff Distance Delivery

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes - All</td>
<td>33.9%</td>
<td>75</td>
</tr>
<tr>
<td>Faculty</td>
<td>34.1%</td>
<td>74</td>
</tr>
<tr>
<td>Staff</td>
<td>25.0%</td>
<td>1</td>
</tr>
</tbody>
</table>

Enrollment in KCC's online courses has risen steadily, with an unduplicated student headcount of 2,951 in Fall 2009 and 2,946 in Spring 2010. Comparisons of the headcounts from Fall to Fall and Spring to Spring indicate increases in enrollment by students home-based at KCC and based elsewhere of over 30%.
Table 5: KCC Online Student Headcounts Fall 2006 to Spring 2010

<table>
<thead>
<tr>
<th>By Sex</th>
<th>Fall 2006</th>
<th>Spring 2007</th>
<th>Fall 2007</th>
<th>Spring 2008</th>
<th>Fall 2008</th>
<th>Spring 2009</th>
<th>Fall 2009</th>
<th>Spring 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>70.76%</td>
<td>66.73%</td>
<td>67.68%</td>
<td>67.23%</td>
<td>66.71%</td>
<td>66.79%</td>
<td>67.06%</td>
<td>66.80%</td>
</tr>
<tr>
<td>Males</td>
<td>29.24%</td>
<td>33.27%</td>
<td>32.32%</td>
<td>33.25%</td>
<td>33.29%</td>
<td>33.21%</td>
<td>33.24%</td>
<td>33.20%</td>
</tr>
<tr>
<td>Not Specified</td>
<td>0.16%</td>
<td>0.00%</td>
<td>0.15%</td>
<td>0.43%</td>
<td>0.09%</td>
<td>0.12%</td>
<td>0.20%</td>
<td>0.24%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>By Age</th>
<th>Fall 2006</th>
<th>Spring 2007</th>
<th>Fall 2007</th>
<th>Spring 2008</th>
<th>Fall 2008</th>
<th>Spring 2009</th>
<th>Fall 2009</th>
<th>Spring 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 18</td>
<td>1.12%</td>
<td>0.42%</td>
<td>1.39%</td>
<td>0.72%</td>
<td>0.98%</td>
<td>0.27%</td>
<td>1.15%</td>
<td>0.20%</td>
</tr>
<tr>
<td>18 - 20</td>
<td>25.76%</td>
<td>25.80%</td>
<td>22.38%</td>
<td>27.77%</td>
<td>27.61%</td>
<td>27.65%</td>
<td>26.70%</td>
<td>27.73%</td>
</tr>
<tr>
<td>21 - 24</td>
<td>34.30%</td>
<td>33.17%</td>
<td>35.24%</td>
<td>35.64%</td>
<td>35.08%</td>
<td>34.19%</td>
<td>32.38%</td>
<td>32.38%</td>
</tr>
<tr>
<td>25 - 29</td>
<td>17.67%</td>
<td>18.76%</td>
<td>18.09%</td>
<td>17.77%</td>
<td>17.14%</td>
<td>16.83%</td>
<td>17.62%</td>
<td>17.65%</td>
</tr>
<tr>
<td>30 - 39</td>
<td>14.09%</td>
<td>14.27%</td>
<td>14.70%</td>
<td>12.88%</td>
<td>12.21%</td>
<td>12.36%</td>
<td>13.69%</td>
<td>14.90%</td>
</tr>
<tr>
<td>40 Plus</td>
<td>6.99%</td>
<td>7.29%</td>
<td>6.21%</td>
<td>6.14%</td>
<td>6.22%</td>
<td>6.81%</td>
<td>6.61%</td>
<td>7.09%</td>
</tr>
<tr>
<td>Not Specified</td>
<td>0.08%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Total Unduplicated Online Headcount: 1,245
% Increase/Decrease Online Headcount (Comparisons are fall to fall and spring to spring): 37.19% - 54.10%
% Increase/Decrease Kaplan-Based (Comparisons are fall to fall and spring to spring): 37.37% - 61.82%
% Kaplan-Based of Online Headcount: 77.59% - 73.48%

Given the significant population of Indigenous students at KCC, the increasing integration of technology in learning environments both face-to-face and virtual, and the steady rise in on line course offerings and student enrollment, professional development programs and pre-service teacher education courses must include lessons on culturally responsive uses of educational technologies.

**Conceptual Frameworks**

In addition to the literature on action research, this work draws from Indigenous Learning Theory foregrounded in the broader field of Culturally Responsive Education.

**Culturally Responsive Education**

Geneva Gay (2010), one of the progenitors of culturally responsive teaching, offers this definition: "using the cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective for them; it teaches to and through the strengths of these students" (Chapter 2, Culturally Responsive Teaching is Validating section,
Kana'iaupuni and Kawai'ae'a (2008) use similar language to define the pedagogy used locally in Hawaiian culture-based schools:

Culture based education is the grounding of instruction and student learning in the values, norms, knowledge, beliefs, practices, experiences, places, and language that are the foundation of a culture, in this case Hawaiian indigenous culture. It may include teaching the traditions and practices of a particular culture, but it is not restricted to these skills and knowledge. More important, culture-based education refers to teaching and learning that are grounded in a cultural worldview, from whose lens are taught the skills, knowledge, content, and values that students need in our modern, global society (p. 71).

Culturally responsive education involves an awareness of the dissonance between the culture of an educational institution and the cultures of its students.

**Indigenous Learning Theory**

While Indigenous peoples have embraced change, modernization, and technologies for millennia and many native societies seek to promote uses of modern technology in ways that support their cultural traditions, educational technology practices can create disharmonies for Indigenous students. Educators can apply culturally responsive principles to their uses of technology in teaching and be mindful of ways technology might conflict with their students' cultures. Indigenous educators such as Kana'iaupuni, Kawai'ae'a, and Four Arrows have published guidelines for culture-based practices that can be effectively applied to educational technology. Native American educator, Four Arrows (2013) presents an Indigenous Learning Theory based on Native Hawaiian and Native American cultures and other information to "help
teachers employ dialogic and Indigenous approaches to teaching and learning” (p.79). This theoretical construct and associated literature will be examined in more detail in the next chapter.

Tenets of Culturally Responsive Education grounded in Indigenous Learning Theory, applied using principles and methods of Action Research, provide a rich environment for exploration, discovery, collaborative knowledge-construction, and meaning-making. McNiff (2013) describes this kind of experience as a hallmark of action research:

Action researchers see knowledge as something they do, a living process. People generate their own knowledge from their experiences of living and learning. Knowledge is never static or complete; it is in a constant state of development as new understandings emerge. This view of knowledge regards reality as a process of emergence, surprising and unpredictable. There are no fixed answers, because answers become obsolete in a constantly changing present, and any answers immediately transform into new questions (p.29).

**Research Questions**

The overarching question of this study is, "What can we learn about indigenizing educational technology by examining the experiences of technology-using Indigenous educators?" This study addresses this question by examining the experience of Indigenous educators who were asked to reflect on instances when technology uses created dissonance or resonance with their native learning orientations, and then soliciting recommendations for modifications to practice – ideas for developing a culturally-responsive educational technology praxis. The specific research questions are:

1. How did their experiences with educational technologies, either as students or teachers, support Indigenous epistemologies, ontologies, and axiologies?
2. How did their experiences with educational technologies, either as students or teachers, hinder Indigenous epistemologies, ontologies, and axiologies?

3. What suggestions do they have for teachers who want to integrate technology into the curriculum in culturally responsive ways?

These questions are examined within the conceptual frameworks of culturally responsive education and Indigenous Learning Theory which are presented in Chapter Two. In Chapter Three I explain this study’s research design and methods which honor Indigenous ways and values. In Chapter Four, participants describe their views of learning and teaching in a manner consistent with the frameworks established in Chapter Two, citing instances where technology can be used to support Indigenous learners, expressing concerns around inappropriate uses of technology and reflecting on their own work, sharing aspirations about their practices, culture, and technology. This dissertation concludes with reflections on the process of action research and recommendations regarding culturally responsive educational technology.
CHAPTER 2. REVIEW OF THE LITERATURE

Technology and Culture in Education

Technology plays an important role in education. The International Society for Technology in Education (2011), the premiere professional organization which developed national standards for educational technology in schools, states:

Advances in technology have changed the way we interact with the world. We are required to understand and harness technology to live and learn. By using technology to advance education, we prepare the children to become the informed, engaged citizens. (p.5).

Culture is also recognized as a crucial element of education. In their work on Hawaiian Culture Based Education, Kana‘iaupuni and Kawai‘ae‘a (2008) provide a succinct definition: “Perhaps most simply, culture may be defined as shared ways of being, knowing, and doing” (p.71). Bruner (1996) states, “culture shapes mind, that it provides us with the toolkit by which we construct not only our worlds but our very conceptions of our selves and our powers (p. x). Gay (2010) highlights the importance of culture in education:

culture is at the heart of all we do in the name of education, whether that is curriculum, instruction, administration, or performance assessment….Even without our being consciously aware of it, culture determines how we think, believe, and behave, and these, in turn, affect how we teach and learn (Chapter 1, Assertions About Improving Student Achievement section, para. 2).

If the fabric of one’s teaching praxis is comprised of educational technology and culturally responsive education as warp and weft, Indigenous Learning Theory provides the color to give
the tapestry depth and meaning, particularly for educators of Indigenous students in American-affiliated Pacific islands.

**Culture-Based Education**

Kana‘iaupuni and Kawai‘ae’a (2008) executed a thorough review of relevant literature and describe culture based education as

the grounding of instruction and student learning in the values, norms, knowledge, beliefs, practices, experiences, places, and language that are the foundation of a culture…More important, culture-based education refers to teaching and learning that are grounded in a cultural worldview, from whose lens are taught the skills, knowledge, content, and values that students need in our modern, global society (p.71).

Demmert and Towner (2009) reviewed the research literature on the effectiveness of culturally based education programs serving American Indian, Alaska Native and Native Hawaiian students and derived a list of critical aspects of such programs: recognition and use of Native American languages (this may include use bilingually, or as a first or second language); pedagogy that stresses traditional cultural characteristics, and adult-child interactions as the starting place for one’s education; pedagogy in which teaching strategies are congruent with the traditional culture as well as contemporary ways of knowing and learning; curriculum that is based on traditional culture, that recognizes the importance of Native spirituality, and places the education of young children in a contemporary context; strong Native community participation in educating children and in the planning and operation of school activities; and knowledge and use of the social and political mores of the community (pp. 9-10).

Similar elements are present in the Hawaiian Indigenous Education Rubric (HIER), a heuristic framework for Hawaiian education (Kana‘iaupuni & Kawai‘ae’a, 2008). The HIER
uses a teacher’s perspective, describing teaching behaviors and philosophies in five domains:
Use of Heritage Language in Teaching; Family and Community Involvement; Culture-Based and Place-Based Content; Cultural Context; and Assessment and Accountability (p. 77).

**Culturally Responsive Education is Effective**

When implemented in schools, culturally responsive education shows positive results for Indigenous students; some studies note positive effects for non-Indigenous students as well. In a study of 40 Hawaiian language immersion and culture-based (HLCB) educators, Schonleber (2007) identified 10 specific and well-defined teaching practices considered by many HLCB educators as culturally congruent and linked to increased academic self-efficacy, resiliency and cultural pride; teachers attributed these changes to their implementation of culturally responsive education. These strategies included hands-on learning, place-based education, and teaching based on observation of students. The strategies were clearly related to Hawaiian axiologies such as responsibility to community and stewardship of the environment. Schonleber (2007) reports:

> These strategies are connected to values and beliefs that are important to many Hawaiians, including the values of humility and patience as personal qualities, the value of harmony in relationships, and the belief that individuals have a responsibility to the community, the family, and the land. These values and beliefs were related to a worldview in which all things are interconnected, children have a kind of divine power participants described as mana, and the earth is to be cared for and respected as a living entity, “an elder sibling” (p. 240).

