

INDIGENOUS VOICES INFORMING ACADEMIC INFORMATION LITERACY:  
CRITICAL DISCOURSES, RELATIONALITY, AND INDIGENEITY FOR THE GOOD OF  
THE WHOLE

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**Dedication**

*To my Papa, Tocomá E.V.H.,*

*and*

*to all our Relations.*

## Acknowledgements

We are made possible because of those that have gone before us. For that, I would like to express my deepest gratitude to my ancestors that permeate through time and space, human and other than human, star, plant, and animal, whose natural forces converge constantly to be a gentle, or sometimes not so gentle guiding force at my back, protecting, preserving, and making sure that despite how crooked or dark the path, I always end up where I am meant to be. Who I am today would also not be possible if it were not for the remarkable journey of my Apache-Comanche grandfather who in an act of reclaiming his own Apache knowledge and traditions, continues to be the foundation of my personal and professional inspiration. I would like to recognize how invaluable my father's parents were to me growing up when they took me to public libraries regularly, essentially from the moment I could read and write, so I, a highly research driven person from even a young age, could explore topics mostly associated with the natural world. I cannot begin to express my thanks as well to my parents who continue to support me in ways that only make me spoiled beyond any such reasonable age, although my Mom would say otherwise. I must also thank my best friends Dr. Rachel Hoerman and Dr. Nhu Nguyen, as well as Dr. Sunyeen Pai, for supporting me, offering seasoned words of advice, and tolerating me through my persistent grumpy moods, feelings of defeat, cynicism, and pessimism because, "Indigenous information literacy just isn't possible in the post-secondary institution." You each provided reassuring support and assistance in your own way through this journey that was invaluable, and I was wrong. This is possible in a multiplicity of forms. Next, a special thank you to the research participants interviewed for this project. You said yes to be interviewed at a time when we are exhausted, burnt out and grieving from an ongoing global pandemic, and you showed up. Thank you so much for your contributions. Finally, to my thesis committee,

thank you for your patience and making this possible. To you all, I am forever transformed and have grown exponentially. Thank you. I hope this thesis begins my process of gifting back to the world with gratitude and the hope of empowering others as you have empowered me.

### **Land Acknowledgement (Ho‘oia ‘Āina) at the University of Hawai‘i**

In this space, I would also like to acknowledge the sovereignty and indigeneity of Hawai‘i at the University of Hawai‘i at Mānoa by offering the following land acknowledgement generated by the University of Hawai‘i General Education Design Team:

The University of Hawai‘i campuses are situated on the traditional homeland (‘āina) of the Kanaka ‘Ōiwi (Native Hawaiian) people, who never ceded their sovereignty to the United States. We acknowledge that Queen Lili‘uokalani temporarily yielded her authority under duress and in protest and did not relinquish her power in perpetuity. Rather, sovereignty was wrested through an illegal coup by foreign settlers aided by the US military in 1893, and later illegally (and immorally) annexed to the United States in 1898. Moreover, the University is a land grant institution under the Morrill Act of 1862, which was used to fund universities in the US by redistributing 11 million acres of Indigenous lands ceded under violent duress. The University has also benefited from 1.8 million acres of seized and contested Hawaiian lands that UH campuses sit on, as well as lands it leases and thus controls.

As a Hawaiian Place of Learning, as an Aloha ‘Āina University, as an Indigenous serving institution, and as a beneficiary of the Morrill Act, the University of Hawai‘i has a kuleana (responsibility) to recognize Hawai‘i-including our campuses and facilities-as located on the ‘āina of Kanaka ‘Ōiwi; to support Indigenous peoples and the protection of Indigenous ‘āina; to affirm Kanaka ‘Ōiwi and their knowledge systems greatly contribute to our collective understanding of Hawai‘i and the world, and practices such as mālama ‘āina are models for sustainability. The university is committed to promoting equity for Kanaka ‘Ōiwi and other marginalized groups in and beyond our institution.<sup>1</sup>

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<sup>1</sup> “Place Based Capacities Proposal for General Education,” University of Hawai‘i, 2. <https://www.hawaii.edu/wp/wp-content/uploads/2021/10/Place-Based-Capacities-Proposal-for-General-Education-1.pdf>.

## **Abstract**

Instructional librarianship in public post-secondary institutions requires that librarians be responsive to a diversity of paradigms and student needs, including Indigenous contexts. Although constrained by institutional infrastructures, Indigenous research methodologies and epistemologies provide frameworks for Indigenous librarians and students to practice and support inquiry in ways that are responsive to their culturally-specific needs. Currently, research in the field of library and information science about how Indigenous research methodologies and epistemologies can support academic librarianship is limited, especially concerning how Indigenous voices can inform information literacy as a whole. For this study, 4 Indigenous LIS and academic professionals and an Apache-Comanche Elder were interviewed. These semi-structured interviews were then analyzed to better understand how Indigenous voices can inform information literacy in the public academy. Responses were coded using thematic analysis. Results demonstrate that Indigenous voices can inform information literacy in consideration of relevancy, value neutrality, positionality, through being critical of hegemonic infrastructures including technology, prioritizing native voices, braiding knowledge systems, and centering relationality. These results hold implications for strategic planning, curriculum development, and informing social paradigms that support Indigenous people in post-secondary education while addressing issues in modernity for the good of the whole.

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## Preface

I was born and raised in Lubbock, Texas, a town that is at the bottom edge of the Great Plains in a region known as the Llano Estacado. This region is one of the ancestral homelands of both my Apache and Comanche ancestors, in addition to being occupied by Paleo-Indians and other native communities moving through the region as far back as 12,000 years ago or more. This lineage for me comes through my mother and her father, on through both my great grandparents. My father is of insular Gaelic descent, predominantly Irish and thus, I am both descended from European settlers and Native Americans.

My Apache-Comanche grandfather was born in Fort Sill, Oklahoma, the decommissioned Apache and Comanche reservation where the Chiricahua and Warm Springs Apache people were held as prisoners of war by the United States until 1914. I grew up being inspired by his gentle wisdom, teachings about respectful relationships with nature, learning about the importance of dreams, ancestors, healing, and walking a good path in life. His own journey through life is one of reclaiming and overcoming the barriers of an assimilationist and racist past, and besides simply appreciating the beauty of his wisdom and character, I have always felt compelled and a deep responsibility to carry forward what I can of his indigeneity in honor and responsibility to him and his story.

This responsibility has carried me on a journey through training in traditional Western herbalism, and an apprenticeship in a particular American folk tradition that is a syncretic blend of the ancestral traditions of its seminal creator who was of African, Irish, and Apache descent. Growing up, I learned about Native American genocides and wars from my grandfather. I also learned from these herbalists and folk teachers that the same genocidal histories occurred in Western Europe under Roman Catholic colonialism against “pagans”, heretics, and in the

Inquisitions and Burning Times. Because of this, I developed an understanding of particular modifications made to social paradigms that contributed to the current state of modernity, a state that is laying waste to the lands we inhabit today. Modernity is a direct result of the intentional selection against native peoples and our ways of knowing and being. Coming into the university, I have fantasized for years about having the opportunity to produce scholarship that speaks directly to this history by re-embedding that which was mistakenly removed from our collective social consciousness and cultural practices.

My background in the university is in ethnobiology, Hawaiian language, and Indigenous research methodologies. I remember the first Indigenous research methodologies course I took when I learned that Indigenous scholars were creating space for dreams and visions as a valid way of conducting research in the academy. I had the impression that Indigenous scholars were being cutting edge and will bring the system back to wholeness with these methods. I had no idea at the time that I would be writing this thesis in the Library and Information Science Program at the University of Hawai‘i at Mānoa. As it turns out, this thesis has resulted in the opportunity to address the atrocities that occurred to both my Indigenous European and Native American ancestors. I am writing this thesis for these ancestors, and for all of us, in an acknowledgement that native knowledges have the exact pieces to help resolve some of modernity’s greatest issues.

The research for this thesis was conducted over a period of approximately two years. In a particular way, it is also the synthesis of my entire life of learning from and with native peoples and in relational knowledge systems. For the first year and a half of this research, I was deeply frustrated and often felt defeated by the topic of Indigenous information literacy in post-secondary institutions. It seemed that no matter what corner I turned, I could not resolve issues with my own traditional concepts of Indigenous ways of knowing, with the reality that post-

secondary research is conducted using information technology systems and defined by institutional requirements and modes of being. In my last full semester of course work I took Dr. Gazan's informatics class and within the first week we were studying and learning about infrastructures. It was a huge relief because suddenly, I had the vocabulary and concepts that allowed me to specifically diagnose why I couldn't seem to make Indigenous epistemologies fit into library information literacy systems. While the understanding of infrastructures didn't make the dichotomies go away, I gained some magical ability to remove these obstacles when I could name and identify them. They no longer presented as frustrations. Instead, in combination with resolving myself to honoring and representing the responses interviewees were providing, this thesis came together in a way that was both critical of infrastructures while opening pathways to do what I've always hoped to do which is to perpetuate native voices and speak directly to what modern paradigms need to remember most: Relationality. We are all related and part of an ecological whole.

Jason Ford  
Mānoa, O'ahu, Hawai'i  
5/13/2022

## Research Question

How can Indigenous research methodologies and epistemologies inform information literacy in post-secondary instructional librarianship?

## Background

Approaching information literacy in public, post-secondary institutions that are responsive to and informed by the histories, educational values and objectives, protocols and ongoing lived experiences of Indigenous peoples requires mediating multiple factors simultaneously. Indigenous cultural competencies for academic professionals encourage library and information science (LIS) professionals to be educated in providing information practices and services that are supportive of culturally relevant contexts. This can be challenging due to circumstances within public post-secondary institutions. There are a variety of realities directly impacting Indigenous information literacy practices that must be reconciled. Indigenous scholars and instructional librarians are required to navigate a system whose Eurocentric, rational, industrial, capitalistic infrastructures can be inconducive to their own value systems and ways of knowing. Additionally, multicultural classrooms are likely to represent a diversity of faculty, students, and ideologies which can make cultural specificity a challenge.