> “Outcomes suggest that training in culturally congruent teaching strategies should be ongoing and systematic and that incorporating place-based curricula in public school settings could possibly increase the academic self-efficacy of Hawaiian students” (Schonleber, 2007, p. 239).
Takayama (2008) performed a comparative analysis of academic achievement data from various school types in Hawai‘i – conventional public schools, western-focused charters and Hawaiian Language & Culture-Based (HLCB) schools and concluded: HLCB school types may make a significant difference in the academic achievement of Hawaiian students; non-Hawaiian students in HLCB schools showed positive effects; there are no academic losses in Hawaiian-focused charters and Hawaiian language immersion schools for students of Hawaiian and non-Hawaiian ethnicities. Cross-sectional data show that in lower grades, students of both Hawaiian and non-Hawaiian ethnicities in HLCB schools may score significantly lower than their counterparts in conventional public schools, but in higher grades there are no significant differences or scores are significantly higher in HLCB schools. Based on his study, Takayama posits the following:

- Non-Hawaiian students who may feel alienated by Western education systems may benefit from more relevant and applied learning environments as offered through HLCB schools.
- Culture-based education seems to parallel the principles of best practices while delivering instruction in culturally relevant and specific ways (Kana‘iaupuni, Ledward, & Takayama, 2009; Ledward & Takayama, 2008).
- HLCB schools are more effective than conventional public schools at moving students out of the Well Below proficiency status for reading at all grade levels and for mathematics in higher grade levels.
- HLCB schools are role models of educational reforms and racial integration that meet the needs of diverse students and increase the movement toward academic proficiency (pp. 271-272).
This research supports the notion that “Congruency between how the educational process is ordered and delivered, and the cultural frames of reference of diverse students, will improve school achievement for students of color” (Gay, 2010, Culture Counts section, para.9).

**The Concept of Indigenous Peoples**

Before we delve into issues of Indigenous Learning Theory, further elaboration of the concept of Indigenous people provides a deeper base of understanding. In Chapter 1, a description of Indigenous peoples from the United Nations was presented; that definition is expanded here:

Indigenous communities, peoples and nations who have continuity with pre-invasion and pre-colonization societies, consider themselves apart from the societies now prevailing on those territories. They form non-dominant sectors and are determined to preserve and develop their ancestral territories for future generations. This includes their ethnic identity, cultural patterns, social institutions, and legal system as the basis of their existence.

This continuity extends into the present by one or more of the following factors: complete or partial occupation of ancestral lands; common ancestry with original occupants; common culture in religions, tribal systems, indigenous membership of communities, dress, livelihood, lifestyle, etc.; language (either in a familial setting or greater societal setting at large); residence countries, or certain regions of the world; and other relevant factors. An indigenous individual is one who belongs to these indigenous populations through self-identification and is recognized and accepted by these populations as one of its members. (Secretariat of the Permanent Forum on Indigenous Issues, 2004).
This term is now part of both qualitative and quantitative research parlance; Indigenous scholars have successfully indigenized research with Indigenous paradigms (Wilson, 2009; Chilisa, 2012), Indigenous methodologies (Tuhiwai-Smith, 1999; Kovach, 2010; Vaioleti, 2006), and Indigenous statistics (Walter & Andersen, 2013), thus enriching and expanding the corpus of professional research praxis. Tuhiwai-Smith (1999) writes:

The term (indigenous peoples) has enabled the collective voices of colonized people to be expressed strategically in the international arena. It has also been an umbrella enabling communities and peoples to come together, transcending their own colonized contexts and experiences, in order to learn, share, plan, organize and struggle collectively for self-determination on the global and local stages. Thus the world's indigenous populations belong to a network of peoples (p.7).

Chilisa (2012) acknowledges and affirms this network:

Ideally, the multiple connections that indigenous scholars have with those around them and with the living and the nonliving should form part of their social history and should inform how they see the world and how they relate with the researched (p. 3).

**Indigenous Learning Theory**

An understanding of Indigenous Learning Theory can inform culturally responsive educational technology practices. Recognizing the importance of culturally responsive education, Indigenous scholars have developed pedagogies and identified practices that are appropriate for their cultures. Frameworks, rubrics, checklists, and other tools have been developed in general curricular areas to support Indigenous ontologies, axiologies and epistemologies; such aspects of Indigenous peoples having been previously ignored by mainstream education. Atleo (2009) notes that Indigenous learning orientations are essential for strategic functioning of educational
systems, for providing “emancipatory insight” and for acknowledgement of Indigenous ways of knowing in the context of western schooling (p. 454). While little has been done in the area of the western Pacific, we have much to learn from studies done about native Americans, Maori, Australian Aborigines, and native Hawaiians.

To achieve understanding of Indigenous Learning Theory, I quote Four Arrows (2013):

Indigenous Learning Theory is about cultivating cognition and consciousness via spiritual awareness and reflection on lived experience. They direct us toward realizing that human awareness is a part of life’s web. They connect us to smaller and larger elements in the universe. They allow us to see the “whole” as a sacred mystery that we cannot fully know but that we can nonetheless change with our thinking and actions. They are about relationships, with the ultimate one being our relationship with our planet (p. 65).

When applied to education, Indigenous Learning Theory

weaves the empirical and the symbolic, nature and culture, self and community, power and love into a unified and unique vision of the world. It sees rituals, ceremonies, rights [sic] of passage, places and family histories and connections as integral and vital to the learning experience (Four Arrows, 2013, p. 65).

Four Arrows also offers a list of pedagogies and procedures which can "help teachers employ dialogic and Indigenous approaches to teaching and learning” (p. 79). He notes that when teachers are careful to integrate these elements into their practice, Indigenous ways of learning emerge: field experience; cooperative learning; intrinsic motivation; student ownership of subject matter; critical reflection; intuitive work; visualizations and dream work; honoring student pace; using song and music; honoring place; using natural world as teacher; involving community;
doing activism and serving others; remembering that everything is connected/related; using humor whenever possible; employing wellness/fitness considerations; using peer teaching; allowing for observation rather than participation; using storytelling prolifically and interactively that is related to the student's world; and being aware of sustainability issues in the class, school and home environment (pp. 79-80).

**Holistic Nature of Indigenous Learning**

The holistic nature of Indigenous views of knowledge and learning stand in contrast to mainstream education’s perspective. Meyer (2003) highlights the connection between ontology and epistemology: “cognition and consciousness exist in an inseparable body-mind-spirit-nature unity that normal mainstream education breaks apart. There is an interconnectedness that moves us away from the binary thinking and oppositional dualities common in mainstream thinking” (p. 12). McNiff (2013) remarks on this aspect of mainstream thinking, noting “Traditional scientific and social scientific researchers tend to see knowledge as a free-standing unit, to be found ‘out there’ in books and databases. Knowledge therefore becomes separated from the people who create it” (p. 28). Meyer (2003) elaborates further on this holistic perspective:

For us, knowledge percolates in both mind and body. It is an experience shaped by sensual cues shaped by culture, shaped by the knowing that heart is at the core of what intelligence implies. This is all about actualizing our human potential because it begs us to acknowledge larger ideas of what it means to be human. Knowledge is not simply an intellectual/mind experience, but a full-body, full-mind one (p. 12).

Aboriginal perspective of teaching and learning. Through Atleo’s study, Aboriginal elders identified four major Indigenous learning themes:

- prenatal care, grandparents’ teachings and care, *oosumch* (the discipline of Nuu-chah-nulth spiritual bathing in sacred sites), and the use of ancestor names. Elders revealed a strategic learning ideology that began by providing a positive prenatal development environment, an early development of personal disciplinary practices, the support of wisdom and insight of Elders’ counsel, and the sociocultural capital of ancestor names. These strategies translated into embodied action schemes that were contextually, constructed with spiritual help in altered and dream states (p. 461).

This study revealed a rich community based network of learning leaders who embody a diversity of learning archetypes and recognize that types of leadership and orientations will be as varied as the changing needs of the community.

**Indigenous Learning in the Micronesian Cultural Context**

In a study of perceptions of college classroom environments held by University of Guam students originally from the Federated States of Micronesia, Barber (2009), found several cultural norms that shape students’ perceptions: “communal nature of knowledge transfer, traditional methods of knowledge transfer, social hierarchy based on age, gender and status, and the prominence of group membership and relations” (p. 77).

Responsibility for knowledge transfer extends to members throughout the community; individuals are expected to transmit skills to younger generations and an “interconnected social network provides easy access to teachers/community member mentors for learning needed skills and knowledge” (p. 80).
In Barber’s study, participants characterized traditional learning as a sequence of demonstration by an elder which is observed by the learner, hands-on practice, immediate feedback and correction from the elder, solitary and unsupervised practice until mastery is achieved, often with visible proof of the achievement such as a fish that is successfully caught or crop that is harvested. Skills are often transmitted and acquired through daily subsistence activities, community social events, and peer play. Learning is directly related to satisfying community needs, such as learning to: prepare food or perform traditional dances for community festivals; to weave coconut leaves for shelter or flowers for marmars (head lei); to farm or to fish for family meals. We find a similar ethos echoed in the Hawaiian proverbs, ‘A‘ohe pau ka ‘ike i ka hālau ho’okahi: All knowledge is not learned in just one school, and Ma ka hana ka ‘ike: In working one learns. Vaioleti and Vaioleti (2003) note a similar view of learning in the word ako which means to learn and to teach. For Maori people, ako is both a process and a vision and as a concept which underpins the learning experience.

Ako is an overriding principle encompassing early childhood, primary, secondary, tertiary and adult education. It is driven by cultural, spiritual as well as collective concepts, motivations and aspirations with ako starting well before a child is born and continues until s/he dies. Ako involves training, learning, doing, observing, practicing, reflecting, consulting and visioning and hope (p. 34).

Barber (2009) comments that respect is a cultural priority among his Micronesian participants:

In Micronesian cultures hierarchies may be based on age, gender and status; critical to these hierarchies is showing respect. Special languages are used with people of higher status and knowledge; an important skill is use of the appropriate language. Caution in
speaking or silence is also very important. These teachings govern behavior and are important to the students’ self-outlook or worldview (propriospect).

**Culturally Responsive Educational Technology**

Indigenous Learning Theory and culturally responsive educational technology pedagogies are supported in a policy brief on technologies and Indigenous peoples indigenous communities increasingly have more power and control over their schools, enabling them to move towards more culturally based educational models. Such models encourage quality instructional practices rooted in a cultural and linguistically relevant context. This includes incorporating indigenous language, content, and teaching practices that are harmonious with indigenous culture and contemporary ways of knowing (UNESCO, 2011, p. 3).

Technology can be a powerful tool to support culturally responsive education, with the capabilities to construct learning environments and learning objects that can address needs of Indigenous communities. A critical element is teacher preparation:

- Teachers should receive training that equips them with the knowledge, skills, and cultural competencies to teach indigenous children. A contributing factor of low indigenous students’ achievement is the teachers’ lack of cultural competencies.
- Universities should prepare teachers to both teach and assess indigenous students based on cultural competencies determined by indigenous faculty and administrators. This training should focus on appropriate cultural ways to use ICTs in supporting the learning of language and culture. (UNESCO, 2011).

The literature shows positive outcomes for native American and native Hawaiian students when culturally appropriate curricula and pedagogies are used. This dissertation adds to the body of
knowledge about Indigenous peoples of Hawai‘i and from the U.S. affiliated islands of Micronesia; the latter group is under-represented in the literature. Improved awareness of these Indigenous groups can be achieved by this examination of the technology experiences of Indigenous academics. Through our voices, we hope to promote a pro-active, culturally responsive approach to educational technology and advance the ideal that digital age educators should be proficient in making decisions about technology integration guided by an understanding of Indigenous Learning Theory.
CHAPTER 3. METHODOLOGY

Introduction

This study involves an Indigenous researcher and participants, and intentionally embraces a research design, methodologies, and outcomes that honor Indigenous ways of being, ways of knowing and values. The overarching question of this study is, "What can we learn about indigenizing educational technology by examining the experiences of technology-using Indigenous educators?" This question was addressed through a basic qualitative action research study using focus group interviews. Before detailing the specifics, I will highlight salient aspects of the various facets of my methodology – Indigenous research, qualitative research, action research, and the use of narrative, and focus group interviews.

Indigenous Research

This study embodies several dimensions of Indigenous research including those described by Chilisa (2012):

(1) It targets a local phenomenon instead of using extant theory from the West to identify and define a research issue; (2) it is context-sensitive and creates locally relevant constructs, methods, and theories derived from local experiences and indigenous knowledge; (3) it can be integrative, that is, combining Western and indigenous theories; and (4) in its most advanced form, its assumptions about what counts as reality, knowledge, and values in research are informed by an indigenous research paradigm. The assumptions in an indigenous paradigm guide the research process (p. 13).
When research on Indigenous peoples is undertaken by an Indigenous person, as in the case of this dissertation, “the activity of research is transformed. Questions are framed differently, priorities are ranked differently, problems are defined differently; people participate on different terms” (Tuhiwai-Smith, 1999, p. 193). Indigenous research is “a ceremony that brings relationships together” (Wilson, 2009, p. 8).

**Qualitative Research**

This study is also characteristic of qualitative research as described by Janesick (2011). “Many qualitative researchers see research as participatory, dialogic, transformative, and educative. It may be a constructivist, critical, and transformative approach to research” (Chapter 1, Using Theory in Qualitative Research section, para. 5). According to Merriam, 200), this approach generates a rich descriptive account of findings, based on literature that framed the study, and an inductive analysis of data; the outcome is deeper “understanding of a phenomenon, a process, the perspectives and worldviews of the people involved, or a combination of these” (Chapter 1, Basic Interpretive Qualitative Study section, para. 1).

**Action Research**

This study is an action research work; according to McNiff and Whitehead (2010), action research provides a space for collaborative inquiry and learning through interrogation, deconstruction and decentering; and it leads to improvements in praxis informed by the collaborative work. Action research involves improving practice through collaborative learning (p. 17). Focus group discussions with participants were one venue for communal learning; collaborating in this fashion with other Indigenous academics activates and honors the network
of social connections noted by Tuhiwai-Smith and Chilisa. Using the kind of narrative data that emerges from such discussions also honors Indigenous epistemologies.

The literature on cross-cultural research promotes the use of qualitative data such as story, narrative, and conversation which are compatible with Indigenous oral traditions privileging both individual and collective voices and providing rich data that can be used in meaningful ways by the client and community (Sukop, 2007). Strickland (1999) notes that increased potential for valid responses can be achieved by honoring traditional patterns of communication when conducting focus groups as participants feel more comfortable and share more readily when using their native forms of communication, e.g., talk-story and story-telling.

Sharing stories of life experiences is an expression of what Bruner (1996) termed narrative thinking, one of the key “ways human beings organize and manage their knowledge of the world, indeed structure even their immediate experience” (p. 39). He asserts that narratives are an essential element for cultural cohesion and a tool for meaning-making:

We frame the accounts of our cultural origins and our most cherished beliefs in story form, and it is not just the “content” of these stories that grip us, but their narrative artifice. Our immediate experience, what happened yesterday or the day before, is framed in the same storied way. Even more striking, we represent our lives (to ourselves as well as to others) in the form of narrative (p. 40).

“Interviewing gives us access to the observations of others. We can learn also, through interviewing, about people’s interior experiences” (Weiss, 2008). Given the nature of the research questions, participants, and desired outcomes of the study, focus group interviews were deemed the most effective way to obtain this data which has not been previously articulated and is absent in the literature.
Focus groups can and have encompassed a wide range of formal and informal discursive practices and serve many overlapping purposes – from the pedagogical, to the political, to the traditionally empirical (Kamberelis & Dimitriadis). Focus group work allows researchers to excavate information from participants that they would never be able to excavate using other data collection strategies (Kamberelis & Dimitriadis, 2013). The nature of focus groups provides the following affordances which are relevant to this study:

Focus groups de-center the authority of the researcher; provide safe spaces for participants to talk about their own lives and struggles; are an empowering form of collective testimony; permit for the creation of groups that mitigate alienation, create solidarity, and enhance community building (Kamberelis & Dimitriadis, 2013, Chapter 2, The Political Surface of Focus Group Work section, para. 2).

As noted in chapter two, the holistic nature of Indigenous Learning Theory stands in contrast to mainstream education. Focus groups “can mitigate the Western tendency to separate thinking and feeling, thus opening up possibilities for reimagining knowledge is distributed, relational, embodied, and sensuous” (Kamberelis & Dimitriadis, 2013, Chapter 2, The Political Surface of Focus Group Work section, para. 13).

Indigenous cultures of the Pacific islands are generally relational and communal in orientation. Interviews in groups are much more consonant with these aspects of Indigenous culture than are individual interviews. Therefore, using focus groups with an informal conversational strategy (Patton, 2002) and interview guide are the most culturally appropriate method of gathering data for this study. Furthermore, Kamberelis and Dimitriadis (2013) assert that “the most appropriate unit of analysis for much qualitative research is not individual but the group” (Chapter 5, Research Ethics and the Public/Private Split section, para. 1).
Design of This Study

The design of this study is holistic, integrating the aforementioned research approaches (Indigenous research, qualitative research, and action research) and an intentional set of data collection strategies which are harmonious with the study’s cultural contexts. This study was conducted in a manner that provided practitioners the opportunity to share and reflect on their educational technology experiences vis-à-vis Indigenous epistemologies, ontologies, and axiologies. Focus groups with a select group of participants, using an informal conversational strategy were conducted to address four research questions: (1) How did their experiences with educational technologies, either as students or teachers, support Indigenous epistemologies, ontologies, and axiologies, (2) How did their experiences with educational technologies, either as students or teachers, hinder Indigenous epistemologies, ontologies, and axiologies, and (3) What suggestions do they have for teachers who want to integrate technology into the curriculum in culturally responsive ways.

Participant Selection

Purposeful selection enabled rich data collection and permitted me to realize core Indigenous values of relationship and reciprocity. Purposeful selection is also referred to as purposive sampling; a strategy wherein particular individuals are purposely chosen to provide information that is particularly relevant to the goals of this study (Maxwell, 2013). Kamberelis & Dimitriadis (2013) state, “exploiting pre-existing social networks also contributes to the success of focus group work” (Chapter 4, Building Upon and Extending Pre-existing Social Networks section, para. 1). As Maxwell explains, “Selecting those times, settings, and individuals that can provide you with the information that you need to answer your research questions is the most
important consideration in qualitative selection decisions” (Maxwell, 2013, p.97). Patton (2002) asserts that “the logic and power of purposeful sampling lie in selecting *information-rich cases* for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling” (p. 230).

Morgan (1997) recommends small focus groups (six or fewer) in such situations where the topic is complex or potentially controversial, when participants have a high level of involvement with or are very knowledgeable about the topic, and when the goal is to hear detailed, personal narratives. He notes that “Having fewer participants gives each one more time to tell personal stories or express heartfelt opinions. Often, this matches a project goal of getting a more in-depth understanding of what participants have to say” (p. 73).

Two focus groups with different participants were held, each approximately two hours in length, with a total of seven participants. All participants identify strongly with their native cultures, some are considered cultural experts; all are involved or well-acquainted with educational technologies and employ multiple technologies in the course of their personal and professional activities.

Sites for the focus group sessions were made with the goal of providing safe and comfortable spaces which Kamberelis and Dimitriadis (2013) note as being a key to successful work with focus groups. The sessions were held in college office and meeting spaces that participants frequented, thus they were comfortable and familiar with the settings.

Dates and times were set through mutual agreement between researcher and participants, occurring between class sessions or on a weekend. Sessions were recorded using digital devices and subsequently transcribed by the researcher. Handwritten notes were made during and after
each meeting. After two focus groups, the discussions achieved saturation with consistent and repeated themes emerging. As noted by Morgan (1997), “if the discussions reach saturation and become repetitive after two or three groups, there is little to be gained by doing more” (p. 81). As is the custom among Pacific Islanders, gatherings often involve food and socializing. Kamberelis and Dimitriadis (2013) recommend that researchers create a sense of community and “celebrate collective togetherness” (Chapter 4, Cultivating Communitas section, para. 1), noting the importance of such activities in focus group work, noting that “as in families, shared meals constitute powerful social glue” (Chapter 4, Cultivating Communitas section, para. 4). Hezel (2013) remarks on the significance of food in island culture where “Come and eat” is a customary greeting in many islands of Micronesia. “In Micronesia it was the shared food itself, not the act of eating together, that was significant as a bonding element” (p. 52). My focus group sessions were preceded by a shared meal and informal talk about personal happenings, (e.g., inquiries into the well-being of family members, progress of school, work, and recent community events). Honoring these and other cultural norms led to engaging encounters, sharing of meaningful stories, new or stronger relationships, and other rich and sometimes unexpected outcomes. More information on the cultural aspects of these focus group interviews will be provided in Chapter 4.

A demographic data form (Appendix 3) was used to collect information on age, gender, ethnicity, educational achievement, and teaching experience. After the demographic form was collected from participants, the focus group discussion was conducted using an interview script and guide with question outline (Appendix 4). Question types were limited to the categories of background, experience and behavior, knowledge, and opinions and values (Patton, 2002).
**My Role as Researcher**

In qualitative studies, the researcher is the primary instrument for collection and analysis of data. Merriam (2002) explains the researcher’s function:

The researcher is interested in understanding how participants make meaning of a situation or phenomenon, this meaning is mediated through the researcher as instrument, the strategy is inductive, and the outcome is descriptive. In conducting a basic qualitative study, you seek to discover and understand a phenomenon, a process, the perspectives and worldviews of the people involved, or a combination of these (Chapter 1, Basic Interpretive Qualitative Study section, para. 1).

Action research methods give researchers an opportunity to manifest a more integral role. McNiff and Whitehead (2010) contend that a primary feature of action research is “putting the ‘I’ at the centre of the research” (p.38). The researcher is a practitioner, an insider who is involved in the situation or problem being studied and thus has a sense of accountability, another facet of the McNiff and Whitehead model. Such research “requires people to hold themselves accountable for what they are doing and accept responsibility for their own actions” (McNiff & Whitehead, 2010, p.23). This quote provides deeper appreciation of the researcher’s role.

The emphasis on the living ‘I’ shows how you take responsibility for improving and sustaining yourself, and for trying to influence the development of the world you are in. ‘I’ therefore have the capacity to influence processes of social change, because ‘I’ can influence my own learning and the learning of others in my immediate context, who in turn can influence their own and the learning of others in wider contexts. The circles of influence are potentially infinite. One individual, working collaboratively with others, can generate worldwide change (McNiff & Whitehead, 2010, p. 38).
As an Indigenous researcher, I approached this study not as an individual, not as the living ‘I,’ but as one member of the community of Indigenous academics, the living ‘We’ participating in a collaborative knowledge-generating, meaning-making, transformative enterprise. This is an embodiment of McNiff’s (2013) description of action being seen in relation with others, which I cited previously, but merits repeating:

a process of dialogue and encounter (Buber 2002), which may also be understood as a form of spirituality (not necessarily to do with religious belief, although it can be).

Capra et al. (1992) believe that relation means belonging. We are all connected in deep ways, and, because we are made of the same stuff as the stars (Feynman 1999), we are also connected with the whole of creation. We belong to one another and therefore to the universe (p. 31).

Belonging to this Indigenous community, I also have a sense of responsibility for the protection and validity of this work; a feeling that is not uncommon among Indigenous scholars. As Cree/Saulteaux researcher Margaret Kovach (2009) writes, “I, too, found myself anxious about the misinterpretations, appropriations, and dismissals that often accompany Indigenous ways of knowing within the academy. The transformative potential for academia in welcoming diverse knowledges is significant, but at what cost to Indigenous peoples?” (Introduction section, para. 6). Perez (2007), a Chamoru author and poet echoes this sentiment, “As indigenous Pacific Islanders delve deeper and broader into their histories, there is a great sense of responsibility and risk in presenting findings. As in this paper, the information shared has potential for direct impact on the lives of people whose histories are discussed, including the author” (p. 83).

Opaskwayak Cree scholar Wilson (2008) notes that Indigenous research methodology stems
from an ontology and epistemology which prioritize relationships and this methodology exemplifies axiologies of respect and relational accountability:

The knowledge that the researcher interprets must be respectful of and help to build the relationships that have been established through the process of finding out information. Furthermore, the Indigenous researcher has a vested interest in the integrity of the methodology (respectful) and the usefulness of the results if they are to be of any use in the Indigenous community (reciprocity) (p. 77).