Due to the multicultural, international, and pan-Indigenous reality of post-secondary institutions, a diversity of students can be present in one classroom. There are an estimated four to five thousand Indigenous cultures globally, and in an increasingly global world, an unpredictable spectrum of students may present in a classroom.<sup>2</sup> This diversity is the reason that

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<sup>2</sup> Kathleen Burns, Ann Doyle, Gene Joseph, and Allison Krebs, "Indigenous Librarianship," in *Encyclopedia of Library and Information Sciences*, 3<sup>rd</sup> edition, eds. M.J. Bates and M.N. Maack (Florida: Taylor & Francis, 2009), 5.

“content-neutrality” and other forms of value and viewpoint neutrality are recommended as best practices by the American Library Association.<sup>3</sup> At least in this regard, librarians are reminded that it is best practice to approach classes with an awareness to understand and support the spectrum of paradigms and research methodologies that present in our academic library practices. Yet, professional best library practices do recognize that Indigenous students can have specific inquiry needs. To meet these needs, Indigenous research methodologies and epistemologies are being employed to support a variety of Indigenous expressions in the academy. These methodologies and epistemologies empower Indigenous librarians to *choose* to utilize their own positionality “to apply Indigenous philosophies and values to professional practice and education,” and contribute to Indigenous scholars ability to work in institutions in greater capacities.<sup>4</sup> This increased capacity facilitates Indigenous librarians and scholars in making empowered decisions about what is contributed, integrated in their traditional systems, and what is critiqued and rejected. Broadly, it is the responsibility of all instructional librarians to know how to best serve their student populations, and like one Apache-Comanche Elder interviewee said, to recognize that “there’s knowledge in every group of people, that if shared, could help everyone.”<sup>5</sup>

The American Library Association states that “librarians, Indigenous peoples and other tradition-bearers should establish frameworks designed to encourage reciprocity, collaboration and access in the stewardship of [Indigenous librarianship,]” affirming that “traditional cultural expressions exist and are created within an Indigenous or folk cultural environment that may

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<sup>3</sup> Trina J. Magi and Martin Garnar, *Intellectual Freedom Manual*, 9<sup>th</sup> edition, (Illinois: ALA Editions, 2015). See the keyword expressions *value neutral*, *neutral*, *neutrality*, and *content-neutrality* in this text for examples of how it is applied by the ALA as a professional standard of unbiasedness in professional practice.

<sup>4</sup> Burns et al., “Indigenous Librarianship,” 18.

<sup>5</sup> This was shared while in conversation with me during a one-on-one interview in October 2021.

include culturally specific meaning, reflecting cultural history, spirituality, worldview, artistic expression, respect for the land, and continuity of culture.”<sup>6</sup> The recognition, support and construction of knowledge contributed by Indigenous scholars is also part of broader movements within the post-secondary academic institution to indigenize the university, university libraries, and to decolonize and diversify epistemologies within institutions described as hegemonic. This is happening through a process of “bringing Indigenous knowledge and approaches together with Western knowledge systems.”<sup>7</sup> In this context, Indigenous information literacy is one of many ongoing emergent manifestations where post-secondary institutions, Indigenous knowledge producers, and those supporting Indigenous capacities intersect in a space that is recognized as being fundamentally not neutral, but rooted in historical, ongoing socio-political and cultural infrastructures that have major impacts on how Indigenous scholars and instructional librarians conduct and teach research.

In the United States, Indigenous education, “primarily [taking place] in boarding schools and under the auspices of Christian churches and missionaries,” was historically used as an oppressive tool to forcefully assimilate Indigenous peoples into the dominant culture.<sup>8</sup> Cajete states:

Throughout the 18th, 19th and into the early 20th centuries official U.S. government policies were geared toward the total assimilation of Native Americans. Toward this end, the government established the first boarding schools in Oklahoma in 1887. Eventually, these were established throughout the Western half of the U.S. Early boarding schools were ‘deculturalization centers,’ which emphasized the vocational curriculum of ‘the

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<sup>6</sup> “Librarianship and Traditional Cultural Expressions: Nurturing Understanding and Respect” (Revised Version 7.0, American Library Association, 2010).

<sup>7</sup> Asma-na-hi Antoine, Rachel Mason, Roberta Mason, Sophia Palahicky, and Carmen Rodriguez de France, *Pulling Together: A Guide for Curriculum Developers*, (Victoria, BC: BCcampus, 2018), 6.

<sup>8</sup> Juris Dilevko and Lisa Gottlieb, “Working at Tribal College and University Libraries: A Portrait,” *Library and Information Science Research* 26 (2004), 46.

primer and the hoe' as a replacement for Native American traditions and language.<sup>9</sup>

Similar patterns of “colonial education” can be found in Indigenous cultures globally where “numerous accounts across nations now attest to the critical role played by schools in assimilating colonized peoples, and in the systematic, frequently brutal, forms of denial of Indigenous languages, knowledges and cultures.”<sup>10</sup> For Native Americans, things remained relatively unchanged until the American Indian Movement of the 1960s. However, Native American Elders recognized even as early as 1911 the value of post-secondary education created by and for Native American peoples. Crazy Bull and Guillory speak about August Breuninger (Menominee) who wrote to Apache physician, Dr. Carlos Montezuma, and said that “a university for Indians is the greatest step we educated Indians could make in uniting our people.”<sup>11</sup> For Native Americans and Indigenous people globally, these sentiments were the early stirrings of starting the process toward self-actualization in academia. This especially gained traction when Indigenous movements emerged from the civil rights movements of the 1960s.

From the 1960s onward, developments continue to take place in Native American and Indigenous education within the university. Kolopenuk explains that the Indigenous sovereignty movements of the 1960s and 1970s gave way to the development of Indigenous studies programs in universities because Indigenous scholars “wanted a seat at the table” within an institution that they saw as complicit in “fueling colonial projects of appropriation and misrepresentation.”<sup>12</sup> The product of these movements now is that Indigenous scholars have achieved the ability to be

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<sup>9</sup> Gregory A. Cajete, *Igniting the Sparkle: An Indigenous Science Education Model*, (NC, Kivaki Press, 1999), 27.

<sup>10</sup> Linda Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, (London: Zed Books, 2012), 67.

<sup>11</sup> Cheryl Crazy Bull and Justin Guillory, “Revolution in Higher Education: Identity & Cultural Beliefs Inspire Tribal Colleges & Universities,” *Daedalus (Cambridge, Mass.)* 147, no. 2 (2018), 96.

<sup>12</sup> Jessica Kolopenuk, “Miskâsowin: Indigenous Science, Technology, and Society,” *Genealogy (Basel)* 4, no. 1 (2020), 4.

impactful across disciplines within the university and other non-Indigenous institutions “so that they are capable of producing and backing highly interdisciplinary, relational, and Indigenous research and training approaches.”<sup>13</sup> Despite this, Indigenous scholars are constantly required to make “strategic concessions,” and frequently express frustrations, critiques and limitations associated with the university as a colonized space where “conceptual systems traditionally utilized in Western higher education are culturally and racially loaded mechanisms that privilege European epistemological thought.”<sup>14</sup> This is explained well by Chilisa who states that “one of the reviewers of my manuscript had difficulties in opening space for research methodologies informed by African worldviews.”<sup>15</sup> Chilisa quotes the reviewer, who stated:

There are difficulties in getting Africans involved in the theorizing and building of knowledge on ways of conducting research. You have to address questions such as how do you test the validity of your findings...by African or Western standards. [Also,] what language do you use to build a research community and how do you research, store, and transmit the accumulated knowledge? Arguably, the whole idea of research belongs to the north/western paradigm, so probably some African-ness will have to be sacrificed in the process.<sup>16</sup>

This quote captures conflicts that are found frequently within the academy for Indigenous scholars who usually have to conform to a world language in order to participate in education, and practice other sleights of mind such as border crossing to adapt to foreign ways of being.

Despite infrastructural limitations, resilience, adaptability, border crossings, and institutional progress continue to transform the university into a space that Indigenous students and communities find value in. Dilevko and Gottlieb explain that tribal colleges and universities

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<sup>13</sup> Kolopenuk, “Miskâsowin,” 4.

<sup>14</sup> Margaret Kovach, *Indigenous Methodologies: Characteristics, Conversations and Contexts* (Toronto: University of Toronto Press, 2009), 41.

<sup>15</sup> Bagele Chilisa, *Indigenous Research Methodologies* (Thousand Oaks, California: SAGE Publications, 2012), 59.

<sup>16</sup> Chilisa, *Indigenous Research Methodologies*, 59.



are a place where Native American communities can converge and work towards cultural revitalization, preservation, and critical nation building.<sup>17</sup> Universities continue to strive to achieve greater capacities to support the educational needs of Indigenous students where Indigenous students, in an expression of their own agency, can come and make empowered decisions about “including *all* of the knowledges and methodological tools that might be helpful to us in order to ‘develop and define our intellectual projects, theories, and methodologies.’”<sup>18</sup> Conversely, they can reject and disregard what is not useful without fear of retribution. Today’s educational environment, although not without ongoing dilemmas, has shifted so that Indigenous communities are now discussing equity, diversity, and inclusion initiatives from their own insiders position of including non-Indigenous peoples within their Indigenous post-secondary institutions and communities of practice. This includes building relationships outwardly with other institutions.<sup>19</sup> Within public post-secondary institutions, there continues to be a surge of recognition that the epistemologies and knowledge systems of Indigenous scholars and people are valuable, bring value to Indigenous communities, and are also necessary in our collective effort to address some of modernity’s most pressing issues.

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<sup>17</sup> Dilevko and Gottlieb, “Working at Tribal College and University Libraries: A Portrait,” 44-46.

<sup>18</sup> Kolopenuk, “Miskâsowin,” 5.

<sup>19</sup> Thomas Trendowski and Joseph Trendowski, “Diversity Initiatives for Tribal Colleges and Universities: Maintaining Heritage While Promoting Inclusion,” *Journal of Business Diversity* 20, no. 3 (2020), 23–29.