Relationships with people, places and ideas were essential for the emergence and development of this study. During various phases of this work, I engaged in relationships with Indigenous and non-Indigenous people (fellow educators, critical friends, researchers, mentors, elders, students) from many places in the Pacific (Guam, Hawai‘i, the Federated States of Micronesia, Aotearoa/New Zealand) and connected with the ideas and aspirations upon which this study are based. I took care to be responsible and respectful of these relationships, inspired by Wilson’s (2008) advice

The responsibility to ensure respectful and reciprocal relationships becomes the axiology of the person who is making these connections. We must also be responsible in our choice of where we will build these powerful connections as we choose the topics of our research. Do we want to give more strength to the connections that are building our forms into that which we can see as beautiful and positive, or give strength to connections that are detracting us and moving us away from the form we would like to take? Our axiology demands that we be accountable to these relations that we form (p. 79).
Ethical Issues: Consent and Confidentiality

In accordance with institutional research protocols, participants were protected via informed consent and procedures were reviewed and approved by the University of Hawai‘i’s Institutional Research Board prior to conducting focus group meetings. Consent forms were given to participants prior to the session; they were given time to review the forms before the discussions commenced and after they read the form, I orally highlighted the sections which covered activities, benefits and risks, confidentiality and privacy. Written consent was obtained for participation in the study which included audio recording of the focus groups. Audio recordings were erased securely after transcription and review by participants. The consent form is provided in Appendix 5.

Participants selected pseudonyms which were used solely for organizing and analyzing the focus group data. The pseudonyms were not used in the reporting of data to ensure confidentiality and anonymity of participants and to create safe spaces in which rich discussions could occur. This de-identifying of data acknowledges that in this study, there is a feeling of "WE" not "I;" presenting the quotes without identifiers sustains that ethos and supports the relational accountability I have as a researcher.

Data Analysis

Coding of data was performed manually and with ATLAS.ti, a computer assisted qualitative data analysis software (CAQDAS) program. Analysis was conducted using analytic memos and first and second cycle coding methods as presented by Saldaña (2010). A combination of these processes and tools led to rich outcomes that achieve the goals of this action research effort which are: to explore experience as a vehicle for learning and using lived
experiences of practitioners to inform improvement. Before elaborating on the outcomes, I will describe my understanding and application of analytic memos and coding methods.

Analytic memos were created after each focus group, to document reflective data and were used during data analysis as recommended by Saldaña (2010). He advocates the use of analytic memos to document reflections about a number of issues, experiences, and facets of research; I used analytic memos to reflect on connections and relations with the participants and phenomena and thoughts on emergent patterns. I had an experience similar to that of Barber (1991) who remarked that in his study of Micronesian college students, memos helped him reflect on the transcript data with the lens of cultural familiarity; his awareness of the cultural contexts “brought a whole set of understandings that might not be clear to someone unfamiliar with the region, memos served to identify or clarify these instances in the transcript” (p.61).

First and second cycle coding methods supported analysis of the transcript data and complemented the reflective data derived from analytic memos. I held to Saldaña’s (2010) approach wherein “qualitative codes are essence-capturing and essential elements of the research story that, when clustered together according to similarity and regularity – a pattern – they actively facilitate the development of categories and thus analysis of their connections” (Chapter 1, Coding as Heuristic section, para. 3).

First cycle coding involved the following methods: Grammatical (attribute); Elemental (structural, descriptive, in vivo, process); Affective (emotion, values) and Exploratory (holistic). Categories and themes emerged from the first cycle codes and associated data via second cycle pattern and focused coding.
Validity Threats

Focus group sessions involved the use of open-ended questions; this provided flexibility and an informal approach that could have presented threats to validity. To minimize these threats, I conducted all sessions to maintain consistency in the delivery of questions. Errors in transcription or misinterpretation of narrative data were also potential threats. I employed member checks for accuracy of the transcripts as well as interpretation of the data. I provided participants with the transcripts and final draft of Chapter Four so that they could review the transcribed recordings and my analysis and interpretation of the data.

The script and questions designed for this study were reviewed by indigenous educators, fellow doctoral students, and University of Hawai‘i professors who have performed research and other work with islanders from the US-affiliated islands of Micronesia and Polynesia. Revisions were made based on critical review by these colleagues.

I end this chapter with a note of caution against any inclination to assume cultural descriptions are universally applicable to all members of a culture. While I make statements of a general nature about the cultural groups represented in this study, we must be mindful that “there are exceptions to any cultural descriptions. Every individual in an ethnic group does not have to exhibit cultural characteristics as described for those characteristics to be valid” (Gay, 2010, Chapter 6, para. 2). It is the patterns of cultural axiologies, ontologies, and epistemologies that surface from participants’ narrative accounts that can be instructive and transformative; shaping improvements to practice.
CHAPTER 4. FINDINGS

Introduction

McNiff (2013) characterizes action research as “an enquiry by the self into the self, with others acting as co-researchers and critical learning partners” (p 23). In this chapter, I will present the findings of this collaborative learning experience. The overarching question of this study is, "What can we learn about indigenizing educational technology by examining the experiences of technology-using Indigenous educators?" This question was addressed though a basic qualitative action research study. Focus groups were conducted using an informal conversational strategy. I employed purposeful selection wherein particular individuals are purposely chosen to provide information that is particularly relevant to the goals of this study (Maxwell, 2013). Two focus groups were held with different participants, each approximately two hours in length, with a total of seven participants. All participants identify strongly with their native cultures, most are considered cultural experts; all are involved or well-acquainted with educational technologies and employ multiple technologies in the course of their personal and professional activities.

Participants

As stated earlier, participants identify strongly with their Indigenous heritages representing various Micronesian states (Chuuk, Pohnpei, Kosrae) and Hawai‘i. All were college educated, most holding a Master’s degree, one awarded a PhD, and two in the process of completing doctoral programs. The extent of their professional experience in the field of education ranged from 1 year to over 30 years. All received their primary and secondary
education in their home states (Chuuk, Hawai‘i, Pohnpei). The table below shows demographic data of participants.

**Table 6: Participant Demographics**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age Range</th>
<th>Ethnicities</th>
<th>Highest Degree</th>
<th>Years Working in Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>40-49</td>
<td>Hawaiian, Japanese</td>
<td>Med</td>
<td>17</td>
</tr>
<tr>
<td>F</td>
<td>40-49</td>
<td>Hawaiian, Chinese, Caucasian, Native American</td>
<td>MA</td>
<td>16</td>
</tr>
<tr>
<td>M</td>
<td>35-39</td>
<td>Hawaiian, Chinese</td>
<td>Med</td>
<td>10</td>
</tr>
<tr>
<td>F</td>
<td>50-69</td>
<td>Chuukese</td>
<td>PhD</td>
<td>30+</td>
</tr>
<tr>
<td>F</td>
<td>40-49</td>
<td>Kosraen, Caucasian</td>
<td>MEd</td>
<td>17</td>
</tr>
<tr>
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<td>40-49</td>
<td>Chuukese</td>
<td>MA</td>
<td>14</td>
</tr>
<tr>
<td>F</td>
<td>40-49</td>
<td>Chuukese</td>
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<td>1</td>
</tr>
</tbody>
</table>

Each participant is engaged in professional pursuits supporting other members of their cultural groups, creating and/or delivering instruction to Indigenous and non-Indigenous students in cultural skills, language and heritage, and all have served as cultural representatives in public or community cultural activities. Participating in this action research study is wholly consistent with their dedication to educating others about Indigenous culture, promoting mutual understanding and respect. As stated earlier, to maintain relational accountability and ensure confidentiality and anonymity, no identifiers are provided when presenting participants’ quotes. The reporting and findings of this study represent our collective voices and the transformative nature of action research, reflecting Janesick’s (2011) characterization:

We transform ourselves by looking and seeing what is before us in our observations. In addition, we hear the data as it is spoken to us in interviews. We refine our narrative writing skills to be able to put forth a trustworthy, credible, and authentic story (Chapter 1, Using Theory in Qualitative Research section, para. 4).
During the course of this study, in the review of literature, in conversations with experts and elders, during focus group activities, and analysis of the data, several themes emerged. Multiple coding cycles revealed twenty-three codes which were then grouped into six organizational categories. Refer to Table 7 for a list of the categories and codes. These are not mutually exclusive categories and represent discrete concepts as well as processes. These will be discussed in detail later in this chapter.

**Table 7: Codes and Categories**

<table>
<thead>
<tr>
<th>AXIOLOGY</th>
<th>ONTOLOGY</th>
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<tr>
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<td>Student Behaviors</td>
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<tr>
<td>Relationships</td>
<td>Communal Identity</td>
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<tr>
<td>Respect</td>
<td></td>
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<table>
<thead>
<tr>
<th>EPISTEMOLOGY</th>
<th>EDUCATIONAL TECHNOLOGY</th>
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<tbody>
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<td>Knowledge is Sacred</td>
<td>Technological Concerns</td>
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<tr>
<td>Knowledge Sources</td>
<td>Uses of Technology</td>
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<td></td>
<td>Strengths of Technology</td>
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<th>INDIGENOUS LEARNING</th>
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The organizational categories shown in Table 7 show that participants described their views of learning and teaching in a manner consistent with the framework established early on in the design of this study, i.e., ontology, epistemology, axiology. They identified characteristics of teaching and learning that are consistent with the Indigenous Learning Theory and echoes perspectives from the literature review. Participants also identified ways that technology can be used to support Indigenous learners, concerns around inappropriate uses of technology and
reflected on their own work, sharing aspirations about their practices, culture, and technology. While these themes are presented in discrete sections here, it is important to remember that Indigenous people operate in a holistic manner and this organizational structure is an artificial construct to facilitate analysis and discussion. I begin this analysis with a look at ontological, epistemological, and axiological aspects of learning, and then highlight the strengths of technology to support those characteristics of Indigenous learning and end with concerns and aspirations around technology.

**Ontological Aspects of Education**

Issues of behavior and identity were articulated by several participants. Identity in the classroom was communal in orientation and related to one’s place of origin. Teaching, modeling, and practicing proper behavior was an essential element in the learning process no matter the course content. These are related to the significance of relationships and reciprocity in education which are addressed later in this chapter.

**Identity**

Students are part of a group of learners, not viewed as independent individuals. With this perspective of learners as part of a nuclear family, extended family, and community, participants were keenly aware that they were educating not just the student, but the people with whom that student was connected. One language instructor stated, “My job is to only focus on the student who is registered for the course, however, you have four or five members in the household that now picked up this wonderful, beautiful language, and that, I think, is the point.”

A participant contrasted the inclusive Indigenous approach to the individualized western approach:
As a group we are learning the content, striving for a goal. I see that as different in a western-focused classroom where it is the individual student who is trying to learn or grasps the concepts and material, but I teach to the class, I don’t teach to a student. That is how I approach it differently so that sometimes for students coming in, not expecting that, they don’t understand why I am talking to a group, or why it is always pair work or group work versus ‘give me a worksheet by myself, I want to do the work by myself, I want to do the translation alone, I don’t want help from my peers.’ It is all-inclusive.

On an individual level, identity is linked to one’s place of origin which influences one’s personality:

We truly believe that from your one hānau (birthplace) you can tell what characteristics and traits you carry because of what you eat, the water that is being diverted, the water that is of your one hānau and the food that is produced by the lepo, the dirt of your one hānau, makes you a type.

**Behaviors/Etiquette**

Instructing students on proper behaviors, regardless of the course one is teaching, is a common concern for Indigenous educators. “For sure, ‘Ma ka hana ka ‘ike’ comes to mind, the ‘ōlelo no’eau that says, ‘In doing, one learns.’ My practice in the classroom or online class environment is teaching the students how to behave.” Etiquette is situational and knowing proper behavior for varying situations is important:

We have different roles that we play in certain settings. Something as simple as entering a room is something that should be understood, that you just don’t do certain things and you must do certain things. Doing that online is tougher than doing it face to face because much of it is body language and how you are going to interact.
Appreciation for cultural protocols and etiquette is a prerequisite for achieving core values of relationship and respect. Students should be instructed on proper customs before a guest speaker is invited into the class:

I would never invite anybody into my class without my students feeling totally confident; I would be ashamed if someone said something inappropriate to her; so I am going to load my student up with as much information about that person.

One participant suggested that newcomers to Indigenous places must “Learn the etiquette, the protocol, the places.”

**Epistemological Aspects of Education**

Indigenous views of knowing are holistic with diverse sources and forms, some given a sacredness that stands in contrast to western views of knowledge. These cultural norms shape the participants approaches to teaching and uses of technology.

**Learning is Holistic**

Participants expressed holistic approaches to education that connected the realms of knowing, feeling and doing, prioritizing experiential ways of learning. These approaches echo Meyer’s (2003) writing about Hawaiian epistemology:

We value heart, and heart for Hawaiians is found, metaphorically, in our na’au. It is also the site for intelligence. We knew thoughts came from our head but if it was to turn into wisdom, it went via our na’au (p. 10).