## Definitions

**Indigenous:** An often contested and socially constructed word, the term Indigenous describes at least two predominant, interconnected layers. Indigenous cultures are those whose primary paradigms and epistemologies are relational and generated from enduring relationships to a place. This place-basedness results in ecological and philosophical knowledge that is contextual. Indigenous people also identify their ancestry with the earliest known, or pre-colonial, inhabitants of a place.<sup>20</sup> Secondly, according to Smith, the term “internalizes the experiences, the issues and the struggles of some of the world’s colonized peoples.”<sup>21</sup> Chilisa, asking the question “what is Indigenous to the two-thirds majority of people colonized and marginalized by Eurocentric research paradigms?” situates the term Indigenous so that “the focus is on a cultural group’s ways of perceiving reality, ways of knowing, and the value systems that inform research processes.”<sup>22</sup> For Cajete, the term applies “broadly to the many traditional and Tribally [sic] oriented groups of people who are identified with a specific place or region and whose cultural traditions continue to reflect an inherent environmental orientation and sense of sacred ecology.”<sup>23</sup> According to the United Nations, “Indigenous people account for most of the world’s cultural diversity” and it is estimated that there are around 370 million Indigenous people, representing approximately 5,000 different Indigenous cultures around the globe.<sup>24</sup> Finally, indigeneity can be re-learned by industrial peoples with respectable methods and core objectives largely oriented around ecocentrism and respectful relationality. Indigeneity is the

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<sup>20</sup> Shawn Wilson, *Research Is Ceremony: Indigenous Research Methods*, (Black Point, Nova Scotia: Fernwood Publishing, 2008), 34.

<sup>21</sup> Smith, *Decolonizing Methodologies*, 7.

<sup>22</sup> Chilisa, *Indigenous Research Methodologies*, 10.

<sup>23</sup> Cajete, *Look to the Mountain: An Ecology of Indigenous Education*, 15.

<sup>24</sup> “State of the World’s Indigenous Peoples,” United Nations, February 2, 2022, <https://www.un.org/esa/socdev/unpfi/documents/SOWIP/press%20package/sowip-press-package-en.pdf>.

natural condition of all humans who have a right to remember and reengage full human capacities that are not fractured by dualisms, exclusive rationality, and ecocidal industrialism.

**Indigenous Research Methodologies (IRM):** IRM refers to the theories and practices of how knowledge is learned and created by Indigenous scholars and people in accordance with Indigenous ontologies, epistemologies, and axiology.<sup>25</sup> Chilisa specifically states that “Indigenous research embraces culturally specific discourses that root research methodologies in the Indigenous knowledge, cultural practices, worldviews, values, and practices of formerly colonized societies whose knowledge has been excluded from discourses on knowledge production.”<sup>26</sup>

**Indigenous Epistemologies (IE):** In IE, knowledge is experienced as an embodied mode of cognition in which a person is seeking or knows their authentic self in relation to community, the land, and the cosmos. Relativism and relationships are valued so that “there is no one definite reality but rather different sets of relationships, [and] reality is not an object but a process of relationships.”<sup>27</sup> In other words, knowledge is socially constructed through collaboration. Knowledge is also generated through experiential methods that include observation, oral transmission, ritual and ceremony, and other techniques that result in revelatory states of consciousness. Indigenous scholarship in the academy frequently uses keywords such as relationality, responsibility, reverence, respect, and reflexivity to assert a global epistemology common to Indigenous scholars as an academic community of practice.<sup>28</sup> These values do not

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<sup>25</sup> Chilisa, *Indigenous Research Methodologies*; Kovach, *Indigenous Methodologies*; Smith, *Decolonizing Methodologies*; Wilson, *Research is Ceremony*.

<sup>26</sup> Chilisa, *Indigenous Research Methodologies*, xx.

<sup>27</sup> Wilson, *Research Is Ceremony*.

<sup>28</sup> Chilisa, *Indigenous Research Methodologies*; Kovach, *Indigenous Methodologies*; Smith, *Decolonizing Methodologies*; Wilson, *Research is Ceremony*.

represent the totality of Indigenous ways of knowing or being, represent idealisms acceptable in public spaces or our highest ideals in education, are over generalized, and require culturally specific researchers or communities of practice to be contextualized. Furthermore, ecocentric and respectful relational values, and the ability to learn and practice multiple modes of cognition, transcend racial and ethnic boundaries, done while maintaining awareness of specificities and private spaces, are a shared birthright and the collective obligation of all humans.

**Information Literacy:** Post-secondary instructional librarians most frequently draw upon the Association of College & Research Libraries (ACRL) definition of information literacy which states that “information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning”.<sup>29</sup> A critical Indigenous scholar might generally agree, but perhaps express concern over the word discover. This makes ontological assumptions about how information is created, accessed, or retrieved, which always happens through sharing and building upon the ideas of others. From within a relational construct, information is experienced or realized through relationships, e.g., “knowledge is shared with all creation.”<sup>30</sup> Furthermore, information literacy can be defined in culturally specific contexts as the epistemologies, ontologies and axiologies of a specific community, and informed by the infrastructures of their own social systems.

**Indigenous Information Literacy:** There is no standardized definition or body of practice of Indigenous information literacy because it is an undeveloped field within LIS. Indigenous scholars in the post-secondary institutions practice information behaviors inherent to

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<sup>29</sup> “Framework for Information Literacy for Higher Education,” Association of College & Research Libraries, 2016, February 2, 2022, <http://www.ala.org/acrl/files/issues/infolit/framework.pdf>.

<sup>30</sup> Wilson, *Research Is Ceremony*, 57.

conventional information literacy practices determined by information technology systems and institutional infrastructures. However, Indigenous information literacy in post-secondary institutions recognizes the information needs of Indigenous scholars by providing practices inclusive of, responsive to, and rooted in Indigenous epistemologies. Indigenous information literacy should be “grounded in the contemporary realities of Indigenous people,” providing opportunities for cultural preservation and practice, heritage management and success, and education in whatever an individual scholar decides is relevant to them and often based on their communities’ needs.<sup>31</sup> Indigenous information literacy can be approached as a professional aspect of librarianship that combines Indigenous research methodologies, epistemologies and information literacy in instructional librarianship, contextualized appropriately by Indigenous librarians or those allied with Indigenous people through community engagement practices that prioritize Indigenous knowledge. Furthermore, Indigenous information literacies are also the traditional education systems of an individual culture of which institutionalization and modernity remains critiqued, resisted, or selectively included.

**Modernity:** The dominant socio-cultural paradigm that describes the globalized, industrial, and capitalistic society. It is the intersections of the exclusive preference for rationalism, Cartesian dualism, industrialism, technology, and capitalism. Modernity is specifically stated as the consequence of lacking relationality, and the exclusive reason for anthropogenic induced climate change.<sup>32</sup>

**Paradigms:** The concepts, values, and practices used in information literacy instruction.

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<sup>31</sup> Burns et al., “Indigenous Librarianship,” 2.

<sup>32</sup> Gilbert G. Germain, *A Discourse on Disenchantment: Reflections on Politics and Technology*, (Albany: State University of New York Press), 1993.

## A Review of the Literature

Exploring the question *how Indigenous research methodologies and epistemologies can inform information literacy in post-secondary instructional librarianship*, an initial literature review was conducted using the University of Hawai‘i at Mānoa’s Hamilton Library online public access catalogue and the databases Academic Search Complete and Library, Information Science & Technology Abstracts. Four main subject areas were explored related to the research question. Articles about Indigenous information literacy, IRM, IE, and Indigenous educational discourses (IED) were sought utilizing basic and advanced Boolean expressions. An attempt was made to locate literature already present about Indigenous information literacy and IRM in the LIS field.

A review of literature in the LIS field concerning IRM in LIS, as well as Indigenous information literacy produces few results in relation to the total body of LIS literature. Spencer Lilley’s 2017 study elaborates on this reality. Lilley conducted a literature review of LIS literature to find how many Indigenous research related articles were being published in LIS journals. In this study, a total of 178 Indigenous related articles were selected for analysis from LIS databases. 110 of these were related to professional and practice-oriented foci, and 68 were related to research. Furthermore, 111 of the 178 articles were written by non-Indigenous authors, with only 27 of the 178 representing collaborations between Indigenous and non-Indigenous authors. From this, Lilley concluded that Indigenous librarianship is under-represented in LIS literature. Additionally, Indigenous librarians’ voices are also underrepresented in LIS concerning Indigenous topics in the field.<sup>33</sup>

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<sup>33</sup> Spencer Lilley, “Assessing the Impact of Indigenous Research on the Library and Information Studies Literature,” *Information Research-an International Electronic Journal* 22, no. 4 (2017): 1–9, accessed February 3, 2022, <http://informationr.net/ir/22-4/raills/raills1606.html>.

In “Methodologies for Conducting Research in an Indigenous Context,” Lilley elucidates further about LIS literature specific to IRM representation. Lilley provides basic IRM implementation guidelines, which form recursive epistemological themes that are found throughout Indigenous research literature and in this review. Prominent themes are relationality, location in place and positionality, relevancy of research to the community, and community participatory based principles as exemplified through the principle of reciprocity. Again, Lilley states that few LIS professionals are familiar with and use IRM when conducting research in LIS.<sup>34</sup> This under-representation of Indigenous literature and methodologies in the LIS profession indicates that there is a need for more Indigenous librarians, and for librarians to explore and address the needs of Indigenous information seekers. Indigeneity is clearly under-represented in LIS, and even more sparse are articles in the literature that specifically discuss Indigenous information literacy. The intersection between Indigenous librarianship and IE is the highest represented category of the LIS literature, and the selections cited are only a small sampling. All of these articles provide epistemological insights that can help inform information literacy in the academy.

### **Indigenous Information Literacy Literature**

Several research articles provide insights into the intersections between Indigenous communities and information literacy practices in the academy. In “Indigenous Cultural Models in Information Literacy Delivery Including Programs for Maori and Pasifika Students at New Zealand Universities,” Roy, Lilly, and Luehrsen state that in Navajo culture, learning is

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<sup>34</sup> Spencer Lilley, “Methodologies for Conducting Research in an Indigenous Context,” *Library and Information Research* 42, no. 126 (2018), 72–82.

accountable to “both the living and ancestors” and “recognizes knowledge and learning as relational, historically based, physically situated, and culturally appropriate.”<sup>35</sup> The authors emphasize that a responsibility to community is more important than individual achievement, and that Indigenous learning is a “recursive and ongoing process of living through understanding one’s place, oneself, and one’s relationship to the environment.”<sup>36</sup> The cyclical, experiential, observational, and relational aspects of learning and Indigenous knowledges are recursive themes demonstrated in the other LIS literature reviewed.