Science sees the notions of intuition and feelings as something that would “dirty” knowledge, objective reality, and pure reason. The separation of mind from body and body from mind became the soul of Science and therefore how Europeans began to
experience their world….For us, knowledge percolates in both mind and body. It is an experience shaped by sensual cues shaped by culture, shaped by the knowing that heart is at the core of what intelligence implies. This is all about actualizing our human potential because it begs us to acknowledge larger ideas of what it means to be human. Knowledge is not simply an intellectual/mind experience, but a full-body, full-mind one. We as cultural people do not separate our affective from the cognitive — the separation is illusionary (p. 12).

The acceptance of feelings as a contributor to student success was also highlighted:

We affirm that Yes, the relationships and the emotions, and the feelings that you are getting out of your students is acceptable because it is leading to high student success rates. You can make a correlation now. You couldn’t make a correlation before, to say, “If my student feels sound and good and fuzzy in my class, he or she will perform better on his or her test.” We have data that says that. Now we can tie it into being of Indigenous peoples and the way we approach teaching and learning.

Technology, particularly the use of video, facilitates the connection of mind, body, and emotion; incorporating learning into everyday life:

For some, the video loses its sense of feel and emotion, but I’d argue to say that it actually can enhance our sense of emotion and feeling. Look at our wonderful movie dramas that we are so drawn to and pay so much to see a wonderfully done movie on a big screen. It’s because media can provide all of that sense of feeling aside from smell, but you can almost visually get someone to smell based on what they see and hear and feel in their bodies.

One participant shared this strategy for using audio and video to make learning relevant:
I try to start some of my classes with music and introducing them to contemporary music of the Pacific; obviously that is not what I am teaching, I am teaching them about the cultures, and it is part of it and I think the audio and video, and seeing it and bringing it into their world, so it is not a documentary from the 1940s of an anthropologist going to the island of Puka Puka doing whatever, it is actually hip hop music using Samoan language, and encouraging them to incorporate that into their lives so that it becomes part of their world.

**Sources of Knowledge**

The teacher is not expected to be the sole source of knowledge in the classroom. Knowledge comes from many people and it is the teacher’s responsibility to expose learners to other experts.

That is also an Indigenous approach—it is not enough to learn from just one kumu or one hālau. We are open to allowing lots of kumu. Bring in experts, have this expert knowledge in your classroom. This is not to say “I don’t know everything that I am supposed to be teaching”, but it is also to say that “yes, I do not know everything.” I am going to ask other kumu, other colleagues, other peers, other experts to come in to enhance the classroom.

Outside experts can supplement the teacher’s knowledge:

I do not dance hula and I don’t know all the protocol for hula, however I have numerous resources and experts out there who do. I am by no means going to become an expert of hula, but I’m going to tap into an expert who does hula well and bring that into the classroom for the students to learn off of.
This was contrasted with traditional mainstream views of the teacher as the sole expert:

In the western way of thinking, I don’t ever recall having so many guest lecturers or so many other teachers coming in. The teachers I’ve had are, “I know this because I studied this for twenty, thirty, forty odd years. Or I wrote the book therefore I know everything that there is for this material. No one else will come into my classroom to be teaching you the topic. Whereas we are really open and we’ll allow each other and bring in experts, for sure.

Participants recognized the knowledge students bring to the classroom and encouraged them to share that knowledge with each other. Learning is thus social and reciprocal.

I tell them on the first day, “Nobody is more of an expert than anyone else.” You do get the student that feels as though they know more than everyone else. I don’t know why they think they are so much more informed, but to me, everybody brings bags into the classroom, what’s in those bags is going to vary and I never assume I know what’s in those bags. They might have happened to be on an island in the Pacific when they were four at an arts festival and picked up something that I never knew they would have picked up. Why would I assume they don’t know very much?

Physical places are also noted as sources of knowledge and learning. Perez (1997) wrote, “I Mañamoru (the Chamoru People) have many histories in these ancestral homelands we know as the Marianas. The land, seas and heavens have a memory of their own that is revealed though the Chamoru mind and senses” (p. x). Meyer (2003) shares a similar perspective:

If a people developed relationship with a place and people for countless generations, they will be in full dialogue with what that place and people have to teach. These are epistemological points that bring us to ancient clarity that highly mobile Americans
often do not possess: 1) Place educates, 2) Beauty develops our thinking, and 3) Time is
not simply linear. Knowing what type of limu, seaweed, washes on Hamakua shores
during winter swells brings up the idea of external knowing, a “seeing” if you will of
what is present in the moment of experience. Relationship with place allows for gross
knowing of all aspects of environment and allows for a stretching toward the rational
and transcendental. This gross level is the lowest form of knowledge production but it
is none-the-less instrumental in developing fundamental principles from which all
knowledge flows. It is not that spirituality collapses into a physics explanation, it is
rather the starting point from which to engage in the multi-faceted experience of our
specific indigenous epistemology (p 63).

These views were echoed in the focus group discussions. A participant who teaches language
commented on the significance of place-based learning:

Because we are in Hawai‘i and the topic is Hawaiian, it is vital. For Pacific people, we
are not so much acknowledging the land we’re standing on, but acknowledging the land
and the ocean in general. The topic of where your land is, is hugely part of the culture;
when you are teaching Hawaiian, you have to incorporate the land in your class.

Knowledge comes from direct lived experiences. Learning should be situated in the experiences
of a place, not restricted to the classroom. In reference to a language lesson about the beach, the
participant remarked:

I can talk to you about this in great depth and give you wonderful supportive
documentation on it, translations of all these vocabulary words, but if I don’t actually
take you out to the beach and let you see and smell and taste you can’t conceptualize the
terms just off pieces of paper and PowerPoint slides and even video of it, so we take
that extra step and take them to actual places and have real life experiences, and have them respond to those real life experiences. It’s great to take them out, but if they don’t do a follow up, a reflection or presentation of some sort at that venue, it doesn’t make it real for them. Getting it real for them and letting them practice it in their daily life is important on the cultural side.

Knowledge is gained through living everyday life and serving the needs of the community. One participant reflected on this kind of learning:

The whole process of life in one day is an education. By following our aunties and watching them do all the things around the house and then gathering with the women when it is time to gather in the fale or the utu, the mats, we don’t think about it as schooling or learning process because it is also part of the lifestyle. There are set times for things, that the whole process of life in one day is also an educational thing for many of us growing up. I was always sent to the outer island every summer and I watched a lot of the things about our culture, I watched a lot of my aunties when they pound the breadfruit when I was smaller than my daughter is now. I was not allowed to touch it because I didn’t know how. When I went to the outer island, I was part of the process of pounding the taro because it is a need that we all work together to accomplish something. It’s different when you are on the main island and when you are out at the outer islands because it is a lifestyle. Every hand is needed in the cooking house and then I also watched my uncles build local boats and they used all kinds of tools, hammer, rock to hammer the plywood together to make local motorboats.

This experiential aspect of knowledge acquisition was contrasted with the western perspective which influences traditional ways of learning:
We have to look at how technologies of learning have changed. Instead of looking at the canoe, we were talking about it as sort of absent from the classroom. The classroom was this isolated place about thinking, not about learning through touching and doing. We were learning through thinking, this is an empowerment of a different form of learning. Technology has externalized all of that stuff, make that live outside of the individual so that we go there to borrow it. What I really hope we can do is start going back, in trying to teach our students, to empower individual story-telling in a way, empower this sense of cultural agency. Individual as repository of cultural knowledge, so they too can pass that on and not get too overwhelmed with the technology so that their whole existence is over-dependent on this technology.

Despite concerns about technology, it was cited as a means to support relevant and experiential learning:

That is the beauty of technology, especially contemporary technology like YouTube.

Seven years ago, YouTube may not have been the media of choice, however today, that is the media of choice, FaceBook is the media of choice. Getting it relevant to the student is really to me a cultural practice. I think of a master fisherman. If you had a master fisherman teaching you traditional means of fishing, they would not provide you information about what it was like fifty years ago at this particular loko i’a that no longer exists, they would probably today take you to a loko i’a or a spot that is similar and has a similar vibe. The fish are different, the coral reefs are different, the tides are different, the water is different today, but they are utilizing the day-to-day skill so that you do learn it and working with your hands is important for us culturally.

Video is especially effective for online classes as demonstrated by this statement:
When I initially started doing the online courses, audio and video were almost mandatory. If audio and video components were not available to me to teach and my students to learn and to respond, the online class for me would not have worked. There has to be a means by which students can learn, hear, see, and use or demonstrate to me how they are carrying out the lessons learned.

A participant shared an exemplary use of video technology that also highlights the importance of multi-generational and experiential learning:

The best example I had was the toddler standing on a chair trying to wash a dish, with a child who was a little older standing next to the toddler washing a dish in the sink. Mom’s assignment was to demonstrate and ‘ōlelo (speak) an activity while she is doing it. So she’s saying it in Hawaiian, the child is washing the cup, and rinsing the cup, and then placing it into the dish rack. The toddler who can’t speak English yet is babbling while the other child is almost mimicking the mom. You can hear the mimicking in the video and I thought this is pretty wild, and I am applauding this mother because here she is, she has to focus on her material for class, let alone memorize the dialog and the vocabulary to use, deal with a toddler who is standing on a chair that can topple at any point in time, with soapy water everywhere and the other child watching over everything but also wants to get into the mix, but you can hear the language being spoken.

A focus group member with online teaching experience noted that technology permits students to make decisions about how to represent and demonstrate their learning:

In the online world, students are required to send videos of themselves utilizing the language in their personal environment. You’ve got some superb students with their
mobiles, they are in their yard, going to the trees, showing things, getting the cat involved. Then you have other students who will sit in front of the camera and just read their sentences, they won’t do anything active. Then you have students who won’t see their face at all, you just see their text. You really let the student decide.

**Sanctity of Knowledge**

In the passage below, Hezel (2013) highlights the differences between westerners and Micronesians with regards to information.

For Micronesians, information retains much of its traditional value as a prestige item, a private possession to be dispensed cautiously and in a measured way. For Westerners, information (unlike wealth) is a commodity that they can afford to share generously. Indeed they think of themselves as having the obligation to do so. In the Micronesian world, information can be converted into social capital, just as wealth can. But the norms that govern the liberal use of information and wealth could not be more different (p. 73).

This perspective influences attitudes toward technology and presented challenges for some participants who shared prior experiences of collecting and recording cultural knowledge from elders in their own communities. “When I look deeply in our culture, there are still people who are very hesitant in writing down the culture because of the fact that it is sacred.” There may be resistance to technology-based recording of cultural knowledge, particularly the type viewed as sacred or clan-specific knowledge which can be valuable social capital.

We want to empower our young people with some of our common language like names of fish, parts of a house, common knowledge – how to build a earth oven and cultural practices around those things like fishing, but when we start getting into things that are
more particular to family or clan knowledge, those things can get very hard to get it out of people, especially when we are recording. Once the technology for recording (is used), to take it outside of the individual, then the interaction is totally different. If it is just me and the other person, depending on how much I trust the other person, it is different. We were aware of those things and we talk to our students about this.

Participants provided examples of successfully addressing these issues in culturally appropriate ways. They demonstrated appreciation for the value or sanctity of knowledge and took measures to ensure respectful collection, dissemination, and protection of information. For example, in a video project about traditional medicine, a project intended to preserve cultural knowledge and engender cultural pride, an Indigenous elder was interviewed, but information gathering was limited to basic information (local names of plants, common uses) and did not include personal recipes or methods of preparation. The participant who undertook this project also commented on the importance of having a pre-existing personal relationship with the person being interviewed. Sharing of such information was done in the context of that relationship wherein respect for cultural norms was already established. The importance of such relationships prior to conducting any research on Indigenous topics or with Indigenous peoples was cited by several participants and is reexamined later in this chapter.

**Axiological Aspects of Education**

Values are an inherent part of Indigenous ways of learning; participants consistently articulated practices grounded in cultural principles and technology uses to support those ideals. Discussions centered on their significance and specific core principles such as relationships, respect, and reciprocity. Regardless of course content, Indigenous educators expressed an
expectation that values be incorporated into their curriculum and shared the aspiration that they be included in learning outcomes and assessments.

Without the values, the content cannot be learned to its fullest; something is going to be lacking. We don’t have a job to only teach content, we are also imposed by our culture, to teach cultural values which isn’t in our job description, which isn’t in our assessment measures, which isn’t in our outcomes.

One participant shared the view that one element of an authentic practice is inclusion of cultural values in educational assessment: “For me it is the authentic practice, the authentic measurement, and the authentic tools we need to incorporate now because it does not fit the cookie cutter that is lent to us in the academic world, especially at the post K-12 level.”