The cyclical nature of Indigenous inquiry is outlined in “Oksale: An Indigenous Approach to Creating a Virtual Library of Education Resources.”<sup>37</sup> Here, Roy and Larsen have utilized the inquiry model developed by Dr. Gregory Cajete. The model includes the steps of “being, asking, seeking, making, having, sharing, and celebrating.”<sup>38</sup> This inquiry model was utilized in a library and information literacy course in the LIS school at the University of Texas at Austin. In addition to encouraging self-reflection in the LIS students, the inquiry model was used as a framework to create an online portal that was culturally relevant to the Lummi people. One major epistemological take away expressed by Roy, is that “knowledge for its own sake has little place in Cajete’s model,” and that “only when knowledge is passed on or encourages other learning, action, or interaction, is the full potential of education realized.”<sup>39</sup>

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<sup>35</sup> Lorie Roy, Spencer Lilley, and Virginia Luehrsen, “Indigenous Cultural Models in Information Literacy Delivery Including Programs for Maori and Pasifika Students at New Zealand Universities,” (Paper presented at the IFLA Conference Proceedings, Puerto Rico, 2011), 3.

<sup>36</sup> Victoria Beatty, “Much to Teach, Much to Learn: Teaching Information Literacy Cross-Culturally,” Paper presented at the Transborder Library Forum- Bridging the Digital Divide: Crossing All Borders, 2007; Roy, “Indigenous Cultural Models,” 2.

<sup>37</sup> Lorie Roy and Peter Larsen, “Oksale: An Indigenous Approach to Creating a Virtual Library of Education Resources,” *D-Lib magazine* 8, no. 3 (2002).

<sup>38</sup> Cajete, *Look to the Mountain*, 71.

<sup>39</sup> Roy and Larsen, “Oksale: An Indigenous Approach...,” 5.



Roy also highlights Cajete’s inquiry model in “The Searching Circle: Library Instruction for Tribal College Students” when iSchool students also applied Cajete’s “Searching Circle process” and used it as a methodology to research and design pathfinders and library guides for tribal college and university students.<sup>40</sup> Roy acknowledges that the “Searching Circle might be included in discussions of constructivist theories of learning” when discussing it in relation to Kuhlthau’s Information Search Process (ISP).<sup>41</sup> Kuhlthau’s ISP is known for its recognition that emotional states affect the inquiry process. Roy acknowledges congruence between Kuhlthau’s ISP and the Searching Circle. She states that “Kuhlthau’s ‘Zones of Intervention’ address the flexibility needed by information professionals in responding to the varying needs of students in the search process,” and that “flexibility tempered by cultural awareness is embedded in the Searching Circle.”<sup>42</sup> The affective aspects of inquiry are also addressed by Loyer, who expresses that for Indigenous scholars, research can be deeply personal. Loyer says that “if I want to research even my own family history, trauma is inevitable; to research as an Indigenous scholar is to confront horrific stories, many of them directly tied to my own experiences or the experiences of people I love.”<sup>43</sup> For this reason, she emphasizes the importance of emotional intelligence and self-care as being an objective in information literacy. Finally, Roy provides some important considerations about cultural specificities found among students in tribal

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<sup>40</sup> Lorienne Roy, Jain Orr, and Laura Gienger, “The Searching Circle: Library Instruction for Tribal College Students,” in *Information Literacy: Key to an Inclusive Society* (Cham: Springer International Publishing, 2017), 21–32; Carol Collier Kuhlthau, “Students and the Information Search Process: Zones of Intervention for Librarians,” *Advances in Academic Librarianship* 18 (1994), 57-72.

<sup>41</sup> Roy et al., “The Searching Circle...,” 23.

<sup>42</sup> Roy et al., “The Searching Circle...,” 23.

<sup>43</sup> Jessie Loyer, “Indigenous Information Literacy: Nēhiyaw Kinship Enabling Self-Care in Research,” in *The Politics of Theory and the Practice of Critical Librarianship*, eds. Nicholson, Karen P., and Maura Seale, (Sacramento: Library Juice Press, 2017), 147.

colleges and universities. In relation to information resources and cultural protocols that are frequently alluded to in Indigenous discourse, but often left undefined, Roy explains:

Access to some content may be restricted by gender (e.g., women’s work or men’s work), season (e.g., winter storytelling), or by status (e.g., clan). Protocol impacts mode of conversation such that some topics may not be addressed (e.g., names of the deceased) or some relationships are strictly defined (e.g., mother-in-law and son-in-law).<sup>44</sup>

These are but a few examples of traditional protocols in Indigenous knowledge systems, systems that also include a rich relationship with spiritual beings and the Other-worlds.

Speaking more directly about Indigenous information literacy through a traditional lens, Maina in “Traditional Knowledge Management and Preservation: Intersections with Library and Information Science,” and Jia, Du, and Trevorrow in “In Search of Indigenous Wisdom and Interdisciplinary Ways of Learning Together,” draw specific attention to Elders who speak of ancestors and spirits as being conveyors of knowledge and information in Indigenous ways of knowing.<sup>45</sup> These concepts demonstrate that for Indigenous researchers, information retrieval extends beyond practices associated with libraries and information technology systems and include practices associated with other states of consciousness and awareness. While these and other articles in the LIS literature approach *discourses* on critical concepts associated with Indigenous information literacy in librarianship, actionable guidelines, frameworks, and studies about how IRM and IE can inform information literacy in public post-secondary institution are almost non-existent. IRM provide actionable methods that can help bring ideology into practice.

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<sup>44</sup> Roy et al., “The Searching Circle...,” 23.

<sup>45</sup> Charles Kamau Maina, “Traditional Knowledge Management and Preservation: Intersections with Library and Information Science,” *The International Information & Library review* 44, no. 1 (2012), 13–27; Jelina Haines Jia, Tina Du, and Ellen Trevorrow, “In Search of Indigenous Wisdom and Interdisciplinary Ways of Learning Together,” *Journal of the Australian Library and Information Association* 67, no. 3 (2018), 293–306.

## Indigenous Research Methodologies

IRM possess the capacity to inform information literacy in post-secondary education by providing a framework that prioritizes Indigenous epistemologies as an approach to inquiry informed by culturally specific contexts. Lilley demonstrates IRM principles by asserting that research is approached through a researcher's healthy relationship to a community, their positionality within and in relation to it, by selecting relevant research topics, and by practicing community participatory based research principles. These principles include allowing the community to define the research question, clearly defining ownership of research, and appropriately engaging all ethical considerations at the communal, relational, and institutional levels.<sup>46</sup> Arguably, relationality is fundamental to IRM and IE. Relationality is multidimensional and represents a person's interconnectedness with their community, the land they inhabit, the ancestors, spirits of nature and place, and ultimately the whole of the cosmos. Tecun et al. affirms this when discussing the Tongan research methodology, Talanoa, stating that:

Talanoa as an Indigenous epistemology overlaps the other worldviews that seek to align with these rhythms and energies between people and place, which requires one to really know their relations. In extension beyond social realms of people, this also means to relationally align in a balanced way with cosmic, natural, or environmental energies and rhythms.<sup>47</sup>

Other critical aspects of both IRM and IE are the importance of embodied, intuitive ways of knowing, connection with land, and recognizing how a multiplicity of perspectives contributes to the production of knowledge and truth. Wilson explains that in IRM, ontology, epistemology, methodology, and axiology should not be considered as separate entities. This reality can be seen

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<sup>46</sup> Lilley, "Methodologies for Conducting Research in an Indigenous Context," 72–94.

<sup>47</sup> Arcia Tecun, Inoke Hafoka, Lavinia 'Ulu'ave, and Moana 'Ulu'ave-Hafoka, "Talanoa: Tongan Epistemology and Indigenous Research Method," *AlterNative: An International Journal of Indigenous Peoples* 14, no. 2 (2018), 161.

demonstrated clearly in how the same concepts repeat themselves throughout the categories represented in this literature review. In actuality, Indigenous information literacy, IRM, and IE are “entities [that are inseparable] and blend from one into the next.”<sup>48</sup> An example is how IRM emphasizes embodied ways of knowing and is frequently discussed in literature regarding epistemologies, too.

### **Indigenous Epistemologies**

Indigenous epistemologies include modes of cognition that emphasize ways of knowing beyond the brain as a primary organ of perception. For example, Magnat explains in “Can Research Become Ceremony? Performance Ethnography and Indigenous Epistemologies” that Indigenous epistemologies include embodied ways of knowing that include feeling, intuition, and the senses.<sup>49</sup> She discusses the epistemologies of Hawaiian scholar Manulani Meyer, who also contends that this type of embodied knowledge is interconnected with our location in place, as beings who are interconnected and in right relationship with the land, emphasizing that we have a “rhythmic understanding of time and potent experiences of harmony in space.”<sup>50</sup> Magnat also cites Cree scholar Shawn Wilson, who asserts that in IE, knowledge is formed between the relationships we have with land and those around us. For him, this relationality also “must be inclusive of a multiplicity of perspectives” because we are incapable of fully knowing what another person’s experience has been.<sup>51</sup> The multidimensionality of embodied knowledge, relationality, and multiplicity of perspective is further described in the Tongan IRM, Talanoa, as

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<sup>48</sup> Wilson, *Research Is Ceremony*, 70.

<sup>49</sup> Virginie Magnat, “Can Research Become Ceremony? Performance Ethnography and Indigenous Epistemologies,” *Canadian Theatre Review* 151, no. 1 (2012), 30–36.

<sup>50</sup> Magnat, “Can Research Become Ceremony?” 34.

<sup>51</sup> Magnat, “Can Research Become Ceremony?” 34.

a tension that must be balanced between people to enter into a state of reciprocity. Tecun et al. states:

Talanoa is the result of the interplay of conflict and order between conflicting points and stories, where the concern or pursuit of creating Noa [equilibrium] 'is itself an expression of conflict...' and if successfully neutralized, reaches a state of balance. This reflects the state and condition of the points of intersection of time and space, people, and place, resulting in co-produced knowledge through harmony.<sup>52</sup>

Maina brings this philosophy into grounded terms by stating that IE are “generally understood to be produced in context of Indigenous Peoples’ relationships with their environment and with each other...”<sup>53</sup> He also explains that many Elders describe IE as “experiential” and “hand-on” learning, and that their way of knowing “originates from the Creator and spirits; is holistic; and intuitive.”<sup>54</sup> In all instances, an emphasis is placed on Indigenous knowledge being realized as relationships between people and place.