**Relationships**

Teacher-student and student-student relationships are critical and must be fostered by educators from the first day of instruction:

In a face to face class, I sit with them, like the first activity we do, the ice-breaker, includes me – what high school I went to, where I am from, what my parents’ names are. It doesn’t become ‘all twenty of you do it and I will stand here and watch you.’ That in and of itself is culturally different.

The prominence of relationships with students in a distance learning course was also discussed:

Just the other day, I had students say, “I know you, you’re my online teacher.” They have wanted to seek me out more than once. I’ve never met them face to face but because I’ve had a little profile picture and everything that I’ve shared about me, they feel that relationship. They seek that intimacy and fostering that personal relationship is very effective.
Establishing and fostering such connections is viewed as more challenging online, but suggestions were offered regarding how technology might help:

In the online environment, I struggle with that. You have to know the proper questions and dig deeper and occasionally you’ll see a response you can tap into. I like to keep all the discussions public, so that everybody and see everybody’s discussion so if something like that comes up, then it encourages other people to tag on. I’m very much into a tag-on, whether it’s in the classroom or not, if somebody hears something and then they connect, it’s good to be able to do that.

In addition to using online discussion boards to foster relationships, video can also be effective:

It is not as easy to do relationship-building online; you can start out and do small exercises. I still struggle. It might be easier if you incorporate more of the video so you are in their houses with them, so that would add to it because you can actually see them. I have not done that yet, probably would want to do more of that, but I know being able to refer them to videos where they can hear the voices of the people that they are reading about, is a good thing.

That last statement reflects the principle of extending the learning network and relationship beyond teacher and students, to include others who can contribute to the learning process. Participants felt it was their responsibility to help students connect with or form a relationship with a guest speaker or author of texts read in class.

Then there is learning the culture of the author and their whole world. That goes back to relationship. If you are going to read anything or listen to a kūpuna, you need to have a relationship with the person that is speaking, whether it is through a book, or through a
video, or through an interview, or through a text. That relationship needs to be built before you start.

When that relationship to author or guest speaker is not attended to, students may feel disconnected or question the value of the text as one participant noted:

You raise a good point and I stumbled on it last week. We read a text and I failed to introduce the author to the students, thinking that the content was what I was focused on. I failed to realize that the author should have been introduced prior to his work and that did not cross my mind, I did not even think about that and I thought, if you are going to read a piece, when do you ever look up the author? You just read the piece; we don’t tell you much about the author. As an instructor, as a professional, the students are assured that we know which authors are academic and intelligent and what opinion we want them to hear.

Knowing the author and helping students get to know the author was viewed by one participant as culturally appropriate; its absence questionable:

There is a literary philosophy that some teachers follow where you do not introduce the author and it is the content and the actual text that is the main focus. Culturally that is really uncomfortable for me. Because why would I have you look at anything unless you had a relationship with them? When I have people come into my class, they (students) have already had a presentation about them, they’ve read their work, they know about them.

Participants commented that when relationships are established and nurtured, results are positive.

I think asking for opinion goes back to relationship. There is something that happens in my class that by the last day we are in tears because we are leaving each other and it’s
because it is hugely relationship-built. At the beginning there is so much time and space allowed for them to say what they want, and what they feel and what they think, that it is just huge at the end. I think that is cultural.

The significance of relationships and positive emotions engendered by good relationships is consistent with Indigenous ways and contributes to student success.

We affirm that yes, the relationships and the emotions, and the feelings that you are getting out of your students is acceptable because it is leading to high student success rates. You can make a correlation now. You couldn’t make a correlation before, to say, “If my student feels sound and good and fuzzy in my class, he or she will perform better on his or her test.” We have data that says that. Now we can tie it into being of Indigenous peoples and the way we approach teaching and learning.

Technology’s role in fostering relationships was noted:

I want to go back to the connections and relationships and technology has been huge. Something as small as Samoa chat, where you just basically have a bunch of Samoans that are sitting and chatting and making those connections via technology, and then pointing my online students to online blogs and online sources of poetry and online sources that they can then connect. With the diaspora of Pacific islanders moving to big urban centers away from their home lands, there is an increased use of technology to keep in touch with each other and then pointing that out to my students studying Pacific studies that it wasn’t a migration to American where they all changed their names at Ellis Island to something else and became American, that there is still a huge connection to the home lands and that it is being done through technology and that it is back and forth, it’s not one direction, is something that I definitely point out to my
students, that we are all very much connected and that is really important. It is not just
your neighbor who happens to be Micronesian, it’s the woman that’s in Micronesia that
is doing poetry and posting in on YouTube and making statements about climate
change. Technology is just amazing and something that they need to be clued in on and
connected to and not just be focused on the Micronesian or the Samoan or the Tongan
that lives down the road.

Social networking technologies are important for islanders who are away from home; they
provide cost-effective ways to stay connected. Several focus group members offered these
observations about social networking technologies such as Skype and FaceBook: “Social
networking is very popular amongst our people. It’s a way of sharing what’s happening.”

Another participant described use of both of these technologies:

My mom who has only had up to a 6th grade education, we Skype every day. Because of
our living situation, she’s doing things I never imagined or she never imagined she’d be
doing, so that we can continue to communicate, because it’s so expensive to make
phone calls, we use Skype and I created a FaceBook page for her which she learned
how to log into every now and then to see pictures of baby.

Social media and video technologies provide ways for islanders who have relocated to witness
important social events and life events, from birth to death.

FaceBook is a big hit with the visual capabilities and also sending DVDs over from
home, on events, like International Woman’s Day just ended and people are sending
videos to their relatives here and beyond, to show the activities that went on back home.
People are so home sick, it’s a way of getting news from home, a way of being there, as
close as you can. Before it was videos, now it’s DVDs, even funerals.
The use of technology to share funeral experiences was noted by another participant:

That’s something interesting whereas in Western culture, you don’t see people taking pictures or video, but for them, it’s their last time to see that person, I guess. Or to share it with the relatives that are not there – that’s common to see.

While technology is a powerful and effective tool for recording and sharing cultural information, participants noted that these acts occur within the context of mutually respectful, pre-existing relationships between those being recorded and those doing the recording:

“Something important for people here to understand is that before making such a request, I place so much importance on building the relationship first, just like in everything else we do; that would make things different.”

**Reciprocity**

Participants voiced a belief that we are all part of a learning network and that learning is a reciprocal process based on relationship:

Indigenous people believe – we have words in Hawaiian: a‘o mai and a‘o aku – when you teach, we are learning. It is reciprocal. There is a back and forth exchange, it is never one-sided. It’s not, “Here’s some information I am going to give you, you’re not going to give me any information.” In the Hawaiian way, we are constantly learning from students. I am constantly learning things – things I thought I knew about the language already – but you get students who comes in and share their experience – had we not let them share their experiences, emotions, feelings, we would not have gotten that and built our library of knowledge. It is not just outward.

At the end of this chapter, I revisit the principle of reciprocity which was articulated as a core cultural value in the context of focus group participation.
Respect

Respect is a core value expressed through a variety of behaviors noted earlier in this chapter: observing proper behaviors toward others, establishing and promoting positive relationships, esteeming others’ knowledge, and protecting sacred knowledge. One focus group member noted that acknowledging a student’s place of birth is also an expression of respect: “In Oceania and the Pacific, they say in Maori tūrangawaewae, the place where you stand, is what you incorporate into your being and by not acknowledging every person’s tūrangawaewae, you are not acknowledging them; that goes back to respect and relationship.”

The role of teacher is accorded a measure of respect and that respect extends to other cultural experts; this is acknowledged as a possible source of conflict for educators accustomed to being viewed as the sole expert in the classroom:

I think that there’s a role in Pacific cultures that you are in, because you’re in that role of teacher, you have a level of respect. I still think that Hawaiian and Pacific peoples were very much compartmentalized in the sense that there were those guilds of ‘the experts’ and I would think they would be very interested in knowing the others’ perspective but yet there is still the role, so maybe that’s that conflict of I am the kumu, this is my classroom, I will maintain that level of respect, but still be open to having others as long as their role is of a certain level as the expert.

The potential for technology to erode respect was noted by several participants:

For the past years, they’ve passed around really bad videos of girls and that’s when I see that technology can be very bad because it destroys respect of individual. I don’t how this individual would bring back their respect in the community when their picture is already out.
There is a concern that students may not be aware of potential harm posed by the Internet: “I don’t think a lot of people understand the power of a recorded image and how far that can go, way beyond your scope.”

**Technology Supports Indigenous Learning and Aspirations**

Participants cited technology uses that support Indigenous Learning Theory, articulating ways specific technology-based pedagogies facilitate important cultural values such as relationships and the use of narrative. Technology was also acknowledged as a powerful vehicle for promoting and sustaining cultural practices including traditional ways of learning, cultural pride and cross-cultural sharing. There were aspirations for more access to technology and the careful application of technology in teaching so as not to negatively impact Indigenous cultures, as noted in these comments:

I see the increased use of technology in families, in communities, in the schools, only if there is available technology. Referring to the schools in Chuuk, it would be great if there was availability of technology; once it’s there the use is important, does it increase of understanding whatever topics that they are studying. For Chuuk, it’s very limited, the use of technology, but if we had the chance of increasing the use of technology in the classroom, we’ll be very happy because we know it enhances learning, but when it comes to culture, we need to be very careful on how we use the culture in putting on the technology.

**Primacy of Narrative**

Participants consistently remarked on the importance of narrative as a mode of learning and valued cultural skill. Practitioners also shared their teaching practices using technology to
support narrative. On the role of narrative in learning, one participant commented, “we’d go to
sleep hearing Grandma’s stories and there were a lot of lessons to be learned in those stories, it
was awesome. It’s definitely a traditional way of learning.” This sentiment was echoed by
another participant: “When I think a little more deeper, our culture is an oral tradition and that’s
how Chuukese education was and has been – telling of stories, helping a child learn by listening
and more of observation.”
Perpetuating oral traditions via audio and video technologies is important in teaching:

…the orality and the fact that we come from an oral tradition – I’ve always done that
with film and as much of the oral that you can incorporate into your online class, the
better. So you saying that it was vital that you had the audio and the video is something
that is for sure cultural because I don’t see how you could teach.
While technology can support narrative, it can also decrease its presence in our lives: “The story-
telling is almost gone. The westerners read books to their kids, we told stories. Now there’s
TV.” Technology was viewed as fostering connection, but in some contexts, can foster distance
between people:

Watching those (movies) on those projectors is a big thing and it is from the storytelling of
our grandmother’s bosom to watching it with the community what it looks like has really
evolved and in another sense also disconnects us from each other because there is so much
difference when grandma is talking about it, telling the story and we are lost in her voice, then to
go and watch it and we are not even connected to each other as we watch the movie.

**Responsibility to Promote Culture**

In the focus group discussions, participants negotiated and maintained a balance between
the need to preserve traditional cultural practices and the awareness of culture as being dynamic
and responsive to societal changes. There is a notable sense of responsibility to transmit Indigenous cultures into the future and awareness that Indigenous cultures can make positive contributions to western societies.

Technology permits preservation of cultural knowledge and practices; digital repositories permit young people who grow up away from the lands of their parents to form connections to their ancestral lands and peoples. As one participant noted, “we can continue our culture through technology and that way our culture doesn’t get left behind.”

A participant offered several examples of educational technology projects to preserve traditions, engender cultural pride, and facilitate sharing across cultures:

(a) I used the vehicle of Kosraean traditional medicine for young adult Kosraeans here, to see if that would motivate them to be interested in their own culture and preserving their culture.

(b) We produced three cooking shows all in Kosraean language except when (the Hawaiian camera person) stepped from behind the camera to become a guest for one of the shows and teach how to make laulau. While we eat taro in Kosrae, we’ve never heard about eating taro leaves and taro stems. We still hear feedback today, people learned about wrapping food in tī leaves, so there is island sharing, but the nutritionists love that they have these videos and they can share it.