As seen, IE are consistently described in the literature as being embodied, relational, place based, inclusive of multiplicity, multidimensional and in harmony with an animated, ecological world. These principles, engaged with respectful community engagement or applied in a contextually appropriate manner by an Indigenous librarian with the cultural competency to do so, can inform information literacy as novel ways are sought to integrate appropriate instructional services into the academic library. Indigenous information literacy can help to form that relational bridge between non-physical types of knowledge, and their integration into a holistic, culturally responsive library as place that serves Indigenous scholars while also modifying issues with dominant modern paradigms.

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<sup>52</sup> Tecun et al., “Talanoa: Tongan Epistemology and Indigenous Research Method,” 160.

<sup>52</sup> Wilson, *Research Is Ceremony*, 70.

<sup>53</sup> Maina, “Traditional Knowledge Management and Preservation...,” 16.

<sup>54</sup> Maina, “Traditional Knowledge Management and Preservation...,” 16.

## Indigenous Education Discourses (IED)

This literature review draws upon three articles concerning IED that can provide curricular insight. In “Pedagogical Pathways for Indigenous Education with/in Teacher Education,” Madden conducted a literature review to learn about the primary pedagogies utilized in IED. Madden’s literature review identified four predominant pedagogies in IED. They are identified as “learning from Indigenous models of teaching, pedagogy for decolonizing, Indigenous and anti-racist education,” and “Indigenous and place-based education.”<sup>55</sup> The pathways identified span a spectrum from traditional pedagogies to those associated with liberation and justice. For example, learning from Indigenous models of teaching is predominantly associated with traditional knowledge and pedagogies. Concerning this model, Madden acknowledges that Indigenous knowledge is not universal, but is contextualized to place. She states that “particular philosophies and practices emerge through longstanding metaphysical relationships with land that is situated in diverse and complex geographical, historical, spiritual, and political contexts.”<sup>56</sup> Moving into the liberatory pedagogies, the pedagogical pathway associated with decolonization challenges “colonial structures of relationships,” and includes being critical of Eurocentrism in schooling.<sup>57</sup> Indigenous and anti-racist educational pedagogies are associated with confronting “racial ideologies and discrimination that maintain racialized, classed, gendered, and heteronormative hierarchies.”<sup>58</sup> Finally, Indigenous and place-based education emphasizes local contexts and seems to be congruent with learning from Indigenous models of teaching. In this pedagogy, “it is argued that

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<sup>55</sup> Brooke Madden, “Pedagogical Pathways for Indigenous Education with/in Teacher Education,” *Teaching and Teacher Education* 51 (2015), 1–15.

<sup>56</sup> Madden, “Pedagogical pathways,” 3.

<sup>57</sup> Madden, “Pedagogical pathways,” 8.

<sup>58</sup> Madden, “Pedagogical pathways,” 10.

this approach brings teachers in relation with situated Indigenous knowledges, as well as Indigenous-non-Indigenous [sic] histories and contemporary realities that emerge from interconnected relationships formed through place.”<sup>59</sup> Lastly, several resources Madden used are common in the Indigenous education cannon.

The resources cited in Madden’s introduction alone intersect directly with the other key scholars whose literature is featured in this literature review. Madden mentions both Kirkness and Barnhardt, and the work of Tewa educator, Gregory Cajete, whose inquiry model is featured in the community-based project conducted by the information literacy class of Roy and Larsen.<sup>60</sup> Madden refers to Kirkness and Barnhardt, whose article “First Nations and Higher Education: The Four R’s-Respect, Relevance, Reciprocity, Responsibility,” provides a pathway in which Indigenous education can be approached. They state that Indigenous education should be conducted with:

...respect for Indigenous knowledge and traditional approaches to teaching and learning; [through the] integration of content that is relevant to, and builds upon Indigenous students’ relational views of human, natural, and spirit worlds; [by providing] reciprocal teaching and learning...and the teaching that, with knowledge, comes responsibility to one’s relations, including future generations.<sup>61</sup>

Pragmatically, Kirkness and Barnhardt are declaring the importance of providing learning opportunities for Indigenous students that have significance to their lives and communities while continuing to reiterate the importance of students’ relationships with land. Examples of relevant fields that they provide include studies in tribal government, land claims and natural resource management, native teacher education, First Nations health and social services, native language

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<sup>59</sup> Madden, “Pedagogical pathways,” 11.

<sup>60</sup> Madden, “Pedagogical Pathways,” 1; Cajete, *Look to the Mountain*, 71; Verna Kirkness and Ray Barnhardt, “First Nations and Higher Education: The Four R’s-Respect, Relevance, Reciprocity, Responsibility,” *Journal of College and University Student Housing* 42, no. 2 (2016): 94–109; Roy and Larsen, “Oksale.”

<sup>61</sup> Madden, “Pedagogical Pathways,” 1.

revitalization, among others.<sup>62</sup> Lee provides a similar listing of relevant disciplines in Indigenous scholarship, including fields such as law, medicine, nursing, and science. This is important because it has implications in terms of developing signature pedagogies and providing relevant information literacy education.<sup>63</sup>

### **Findings from Literature Review**

The body of LIS literature on IRM, IE, and IED demonstrate that comprehensive guidelines on Indigenous information literacy in LIS literature are sparse, especially in consideration of Indigenous information literacy in public post-secondary institutions, or the practice of Indigenous people informing information literacy in the same spaces. Interdisciplinary literature in IRM, IE, and IED can inform information literacy in post-secondary institutions by providing curriculum and pedagogical guidance. Based on the information gained through a review of literature, it was found that IRM, IE, and IED provide foundations necessary to inform Indigenous information literacy discourses by demonstrating essential cultural values, world views, information seeking behaviors, and inquiry models that are defined by relational and epistemological concepts including respect, reciprocity, relevancy, relationality, responsibility, and multiplicity of perspectives. The need to recognize animated/non-physical information resources, such as spirit and ancestral communion as an educational and research method is also demonstrated.

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<sup>62</sup> Kirkness and Barnhardt, "First Nations and Higher Education: The Four R's," 104-105.

<sup>63</sup> Deborah Lee, "Indigenous Knowledges and the University Library," *Canadian Journal of Native Education* 31, no. 1 (2008): 149-163.



## Methodology

### Theoretical Frameworks

This research was conducted with an emphasis on prioritizing Indigenous voices in an attempt at “operationalizing our Indigenous-embodied knowledge” in post-secondary information literacy discourse.<sup>64</sup> IRM acknowledges that there are ecological, cultural, and cognitive bases for cultural specificity that have direct implications on how inquiry is practiced in local contexts while also supporting scholars in academia. In contexts grappling with ongoing colonial realities, prioritizing native voices is also a reconciliatory action. However, cultural specificity in public post-secondary Indigenous information literacy is dynamic due to the intersection of political, economic, and multicultural realities. A global observation of Indigenous scholars in post-secondary institutions reveals that they exist anywhere on the spectrum in relation to colonialism, modernity, development, and traditionalism. Dr. Cajete recognizes this nuance in an educational study he conducted concerning Native Americans at the junior college level in which he also recognizes diverse students on a spectrum of cultural specificity and diverse student populations. His study group included native college students from “a broad cross-section of socio-economic, language, and cultural backgrounds [in which] their relative level of enculturation, acculturation, and assimilation is equally diverse.”<sup>65</sup> The diversity of multicultural and pan-Indigenous students, and the research requirements determined by the practice of a discipline, can create further challenges in providing culturally specific methods instruction. In consideration of these challenges, the needs of Indigenous instructors, scholars, and students are considered by employing a cognitive frame that recognizing peoples’

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<sup>64</sup> Kolopenuk, “Miskâsowin,” 4.

<sup>65</sup> Cajete, *Igniting the Sparkle*, 19.

cultural specificities situated within diverse communities of practices, and also through the use of generalizations and shared core concepts and objectives that are widely applicable in public post-secondary instructional librarianship.<sup>66</sup>

In consideration of Indigeneity as it manifests in post-secondary universities on diverse spectrums, this research has been approached with degrees of generalization in analyzing and discussing the data to express nearly universal, innate human, or widely recognized core Indigenous concepts. An attempt to be conscious about avoiding homogenization has been made by recognizing there are levels of cognitive difference between asserting conceptual knowledge that is relatable or core to collective shared experiences and implying that it is truth or universal for everyone.<sup>67</sup> These generalized conceptual degrees are recognized by Cajete who advocates for native education by teaching through a “community of shared metaphors and understandings that are specific to Indian cultures yet reflect the nature of human learning as a whole.”<sup>68</sup> While being sensitive to the understanding that Indigenous communities sometimes express concerns about being overly generalized, Kovach explains that generalization is possible *in the institution* because “we understand each other because we share a worldview that holds common, enduring beliefs about the world.”<sup>69</sup> Establishing this common ground in the institution fosters communities of shared understanding, for example, IRM, while also establishing foundations that empower Indigenous people to bring their full selves to the academic experience.

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<sup>66</sup> Cajete, *Igniting the Sparkle*, 19.

<sup>67</sup> An exception is relationality/ecocentrism, of which no human can escape, and all humans and communities of practice/cultures must be responsive to.

<sup>68</sup> Cajete, *Look to the Mountain: An Ecology of Indigenous Education*, 21.

<sup>69</sup> Kovach, *Indigenous Methodologies*, 37-38.

## Methods

In conducting this research, a diversity of Indigenous perspectives were engaged. See the appendix for a listing of the research questions. Indigenous research is relational, community generated knowledge and acknowledges the importance of honoring a multiplicity of perspectives. Kolopenuk explains that “for tapwewin, multiple truths (knowledge that is equally true) exist at once,” and that truth is determined through a relational process that happens “when a truth resonates among a cluster of relations...”<sup>70</sup> To move toward truth in relation and with the aim of engaging diverse perspectives, one-on-one semi-structured interviews were conducted remotely with a total of 5 participants. Participants were invited by email and represent a diverse Indigenous demographic that included actively practicing Native Hawaiian and Native American (Cree) academic librarians and information science scholars, a relationally oriented adjunct professor (Ph.D.) with over a decade of experience practicing community engaged research with Indigenous communities in the Pacific, and an Apache-Comanche Elder from outside of the academic community.

The interview questions were used as a guide to explore the research question of how Indigenous research methodologies and epistemologies can inform information literacy in post-secondary instructional librarianship. These questions were generated from core keywords and concepts frequently cited in Indigenous research methodologies, epistemologies, and scholarship. The concepts are associated with the keywords respect, reciprocity, relevancy, relationality, responsibility, multiplicity of perspectives, and embodied knowledge. Furthermore, questions were created to understand how Indigenous epistemologies can be situated within a multicultural institution, some of the frames of mind associated with Indigenous scholars navigation of inquiry

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<sup>70</sup> Kolopenuk, “Miskâsowin,” 8.

and learning in post-secondary education, and with an emphasis on prioritizing Indigenous paradigms, values and scholars while considering objective realities about the institution and all its constituents as a whole.

The interviews were conducted remotely and audio recorded. The audio recordings were transcribed and then thematically coded by contemplating the answers to the interview questions and creating action statements in relation to the original research question itself. This was done with an emphasis on maintaining relevancy to information behaviors inherent to the inquiry process that are rooted in Indigenous research values, and also relevant to public post-secondary contexts. When grouping data into their codes, “relational analytics” were utilized that looked at data points “where they resonate.”<sup>71</sup> This coded data then formed the basis for the results and discussion that follows. Next, interviewees were provided an opportunity to review the results section to ensure their insights were presented responsibly, emphasizing principles of relationality and reciprocity in knowledge production to the fullest extent possible under remote circumstances.<sup>72</sup> Finally, responses to the results were contributed as discourse. The expressed views are the data-based conclusions of the author’s and do not necessarily represent the interviewees themselves.

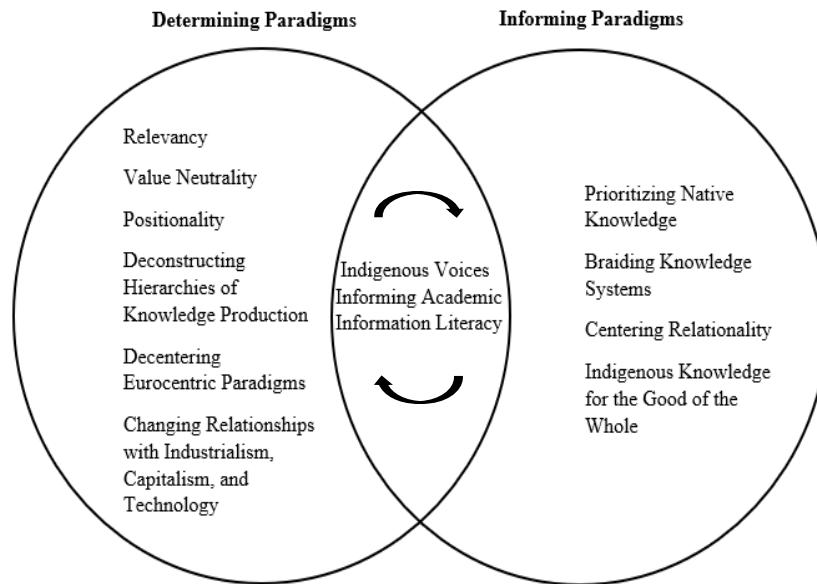
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<sup>71</sup> Kolopenuk, “Miskâsowin,” 5.

<sup>72</sup> This research was conducted during the global COVID-19 pandemic which forced this research to be conducted using socially distanced methods.

## Results with Discussion

The results presented here are synthesized responses to semi-structured interview questions exploring how IRM and IE can inform information literacy in public post-secondary librarianship. The results presented here do not include the entire data set and represent fundamental priorities. Examples of data not included are those related to cognition, embodied knowledge, intangible realities, and information retrieval. A setup, quote, response writing format was used and followed by a data driven, multidisciplinary discussion. Interviewee responses to questions were oriented around IRM and IE informing information literacy through contexts associated with determining paradigms or informing paradigms. In the context of this research, paradigms are the concepts, values, and practices used in information literacy instruction. Responses that demonstrated data that directly determine or decenter conventional instructional paradigms, were categorized as determining paradigms. These are relevancy, value-neutrality, decentering hegemonies and Eurocentrism, and changing relationships to industrialism, capitalism, and technology. Next interview responses that contribute or add new values to paradigms were categorized as informing paradigms. These codes are prioritizing native knowledge, braiding knowledge systems, and centering relationality. Finally, participants commonly acknowledge the benefit of Indigenous knowledge for the good of the whole. Selected examples of participant responses and their assigned codes are seen in Table 1. Figure 1 demonstrates how the codes interrelate and can be used to guide curriculum development.



**Figure 1. Codes from interviewee responses that show reiterative relationships between determining paradigms and informing paradigms in Indigenous voices informing academic information literacy.**

**Table 1. Examples of selected interviewee responses and their assigned codes.**

| <b>Code:</b>            | <b>Example:</b>   |
|-------------------------|---|
| <b>Relevancy</b>        | If I'm teaching an information literacy session, I'm going to talk about the things that are important for the perspectives on history and contemporary times about colonization and decolonization. Hearing those truths is not always easy to hear for some people, right? But you know, it's not going to be anything different than what they're, the students, are going to be hearing in the classroom by the professor or other instructors.   |
|                         | I think it will depend on what it is they're interested in. I even know non-Indigenous students in health programs who want to work on community initiatives like food security so that they have something they come out of the program with, something that has some practical benefit for when they leave the program, and they can take into whatever job they get afterwards.  |
|                         | For one thing so many courses taught in the universities have no bearing at all on reservation life. We've got some good doctors, nurses, school teachers that have got the education and they're doing a great job. We've also got those who went to school to get an education in business administration, and yet none of them even uses it because there are very few places on the rez to apply that. If you're on the tribal council, maybe yeah, but for most part there's no place to use that. |
| <b>Value neutrality</b> | I think for information literacy, it's kind of like research, because, in my opinion, there's no such thing as neutral research. And if you are doing information literacy in a way that helps people, you're really going to want to take a stand on your positionality. That's definitely going to influence how you teach information literacy, so it just kind of goes hand in hand.  |
|                         | No information literacy is neutral, let's get rid of the idea that libraries, archives, and museums are neutral spaces, because they're not.  |
| <b>Positionality</b>    | If you can make a distinction as to whose culture goes back to that land, and who, I often think of it as who has the right to speak for that area, that culture should be prioritized. But then after that, I don't know that there really should be any kind of like ranking system or hierarchy.   |
|                         | If you are doing information literacy in a way that helps people, you're really going to want to take a stand on your positionality. Right? And that's definitely going to influence how you teach information literacy, so it just kind of goes hand in hand.  |

**Table 1. (Continued) Examples of selected interviewee responses and their assigned codes.**

| <b>Code:</b>  | <b>Example:</b>   |
|---|---|
| <b>Deconstructing hierarchies of knowledge production</b> | I think in the case of respect, I think there's a lot of ways that it can inform info lit because if you're respecting the student that you're teaching then you will, I don't know, do what you need to do to make the session worthwhile for them. And I think in in that case, you will get a sense of where the student is at, you know, and consider, you know, that they have knowledge that I might not have, right. Go into it with a learning attitude as well. I think a lot of people who work in Indigenous education are very aware of hierarchies. And, you know, how do we kind of break down those hierarchies? And when you respect a student for the knowledge that they might have from life experience, then you're not going to be arrogant, right? When you're, when you're doing your session, you're going to be interested in what the student has to say. |
|   | If you can make a distinction as to whose culture goes back to that land, and who, I often think of it as who has the right to speak for that area, that culture should be prioritized. But then after that, I don't know that there really should be any kind of like ranking system or hierarchy. I think that creates more problems than it solves. To the extent that is appropriate, all of it should be available to those that are interested. And, you know, not necessarily one should be put above another. But if you're interested in learning more about Indigenous knowledge and Indigenous knowledge systems of a particular group, then that should be something you're capable of pursuing in an academic institute as appropriate, right?   |
| <b>Decentering Eurocentric paradigms</b>                  | I have actively been trying to not promote "old white man," you know, especially in Hawaiian study, Hawaiian and Pacific research, you have to use some of the "old white man," but I try to push native voices, native scholarship, you know, it's great. It's even better when students can read 'Ōlelo Hawai'i because I can push them to the primary documents. And so, again, I think that's just me, being aloha 'āina, and trying to elevate Hawai'i or the Indigenous voice over the voices that we've heard for so many years.   |
|   | I've been reading a lot about and I've known some of the people who went to the residential schools that Indians were forced to go to after the Indian wars were settled. It was quite the opposite of what I think should be taught. They forced Native American children to give up their culture. They couldn't speak their own language, couldn't practice their own spiritual beliefs. They tried to turn them into white people.  |



**Table 1. (Continued) Examples of selected interviewee responses and their assigned codes.**

| <b>Code:</b>  | <b>Example:</b>  |
|---|--|
| <b>Changing our relationship to industrialism, capitalism, and technology</b> | I think what is more important is that acre of land you put that house on had plants, animals, nature. That means nothing to no one, so you're destroying what is keeping us alive, you're destroying our ecology, our environment. To me that's what's important. What's important is living within your means, or beneath your means anymore. If you don't need it, don't destroy nature to build something there. We've got the worse society in the world for that. We build big cities, abandon that, let it rot and move 5 miles outside of town and build another city because we don't want to live in the big city and in the process destroy the environment, and keep this cycle. And all that's behind us is wasted environment, everything we've left behind is wasted.   |
|   | Our education needs to work on changing the mindset of people of bigger is better. Bigger is not better if you don't need it, and I think if our education system was more interested in the good of the world they'd be teaching that sort of thing, that instead of bigger is better, maybe smaller is best or something. That would require some changing of complete social mindset and I'm not sure how they'd do that. I think it would have to start with the universities themselves. Their mindset now is let's have the best football team so we can have more money, build a bigger colosseum, and make more money, and universities are just as guilty maybe more so, so it would take a hell of a reversal of a mindset to change. Because instead of trying to teach less, I mean teach that you don't need all that money, they're teaching just the opposite by example if nothing else, continuously trying to add on, increase more. |
|   | All of the production for the different parts of the computers, and everything like that increases a lot in terms of pollution, and just compounds that we're putting out into the environment. Yeah, it's a huge problem. I think that one of the things I think is important is that right now, you know, there is a generation that is coming up very much embedded in technology, and in these modern day, everyday things, and they're thinking about, you know, how computers are used. But I think there's also a push towards kind of creativity and entrepreneurship. And I think it's really important for kids that are coming up in this area to be thinking about solutions as well.  |
| <b>Prioritizing native knowledge</b>  | We haven't lost our sense of responsibility, especially to our families and to our communities, and so in terms of info lit, you know, I think we have a kuleana to prioritize, like I was saying earlier, prioritize native voices and native knowledge. That's our kuleana to our kupuna and to our community.   |
|   | I try to push native voices, native scholarship, you know, it's great. It's even better when students can read 'Ōlelo Hawai'i because I can push them to the primary documents.  |