(c) We created a Pacific Voices technology kit (for teachers): a printer, an Apple computer, a digital still camera, and video camera. They wanted to create bilingual books. We want our kids how to read, but we realize they need to learn to read in Kosraean before they can learn to read English, but there isn’t much reading material. So as I introduced the equipment, we said, ‘this is a digital camera, let’s
make it a Kosraean camera.’ This is a printer, let’s make it a Kosraean printer and I showed example projects, different cultural projects and then we walked around the village and they got their media and we created five different stories, they were all bilingual, the teachers were really into it. They drew the art for it; we had a scanner and printer as well. They were so proud of their work and they couldn’t wait to share it and use it in their classrooms, and they couldn’t wait to have their own kids producing. It was a simple, very possible way – without going through a big publishing company – to create bilingual books in topics that they were teaching.

One seasoned educator in the group made this observation about the content of the information being shared:

It’s interesting now – we grew up trying to learn about other things, now we are trying to teach our students about their own things – we’ve come full circle. At the beginning of this technology explosion, now we are trying to ride the same wave, but get our students on board and make sure they don’t lose a lot of their own culture and background and go through what we went through.

I tell my students to look at the canoe as a very good example of our own technology. It developed over thousands of years; now it is up to us to continue the development, to revolutionize the design of the canoe, taking it into different places, utilize other technology to sustain those cultural tools like the canoe and things like that. I am waiting for the next generation of canoe design, house design, instead of just saying, “Okay, we’re being hit by westernization” and modernizing in very different ways; we don’t necessarily need to lose our culture in order to take on this and this is the challenge to us when we talk about culture and multiculturalism is where is our place in
this global experience. Instead of taking on other people’s experience, let’s enrich our experience through sharing it with other people.

One’s culture can also be enhanced by learning from others:

If you take it back to traditional Hawai‘i, even with our early monarchs and our early ali‘i, they were always searching and setting out for that newest technology, in whatever form you want to call it, you know, we were the forerunners of technology at one time, tiny little islands in the Pacific had things that the mainland didn’t have yet and that is impressive to me, to teach students that you may generalize Hawaiians as being on the lower end, but remember how could we have been, when our ali‘i and our people before us really saw what it could do to our ‘āina and it wasn’t a negative thing. They are only taught the negative impact that was done to us with the occurrence of the settlers that came early on, but our ali‘i saw this as an opportunity and we are global and that is huge in the way we view education. That’s what I stick to in teaching, we have to go beyond where we are to grasp ‘ike and knowledge from others whether it be from our own race, our own blood, but definitely if there is a place, a land or a culture that has really done their research or done their due diligence on a topic or skill, that we learn from that and that we apply that within our own practices and teaching and maybe we better ourselves.

Educators noted uses of social media such as YouTube and FaceBook to promote cultural pride and encourage youth to sustain their culture. “Young Chuukese boys and girls are into singing, and you go on to YouTube and you see not just the popular singers, but anybody could sing and put anything on.” One participant encourages students to use social media sites to practice language skills, though is careful not to engage with students on such sites. “I won’t get a
FaceBook account personally and get students to friend me. I do ask students to post on their social media about a topic and then I want the reflection on what happened.” Another participant validated this practice, saying, “This kind of use permits students to perpetuate language and respects your cultural value of the role of kumu not as a friend. Your students use social media as a vehicle to perpetuate language.”

Participating in culturally relevant videos was noted as a significant source of pride. In recalling watching films made of local cultural events, one participant said,

For them to see themselves in production of anything is like, “I’ve arrived. I’m really well off.” I hear some of my women that join our program, just because they were seen on ‘Ōlelo and other people addressed them, for them that is success and that is huge and for them to be able to contribute in some way and educate the community in that sense, for them is very valuable.

Another participant reflected on a similar experience when showing videos of the home island to immigrant youth:

It brings a lot of pride to see their own images and images of their island; it is a healthy pride and there’s a connection to that with our kids’ self-esteem in education, in seeing their own culture and images of themselves or that represent them projected on the big screen.

**Summary**

The overarching question of this study is, "What can we learn about indigenizing educational technology by examining the experiences of technology-using Indigenous educators?" This question was addressed though a basic qualitative action research study using focus group interviews involving an Indigenous researcher and purposeful selection of Indigenous
participants. A framework of research that honors Indigenous epistemology, ontology, and axiology that was presented earlier in this work was reflected in the ways participants described their views of learning and teaching. Education is holistic, relational, reciprocal, respectful, relevant and grounded in our values, experiences, stories, and places. The Indigenous view of knowledge does not privilege the mind or limit it to the realm of thought; knowledge is a multi-sensory experience involving mind, heart, body, and spirit. Knowledge is valued for its application to living and can be sacred.

Participants espoused a positive stance toward technology, situating it in the context of dynamic cultures that honor the past while transmitting a legacy into the future. They identified ways that technology can be used for cultural preservation, development, promotion, pride, and sharing. They voiced a few concerns and shared aspirations that can inform future uses of educational technology with Indigenous students and educational technology practices of Indigenous professionals.

The primary findings of this study are that technology can support aspects of Indigenous Learning Theory and that Indigenous educators can provide wisdom about what constitutes culturally responsive educational technology practices. Specific recommendations are provided in the next chapter.
CHAPTER 5. IMPLICATIONS FOR PRACTICE

A goal of this project is to advance educational technology practices that create harmonious learning experiences for Indigenous students and educators at all levels. Information from Indigenous practitioners can contribute to the professional learning of educators, helping them to re-conceptualize their teaching and achieve technology integration that is culturally responsive. The findings of this study may also guide professional development programs for College staff - instructional and counseling faculty as well as student services professionals - with the aims to improve instructional and support services to students and provide Indigenous faculty with opportunities to develop professional practices that honor their native cultures.

**Toward a Culturally Responsive Educational Technology Praxis**

The effective integration of technology in the education of Indigenous students requires an understanding of Indigenous Learning Theory. Building a teaching praxis on this foundation enables educators to select technologies and employ technology-based pedagogies that support aspects of Indigenous epistemology, ontology, and axiology. Participants cited instances of educational technology practices that achieve the following goals:

- preserve and sustain culture in ways that honor and convey its dynamic not static nature
- support oral traditions
- encourage development of narrative skills
- demonstrate respect for self, others, cultural protocols, and knowledge in all spaces (physical and online)
- enable relationships among people and between people and their places (land and ocean)
- recognize the learner as a member of community (class, family, clan, village, etc.)
• bring community into classroom, e.g., guest speakers, elders, cultural practitioners

• foster co-creation of knowledge and learning using approaches that are holistic, multisensory, relevant, experiential, place-based, and reciprocal

• stimulate cultural pride

• promote sharing across cultures

Participants noted the following technologies that support achievement of these goals:

• audio

• video

• story-telling tools

• social networking systems

• online collaboration/communication tools

These technologies can be used to: make learning a multi-sensory, experiential, and aesthetically engaging experience; enable and support relationships across a distance; preserve and promote cultural traditions; empower people and encourage pride in one’s culture; support development of culturally valued storytelling and narrative skills; bring community into learning spaces and bring students out into the community.

**Tacit Knowledge Becomes Explicit**

The constitution of the focus groups was such that discussions provided much more than data for this study. Through conversations, intuitive and unspoken knowledge became explicit. A wellspring of insights emerged from enabling participants to associate their culture with their teaching praxis. As Perez (1997) writes, “There is power in the articulation of thought and sense. Dialogue can only begin when you find voice” (p. xi).
Finding one’s voice through the focus group discussions was empowering:

“Conversations like this affirms those of us who are practicing it, that it is okay to continue what you are doing, how you are doing it, even though we are being constantly compared to others.”

This highlights the value of encouraging such discussions on a regular basis and for providing Indigenous educators with safe spaces to articulate and nurture teaching and leadership practices grounded in their native epistemologies, ontologies, and axiologies. As educator and poet Sandford Lyne (2007) notes:

Nobel poet and educator, Gabriela Mistral of Chile, wrote: speech is our second possession, after the soul – and perhaps we have no other position in this world. If there is truth in what Mistral says, then not to speak, not to find and express our own voice, is to give up half of our inheritance, to live a half–life. That is too much to lose. (Preface section, para. 3)

It is my hope that by giving voice to these Indigenous educators, schools can adopt culturally responsive technology-based pedagogies that support the learning orientations of a growing number of students from cultures largely absent from the educational literature.

**Focus Groups Embodied Themes**

This dissertation is as much about culturally responsive research as it is about culturally responsive educational technology. As an Indigenous scholar, the process of navigating mainstream research processes and expectations to craft a path that honored me and my participants and construct what noted educator Four Arrows refers to as an authentic dissertation, was complicated. One of the most empowering aspects of this project was the Indigenous nature of the focus group activities which contributed to rich discussions that may have been diluted had western norms dominated the process.
As stated earlier, relationships with people, places and ideas were essential for the emergence and development of this study. Participants were recruited from a personal network, permitting me to conduct the focus group sessions not as a separate individual, but as a member of the community of Indigenous academics, participating in a collaborative knowledge-generating, meaning-making, transformative enterprise.

As is customary in gatherings of islanders, food was shared at both focus group sessions, served continuously during the talking. Cultural norms around respect, relationship, and reciprocity permeated the gatherings. In the session comprised entirely of Micronesian participants, family members were present and welcomed to eat, chat, and sit with the group, absent of any expectation of active engagement in the formal discussions. In this way, their presence situated the focus group in a larger cultural context, evidence of respect for familial relationships and appreciation for the work being done. One participant brought her infant and a young relative who would be responsible for attending to the baby during active focus group work; her husband joined the group later; another participant came with her husband and daughter because they were going to a family gathering after the focus group --relatives came and went like warm waves gently flowing through our core group. There were natural pauses taken in the formal discussion whenever a family member entered the room so that introductions could be made; discussions picked up naturally after the newcomers were introduced, given food, and situated comfortably. The infant’s needs for motherly attention were satisfied periodically, without any worries about disrupting the conversation. The baby was passed around the room to receive the personal attention, affection and socialization that is customary among our people. Observations about the baby punctuated the focus group dialogue.
The significance of reciprocity was evident and even made explicit by two participants. One reminisced about my support and presence for her thesis presentation and remarked that she had to come to the focus group to show her appreciation and return that support. Another participant voiced appreciation for the ways this dissertation may help immigrants to Hawai‘i from her home country and expressed gratitude for my attendance at her doctoral defense. She used this as a teaching moment by looking at the youth in the room and saying, “This is the Micronesian way. Reciprocity is important.”

The discussion flowed easily and smoothly with participants asking clarifying questions, acknowledging words spoken previously by others, giving validation and elaboration, reminiscing including laughter and words of pride, and a general sense of camaraderie. Hearing the data spoken in both focus group sessions was like listening to a cantata, defined by Merriam-Webster as “a composition for one or more voices usually comprising solos, duets, recitatives, and choruses and sung to an instrumental accompaniment.” The interplay among individuals, the manner in which one participant would yield the floor to another, encourage another to share a particular story of practice, or validate statements made by another -- the cadence, echoes, dynamics, harmonics, and resonance -- individual voices blending artfully to generate a bell canto.

**Action Research as a Vehicle for Inafa’ Maolek**

This dissertation represents my own professional learning and an attempt to contribute to the learning of other professionals who may then improve their practices. As McNiff and Whitehead (2010) assert, this is a hallmark of action research:

To contribute to improving a social situation therefore means first engaging with one’s own learning, and then bringing that learning into a social situation. This means talking
with people, and showing your awareness of your own learning and how you might influence them. We have said throughout that a ‘social situation’ refers to groups of people in a particular context with a particular intent. Therefore, contributing to improving a social situation means trying to influence people’s thinking, for them to bring that new thinking to bear on their possible new actions. (p. 251).

In chapter one, I noted that this dissertation is a step on my path to inafa’ maolek (to make things good or right); to honor rather than deny my own cultural values in my work. There were other strides taken to further that pathway; weaving of warp and weft to strengthen the fabric of my praxis. This dissertation experience occurred in the context of an active career; my professional practice was not stationary, frozen in place and time while the research study was being done. During execution of this dissertation, I was involved in professional activities that while not germane to the study, were inspired by it. These actions provide future research possibilities and illustrate McNiff & Whitehead’s (2010) statement that action research “becomes the grounds for other social and professional practices; professional development is understood as grounded in the capacity to offer explanation for our work” (p. 19). They also note, “It becomes a case of people working collaboratively to improve their practices by improving their learning about those practices, and checking with one another that what they know is valid. Practice therefore becomes the site for the co-creation of knowledge of practice” (p. 21).

As I was exploring the literature and developing a research proposal, I engaged in numerous discussions with colleagues in teacher education programs, in the fields of Educational Technology and Multicultural Education, and with Indigenous faculty who use technology in teaching. Identifying a problem in the field which could be illuminated and addressed through an action research study led to recognition of the gaps in my own work. Throughout the course
of this project, I was compelled to be critical of myself, discuss issues with associates, and take action in response to the questions I asked myself about my own practice and about those of the institutions with which I am affiliated. The question of values led me to be more conscious of the diminution of my cultural ideals in my own professional life and an awareness of the attendant personal dissonance. Realizing my principles in practice, those same principles on which this dissertation are based, was something I could no longer deny. As McNiff & Whitehead (2010) advise, “it is important to remember the distinction between speaking about values and living them” (p. 79). The dissertation process was a vehicle for examining and speaking about my values and laying the preliminary groundwork for living them, but this was not enough in the context of an active and ongoing praxis. I needed to find ways to breathe those values into my professional life without delay.

Dissertation-related dialogic and reflective activities not only unearthed problems, but birthed possible solutions. Discussions with the coordinator of my institution’s teacher training program led to acknowledgement that we were not addressing culturally responsive educational technology in our foundational multicultural education and educational technology curricula. We were teaching these as two separate and unrelated facets of the same profession. While the anticipated outcomes at the end of the dissertation process include addressing these issues of curricular integration, I could not continue with the status quo. Having exposed these deficits in a teacher training program offered by a campus striving to be a leading indigenous serving institution, in a state whose schools serve a culturally diverse student body, I could not maintain my current practices. In July 2013, a year prior to completion of this project, in collaboration with an associate who was teaching a foundational multicultural education class, I created an instructional unit for her course, weaving together principles of educational technology and
culturally responsive education. Using resources gathered during the proposal stage and early phases of the dissertation, I created a two-week module with readings about Indigenous Learning Theory and culturally responsive technology, highlighting Indigenous cultures of Hawai‘i and Micronesia, giving voice to cultural groups underrepresented in our curriculum. The unit included assignments that required reflection and application, and culturally responsive educational technology outcomes were added to the capstone project for the class.

In spring 2014, I taught the required educational technology class for our pre-service teacher education program, integrating principles of culturally responsive education into the course. I wove into my curriculum the materials and activities used previously in the multicultural education class, working the strand of culturally responsive pedagogies throughout the first six weeks of the course to bring new depth, color and texture to the tapestry of my class and my teaching practice. This resonated with the diverse student body, representing many cultures including Pohnpeian, Hawaiian, Vietnamese, Korean, Chinese, and African-American.

In the spirit of a collaborative and dialogic critical review of actions I hoped constituted improvements to practice, I shared these curricular modifications in a professional development forum for college faculty. The invitation to present my work called to mind this observation by McNiff and Whitehead (2010):

Perhaps the most powerful aspect of action research is that practitioners become aware of their capacity to influence the future, especially in relation to new forms of social and cultural practices. Because the focus is on improving learning to improve action, it becomes evident how one individual can influence the thinking of other individuals through collaborative working and making accounts of practice public so that other
people can learn from those accounts and perhaps find ways of improving their own learning and practices (p. 23).

The forum was one in a series of workshops dedicated to student learning outcomes (SLOs) and the event I participated in was described as “SLO Stories – SLO stars share their stories and perspectives on assessment.” I shared the story of identifying the problem of this dissertation which then uncovered gaps in my own teaching; discussing and addressing these issues with other faculty and implementing improved teaching practices and curricula. I also took this opportunity to raise awareness of Indigenous learning orientations and advocated for culturally responsive teaching across all disciplines. The dialogue was positive, yielded validation and ideas about other culturally responsive pedagogies. These interactions with colleagues stirred deeper reflection and critical analysis of my own work, but also inspired similar responses in participants and event organizers who invited me to a future forum, to share this story with more faculty members.

My efforts to realize inafa’ maolek were validated by these positive responses from students and other educators. This dissertation experience represents the crystallization of an authentic practice, the fabric of which now includes strategies that resolve the pedagogical dissonance at the heart of this dissertation. It is my hope that this work contributes to new thinking and new actions, improving learning for Indigenous students and teaching by Indigenous educators.
APPENDIX 1. NATIONAL EDUCATIONAL TECHNOLOGY STANDARDS

ISTE Standards

Teachers

Effective teachers model and apply the ISTE Standards for Students (Standards•S) as they design, implement, and assess learning experiences to engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community. All teachers should meet the following standards and performance indicators.

1. Facilitate and inspire student learning and creativity
   Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments.
   a. Promote, support, and model creative and innovative thinking and inventiveness
   b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources
   c. Promote student reflection using collaborative tools to reveal and clarify students’ conceptual understanding and thinking, planning, and creative processes
   d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments

2. Design and develop digital age learning experiences and assessments
   Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the Standards•S.
   a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
   b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress
   c. Customize and personalize learning activities to address students’ diverse learning styles, working strategies, and abilities using digital tools and resources
   d. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards, and use resulting data to inform learning and teaching

3. Model digital age work and learning
   Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society.
   a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations
   b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation
c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats

d. Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning

5. Engage in professional growth and leadership

Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources.

a. Participate in local and global learning communities to explore creative applications of technology to improve student learning

b. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others

c. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning

d. Contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community

4. Promote and model digital citizenship and responsibility

Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices.

a. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources

b. Address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources

c. Promote and model digital etiquette and responsible social interactions related to the use of technology and information

d. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools
APPENDIX 2. MAP OF THE PACIFIC ISLANDS
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<th><strong>APPENDIX 3. FOCUS GROUP PARTICIPANT DEMOGRAPHIC DATA FORM</strong></th>
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<td><strong>Approximately how many years have you been teaching?</strong></td>
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APPENDIX 4. FOCUS GROUP SCRIPT

Hello. Thank you for coming today. Hello. I am a doctoral student in the College of Education at the University of Hawai‘i at Mānoa and am conducting a research study examining experiences of Indigenous educators who integrate technology into their teaching. I am inviting you to participate in this study because you were educated in and work in American educational institutions, and because of your expertise in the area of Educational Technology. This rich background can provide valuable information for the fields of Indigenous education and Educational Technology. This group discussion will last about 90 minutes and will be recorded using a digital audio recorder. Do you have any questions before we start?

Introduction:
In 2011, UNESCO’s Institute for Information Technologies in Education issued a policy brief about Info Computer Technologies (ICTs) and Indigenous People calling for new educational policy structures and initiatives to empower Indigenous culture and education by providing Indigenous peoples and schools with:

- educators who are competent in using ICTs in culturally responsive ways;
- high quality, culturally appropriate digital learning resources; and
- use of ICTs for preserving and revitalizing Indigenous languages and for the creation or sharing of culturally-based knowledge and content.

Significant progress has been made in addressing the last two recommendations. Indigenous peoples have taken the lead in developing high quality, culturally appropriate learning materials, virtual environments, learning objects, and curricula. Very little progress has been made in addressing the first recommendation which assumes an understanding of what “culturally responsive uses of ICTs” are, yet this kind of information is not present in our teacher education curricula; there are no specifics in our multicultural education curricula or in our educational technology curricula. This is also an issue for in-service faculty at all levels. Professional development opportunities address technology skills, but not culturally responsive applications of technology.

One purpose of this study is to come up with suggestions for improvement to teaching practice, based on the experiences, insights and suggestions from practitioners like you -- Indigenous educators who are conversant in the practices of educational technology. This study provides a forum for you to explore issues of disconnects and disharmony between Indigenous practices and cultures and the ways technology is integrated into learning and teaching. This project also provides you with a way to guide indigenization of the field of educational technology, improving practices of educators of Indigenous students and paving the way for learning experiences that are more culturally responsive.

For the purposes of this study, and since Indigenous Peoples of the Pacific are so diverse, I would like to focus on three areas: Epistemology, Ontology, and Axiology. Our discussion will involve identifying and reflecting on instances of dissonance and consonance between technology integration and Indigenous epistemologies, ontologies, and axiologies. I am aware that culture is dynamic and ever-changing and that we can only speak for ourselves and not for an entire People or cultural group, so let’s focus our conversation on your own personal experiences as an Indigenous person educated in a Western educational system.
Questions:

1. As you know, Indigenous people have a holistic approach to learning that is not only about our minds – learning involves our ways of being/world view (ontology), ways of knowing (epistemology) and values (axiology) all play a part of our learning. Think about some of your own native aspects of being and knowing, and cultural values. What are some specific beliefs and values that come to mind? What are some primary values of your culture?

2. Think back to when you were a student. Was technology used in the classroom? How was it used? What role did your culture play in how the technology was integrated into learning and teaching?

3. As a student or teacher, what challenges have you encountered in regards to your cultural identity and technology use in learning? Have there been instances wherein you have been asked to use technology as a student in ways that are incompatible with your culture? As a teacher, have you used technology in ways that are incompatible with your culture? Have you applied technologies in ways that do NOT resonate with your Indigenous epistemology, ontology, and/or axiology?

4. As a student or teacher, what ways has technology been used in culturally responsive ways, supporting your cultural identity? How have you used technology in culturally responsive ways, supporting the identities of your Indigenous students?

5. What recommendations can you make for educators so that they can use technology in culturally responsive ways and support Indigenous ways, beliefs and values? Can you suggest specific guidelines, guiding questions, technologies, websites, and/or activities for each of the following areas: Indigenous ontology, Indigenous epistemology, and Indigenous axiology?

6. Are there experiences or behaviors you are aware of that educators should avoid or be mindful of; examples of particularly inappropriate uses of educational technology with Indigenous students?

Thank you for sharing your time and your thoughts. Do you have any questions before we end?
APPENDIX 5. FOCUS GROUP CONSENT FORM

Hello. I am a doctoral student in the College of Education at the University of Hawai‘i at Mānoa and am conducting a research study examining experiences of Indigenous educators who integrate technology into their teaching. I am inviting you to participate in this study because you were educated in and work in American educational institutions, and because of your expertise in the area of Educational Technology. This rich background can provide valuable information for the fields of Indigenous education and Educational Technology.

Activities and Time Commitment: If you agree to participate, you will be interviewed in a small group consisting of other Indigenous educators. The focus group discussion will last about 90 minutes and may be audio recorded so that we can have a written record that can be analyzed later. The focus group activity will be informal, a time to share your experiences as an Indigenous student who was exposed to instructional technologies in American institutions and/or an educator who applies Educational Technology practices in an American educational institution.

Benefits and Risks: While you will receive no direct benefit from participating in this study, your sharing is meaningful and will help the College and University use educational technologies in culturally responsive ways. I believe there is little or no risk to you in participating in this project. If, however, you are uncomfortable with any of the interview questions, we will skip the question, or take a break, or stop the interview, or you may withdraw from the study altogether.

Confidentiality and Privacy: During this research project, all data from the interviews will be kept in a secure location. Only the researchers and their graduate advisor will have access to the data, although legally authorized agencies, including the University of Hawai‘i Human Studies Program, have the right to review research records.

After the focus group interviews are transcribed, we will erase the audio-recordings. No names or other personally identifying information will be used in the writing of this research project. In typed transcripts, a pseudonym or fake name will be used; your real name or any other personally identifying information will not be used. You will be provided a copy of the transcript for review and comment. If you would like a summary of the findings from my final report, please contact me at maryh@hawaii.edu.
**Voluntary Participation:** Participation in this research study is voluntary. You can choose freely to participate or not to participate. In addition, at any point during this project, you can withdraw your permission without any penalty of loss of benefits.

**Questions:** If you have any questions about this project, please contact Mary Therese Perez Hattori via phone (808) 734-9840 or email (maryh@hawaii.edu) or email graduate advisor Dr. Gay G. Reed at ggreed@hawaii.edu. If you have any questions about your rights as a research participant, in this project, you can contact the University of Hawai‘i, Human Studies Program, by phone at (808) 956-5007 or by e-mail at uhirb@hawaii.edu.

Please keep the prior portion of this consent form for your records.

If you agree to participate in this project, please sign the following signature portion of this consent form and return it to me.

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Signature(s) for Consent:

I agree to participate in the research project entitled, *Indigenizing Educational Technology: Foundations and Practices*. I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

Your Name (Print): __________________________________________

Your Signature: ____________________________________________

Date: _____________________________________________________

Please check the box below to consent to be audio-recorded during focus group interviews. Audio-recordings will be erased after the focus group interviews are transcribed. In typed transcripts, a pseudonym or fake name will be used; your real name or any other personally identifying information will not be used.

☐ I consent to audio recording of my focus group interview.
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