**Table 1. (Continued) Examples of selected interviewee responses and their assigned codes.**

| <b>Code:</b>                      | <b>Example:</b>  |
|-----------------------------------|--|
| <b>Braiding knowledge systems</b> | Yeah, and you know, they may be interviewing Indigenous people to find out, how do you survive when food prices just keep going up and up, and you can't afford it? Right? Learning about how community takes care of each other, such as people who hunt and provide for others beyond their immediate family, and other kinds of innovations. like, you know, having greenhouses in, in colder climates that are run with solar energy, and that sort of thing.  |
|                                   | You know, I told them a personal story about how my dad was taught about different medicines that were readily available that people were using since time immemorial and based on the land where they were living. [He was told] just to pick off a piece of Spruce gum and chew that. And, you know, he never had one cavity in his whole life. He had all of his teeth by the time that he passed into his 70s. And, you know, I find those kinds of things are very helpful for those Indigenous students that, you know, keep searching for this kind of thing. And I said, you know, there may not be any papers written on this, but maybe that's your job. Maybe that's your job is to collect these stories from Elders and others that you may know and then publish your own paper. Then, other people will have that when they're going through the program. |
|                                   | If you're doing a session on Indigenous science, for instance, there's going to be some aspects of scholarship that will incorporate Western science methods. But there's going to be other kinds of methodologies that will come up in the materials and the results that you search for. So people like to say that Indigenous people use certain aspects of Western science like observation and experimentation, and, you know, that sort of thing. But we also use dreams, right? We also use visions as part of part of our Indigenous knowledge.  |
| <b>Centering relationality</b>    | I think how Indigenous studies scholars have gotten by all through these years is because of the relationships that they have with other scholars. They find out about new publications, whether they're books or articles or whatever, based on the network of relationships that they have in academia. It's like the people that they know are the subject headings, you know, so they don't need to use subject headings because they find most of what they need through their networks. That's an Indigenous knowledge kind of methodology. It's using that reciprocity of relationships, you know?  |

**Table 1. (Continued) Examples of selected interviewee responses and their assigned codes.**

| <b>Code:</b>  | <b>Example:</b>   |
|---|---|
|   | I think it is very common in Indigenous epistemologies to consider yourself as a part of a greater whole, you know, and so that is really important when you're thinking about relationality, because it is never just me, it is us, it is kāua, it is kākou. And what is included in kākou, may not be just humans, it's the land, it's trees, it's the environment, it's the microorganisms. And so, how you are relating and representing yourself, within a greater context, I think it's really important when you're trying to think about Indigenous epistemologies. |
|   | I think that is something that should be addressed if we're talking about modern day curriculum. These are the kinds of things we should be thinking about, how to make all of these things intersect so that you're learning how to malama 'āina in a library, and you're learning how to use library and skills on the land. Because I think overall, right, these are not, these are not mutually exclusive things.  |
| <b>Indigenous knowledge for the good of the whole</b> | There's knowledge in every group of people that if shared could help everyone.  |
|   | It would help, just like the kids, well say the Navajo or Apache Nation, or any other tribe, if they had a curriculum that intertwined with their culture instead of trying to drag them away from where they're at. Help them help people on the reservations, create jobs on the reservations. Help them to understand the difference between the normal society if you want to call it that and the rez society-how they intertwine and help each other because there's a lot of things that native culture can teach that can help the world itself.                    |
|   | I think that responsibility to other things, to other places and environments, is something that is very much an Indigenous epistemology, but I really think it needs to be a global one.   |

## Determining Paradigms

### **Relevancy**

The information literacy courses that are taught by the Indigenous librarians interviewed in this study happen in diverse contexts within the spectrum of subject areas present in post-secondary institutions. To elucidate, one participant stated that “the student population at [my university] is all over the place, we’ve got first year students fresh out of high school, we have older students, returning students, we have military veterans, it’s all over the place.” Except for the one non-academic Apache-Comanche Elder interviewee, the participants are Indigenous and Indigenous affiliated faculty, scholars, or librarians who function in post-secondary institutions where interrelated paradigms and worldviews intersect. Information literacy sessions provided by the librarians are taught for multiple subject areas and include Hawaiian Studies or Indigenous Studies courses, as well as the standard variety that span the disciplines.

Understanding and situating paradigms is required for instructional librarians to generate and support learning goals and objectives within curriculum, support researcher and faculty needs, and also be relevant to students. Results from the participant interviews demonstrate that relevancy is closely associated with determining paradigms. Also demonstrated is that determining paradigms is accomplished through enacting relationships between collaborating with faculty and understanding subject area requirements, by being relevant to what the subject area is, relevant to what a student’s needs are, understanding that university libraries are not ideologically neutral, taking a stance on your own positionality, and recognizing the indigeneity of a place.

The paradigms utilized in instructional librarianship are often constructed in collaboration with faculty and in relation to what the session/subject area requires. This is seen when one

participant stated that if she is teaching an information literacy session for an Indigenous studies class, she will “talk about the things that are important for the perspectives on history and contemporary times about colonization and decolonization,” emphasizing that, this isn’t “going to be anything different from what they’re, the students, are going to be hearing in the classroom by the professor or other instructors.” Another time, this participant stated that while “having different kinds of students in the classroom can be tricky,” paradigms being used in instruction “will depend on what the instructor has been able to establish with the group.” The interviewee’s responses also demonstrate that paradigms “depend on the session,” and she spoke about a time she was able to teach about “land-based learning” because it was “very relevant” to the professors teaching science education classes. From these statements it is seen that Indigenous instructional librarians are determining classroom paradigms by instructing in accordance with what is relevant to course instructors and in relation to the subject area being taught. These statements also demonstrate threads of relationality and reciprocity between student, teacher, and classroom relationships.

Paradigms in post-secondary instructional librarianship are also determined by what is relevant to the subject area. Subjects and disciplines are communities of practice in which their members determine what paradigms and methods are considered standard within them. Statements made during participant interviews show an understanding that specific disciplines inform relevancy for Indigenous and non-Indigenous students alike. For example, one interviewee stated that when researching, students should “have something that speaks to their discipline.” Another interviewee, speaking of the relationship between relevancy and subject matter said:

I think what goes hand in hand with relevancy is, you know, having a good understanding of the subject matter, right? So, yeah, if you haven't read anything about that particular course, and if you aren't familiar with you know, some of the major concepts related to that particular course, it's going to be hard to find relevant material and you're just going to be wasting that person's time. Right? And so if it's not relevant, it is going to be a disrespectful way of taking up somebody's time.

As seen, relevancy determinations are made in relation to subject matter, but this interviewee response also demonstrates that there is a relationship between subject matter and faculty determinations of relevancy as well. In addition to speaking of the relationship between relevancy and understanding subject area knowledge, relevancy is also mentioned in this sentence in association with considerations for being respectful and recognizing student needs by being sensitive to their time.

Recognizing what is relevant to student needs emerged frequently in the responses of several participants. These statements corresponded to ideas about making study and time in the university productive for the student in consideration for their community relationships and careers that come after graduation. For example, one interviewee emphasized student needs in determining paradigms by acknowledging that it "will depend on what it is that, you know, they're interested in." The interviewee then tied student needs into community, and post-graduation work life, stating, "yeah, and you know, I even know, non-Indigenous students in health programs who want to work on community initiatives like food security, so that they have something, they come out of the program with, something that has some practical benefit for when they leave the program, you know, that they can take this into whatever job they get afterwards." In this statement, the interviewee shows that they are aware of practicalities associated with determining paradigms and subject areas for students. These practicalities are also correlated with economic infrastructures, revealing the connection between post-secondary

education and economic realities. Additionally, the statement demonstrates a relationship between student needs and their post-graduation careers.

The need to recognize what is relevant for a student in relation to their communities and post-graduation careers was emphasized by another interviewee who is a non-academic affiliated Apache-Comanche Elder. This participant expressed their concerns with educational outcomes for native students and reservation life. He felt that “many courses taught in the university have no bearing at all on reservation life,” expressing concern that oftentimes degrees in many disciplines result in natives having to move and live far away from their communities. The participant does recognize that certain degrees and classes are highly relevant, stating that “we’ve got some good doctors, nurses, and school teachers that have got the education and they’re doing a great job.” He also mentions that as a person more familiar with the Navajo and Apache, he knows that “many of the people end up being artistic, making jewelry, painting, and making rugs.” He recognizes that “there are art classes” in the university that they can take to help with those disciplines, but expresses suspicion at the overall benefit of university education in every context. Concerning native students, he feels that “there’s a ton of classes they shouldn’t take because they don’t really help them.” An all-too-common sentiment, he also expressed concerns about degrees “that they’ve spent and owed money on for the next 20 years that have nothing to do with anything they’re ever going to do for the rest of their life.” From this, it is seen that the participant emphasizes the relevance of native students getting educated in fields that have direct associations with their careers and lives. As seen, determining paradigms is associated with faculty and subject area requirements, and student needs in relation to relevancy, community, and post graduate outcomes.

Relevancy is a keyword that appears frequently in Indigenous education literature, education at large, and is also a subject that is studied in library and information science. Defined in information science as “the users’ perceptions about the potential of certain information to resolve his or her problems in the context of his or her information seeking and use situations,” relevance studies concern the evaluation of information retrieval processes and how accurately information resources reflect a searcher’s information needs.<sup>73</sup> For instructional librarians, an instructional session becomes a form of inquiry as an object of study and body of practice. It is their responsibility to plan for and implement instruction that reflects the information needs of the classroom based on relevancy assessments. Following a framework that seeks to support Indigenous student needs in multicultural post-secondary environments, determining paradigms becomes pragmatic when considering relevancy because relevancy is “a subjective, multidimensional, dynamic and situational phenomenon.” It is determined by individual students who choose their disciplines and courses, often in consideration of what is relevant to their communities, by instructional faculty, and in relation to subject area requirements. Thus, relevancy’s subjectivity within the multicultural, pan-Indigenous, and paradigm diverse nature of post-secondary institutions means that instructional librarians and institutions can be flexible and practical in making relevancy determinations about classroom paradigms by looking at specific subject area, student, and local contexts. As seen, interviewee responses show that relevancy of paradigm in public, post-secondary information literacy can be informed by faculty preferences, instructional session and subject area requirements, and student needs.

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<sup>73</sup> Teresa Neely, *Sociological and Psychological Aspects of Information Literacy in Higher Education*, (MD, Scarecrow Press, 2002), 25-35.



It is standard practice to collaborate with faculty and determine paradigms and instructional methods by looking at subject area requirements in academic libraries. Post-secondary institutions organize disciplines within schools, colleges, and departments. Additionally, academic libraries often utilize subject area specialists as their instructional support staff. Following this convention, instructional librarians provide information literacy instruction to classes within specific disciplines. This provides the opportunity for the librarian to collaborate with faculty within that discipline to cater library instruction to the specific needs of the discipline. An example of this method is seen in signature pedagogies. The concept of signature pedagogies, first described by Lee. S. Shulman, are “ways of teaching that enculturate students into a profession,” and they “are irrevocably tied to threshold concepts, or core concepts, in a field.”<sup>74</sup> They recognize that disciplines, and especially professions, have their own inherent teaching methods and learning objectives that prepare students to meet the professional requirements of their respective areas of focus. While the concept of teaching using signatures began with vocational education, the concept has moved into academic disciplines. Similar to the Cree academic librarian who acknowledged that what is taught in information literacy sessions is determined by what faculty establishes with students and what is relevant to the subject area, Hays recognizes that “knowing how students are introduced to the discipline can help librarians tailor information literacy lessons to the needs of the discipline.”<sup>75</sup> Approaching information literacy by emphasizing a disciplinary lens allows instructional librarians to design instructional sessions that meet academic objectives necessary to succeed in a profession. This is a critical point because the most relevant disciplines for Indigenous students determined by what services

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<sup>74</sup> Lauren Hays, “Examining Information Literacy Instruction Through Signature Pedagogies and Pedagogical Content Knowledge,” in *The Grounded Instruction Librarian: Participating in the Scholarship of Teaching and Learning*, (Chicago, Association of College and Research Libraries, 2019), 4-6.

<sup>75</sup> Hays, “Examining Information Literacy,” 6.

are most needed in Indigenous communities are also sometimes the most technical, specialized, and competitive fields including medicine, law, engineering, and natural sciences. Because the purpose of signature pedagogies is to use instructional methods that are discipline specific and includes identifying epistemologies that are traditional to that discipline and relevant to student needs, this creates flexibility in practice that can be responsive to diverse contexts. These contexts provide the opportunity for instructional librarians to recognize what objectives need to be met for each instructional session, coupled with the flexibility to determine if cultural congruent methods may be warranted. Applying this lens is beneficial in post-secondary contexts where a multicultural variety of students need to be prepared for their disciplines and professions, while creating an opening for relevancy in diverse contexts through collaboration.

Mader explains:

Developing a signature pedagogy, as contrasted with a [conventional] pedagogy, requires that teachers sit down with each other and think hard about what counts as knowledge and how do things come to be known. They have to dig down and find those things that they now take for granted, so that they can help students move down the path from novice to expert. Faculty can do this with others in their discipline, but it has also been found that when they have this dialogue with those in other disciplines, they are surprised to find that they benefit from understanding the ways of knowing, doing, and valuing these other perspectives.<sup>76</sup>

As can be seen, signature pedagogies capture the full spectrum of data-driven conceptions from this research that are associated with developing library instruction in situations that are both academically and culturally diverse. The pedagogy emphasizes that which is demonstrated in the data, namely, the need to be congruent with faculty needs, subject area needs, while also being responsive to the needs of students which may include culturally relevant conceptions.

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<sup>76</sup> Sharon Mader, "What are Signature Pedagogies," *ACRL Framework for Information Literacy Toolkit* (2017), 1.

As more Indigenous scholars gain critical mass capacity across multiple disciplines within the academy, pedagogies relevant to Indigenous contexts within those fields may become more prominent in meeting culturally relevant frames. Culturally congruent pedagogies are associated with beneficial learning outcomes for Indigenous students and will be discussed further in the section on braiding knowledge systems. Next, the evaluation of Indigenous related services in academia warrants a critical lens because participants' responses also show that determining paradigms in instructional librarianship is also influenced by recognizing that university libraries are not ideologically neutral, through taking a stand on positionality, and recognizing the indigeneity of a space.

### **Value Neutrality**

The practice of implementing value-neutrality in librarianship best practices remains a prominent topic of consideration. As Macdonald and Birdi point out, "in LIS, neutrality is core to professional codes" which they reiterate by citing the policies of the International Federation of Library Associations and Institutions, a variety of European codes such as the Italian Library Association, and finally, they include the American Library Association.<sup>77</sup> They continue to explain that neutrality is rooted in concepts associated with political liberalism that grants the individual freedom of choice and assumes that people will arrive that truth by making informed decisions. However, neutrality is frequently questioned because institutions can't be neutral due to being established in and existing within an "essential social fabric that limits the choices that

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<sup>77</sup> Stephen Macdonald and Briony Birdi, "The Concept of Neutrality: A New Approach," *Journal of Documentation* 76, no. 1 (2020), 335.

people make.”<sup>78</sup> For academic libraries, information literacy is embedded in infrastructures of modern society, the institution, and that are subject specific.

When asked if information literacy in post-secondary institutions should be neutral, two participants explicitly spoke against the idea of information literacy paradigms as neutral. One directly stated that “no information literacy is neutral.” The other stated:

I think for information literacy, it’s kind of like research, because, in my opinion, there’s no such thing as neutral research. If you are doing information literacy in a way that helps people, you’re really going to want to take a stand on your positionality. Right? That’s definitely going to influence how you teach information literacy, so it just kind of goes hand in hand.

In this quote, information literacy is correlated with research and positionality, and like information literacy curriculum, is value laden and guided by methodologies informed by subject area and faculty mediated requirements. These responses align with recent literature concerning neutrality.

Macdonald and Birde found after reviewing the literature on neutrality that there are four major concepts associated with it. These are the “favorable conception” in which neutrality is seen as a mechanism to assist librarians in providing non-biased services and an effort to support diverse and multiple viewpoints in collections. The “tacit value” conception claims that “neutrality is conceptually incoherent,” because “tacit values lie behind all neutral pretenses.”<sup>79</sup> Tacit value conceptions ignore social biases and infrastructures that are pre-existing. Finally, neutrality conceptions are associated with the idea that “libraries are social institutions” and librarianship is a “value-laden” profession because libraries serve social functions and decisions

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<sup>78</sup> Macdonald and Birdi, “The Concept of Neutrality,” 335.

<sup>79</sup> Macdonald and Birdi, “The Concept of Neutrality,” 338.

require non-neutral stances.<sup>80</sup> The latter three frames are most in alignment with participants' ideas about neutrality. As will be seen, being critical of Eurocentric hegemonies is of high importance to them. Also, recognizing that instructional sessions aren't neutral is in alignment with what has already been established, namely, that classes are value laden and informed by relevancy determinations that situate instruction within the methodologies and methods established by faculty and subject area requirements. Furthermore, as seen in the above quote, the interviewee acknowledges that they perceive a relationship between helping people and standing within one's positionality, a stance that, in alignment with value laden conceptions of neutrality, requires that instructors and students consciously know their paradigms and practice self-reflection.

## **Positionality**

Being aware of one's positionality includes recognizing where one is from, what worldviews and paradigms are operational in one's life, and how that relates to structures of power in relation to others. Positionality is also related to determining paradigms by being conscious of the sovereignty of Indigenous places. It is recognized that public post-secondary universities are established on Indigenous peoples' lands where discourses contesting whose socio-political systems should be privileged are a regular feature of academic and lived realities.<sup>81</sup> One participant, a Native Hawaiian information science scholar, feels that participating in Indigenous cultures shouldn't be mandatory in multicultural spaces, yet asks,

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<sup>80</sup> Macdonald and Birdi, "The Concept of Neutrality," 338.

<sup>81</sup> See Morrill Act of 1862 and the land acknowledgement at the beginning of this document.

“but because of the indigeneity of the land, there is an exception, right?” She reiterates further, stating:

If you can make a distinction as to whose culture goes back to that land, and who, I often think of it as who has the right to speak for that area, that culture should be prioritized. But then after that, I don't know that there really should be any kind of like ranking system or hierarchy. I think that creates more problems than it solves. To the extent that is appropriate, all of it should be available to those that are interested. And, you know, not necessarily one should be put above another. But if you're interested in learning more about Indigenous knowledge and Indigenous knowledge systems of a particular group, then that should be something you're capable of pursuing in an academic institute as appropriate, right? Like, you can't, there are certain things that wouldn't necessarily be taught in an in an academic institute, but things that can be taught and things that are widely shared should be available to everyone. I don't think you should discriminate both for the person looking to learn and for the different types of knowledges.

This participant acknowledges that the communities that are the first peoples to inhabit a land, should have their paradigms privileged as an overarching social construct. This statement is being made within an understood context that many Indigenous communities are colonized or have been colonized by colonial nations and globalized forces. Although the interviewee feels that a primary recognition in determining paradigms should be given to the Indigenous people of a place, she indicates that egalitarianism in multicultural spaces is important when she signals that hierarchies of power among relations causes problems, and finalizes her statement affirming that prioritizing Indigenous paradigms in native spaces provides opportunities for others to learn different knowledges too. When stated within objective contexts associated with the University of Hawai'i, this means that classroom education can be situated with an overarching socio-political construct that is governed by Native Hawaiians and emphasizes curriculum that is place based to Hawai'i. It is from this vantage point that core course objectives can be taught, and multicultural frames can be included from the positionality of Native Hawaiian people being

inclusive of multicultural objectives from within their own sovereign frameworks. Positionality is also a consideration in individual researchers' methodologies.

Chilisa discusses the importance of reflexivity in positionality for researchers, claiming that researchers need to ask themselves what their stances are on issues, whether or not they are challenging dominant discourses, who the target audience and subjects of research are, and what needs to be changed.<sup>82</sup> These recommendations are in response to the recognition that hierarchies of knowledge production exist within colonized places and the need to “interrogate power relations with regard to researchers as privileged elites researching within and operating with Western modes of thought [in which] the concern is with Eurocentrism as a science that privileges Western ways of knowing and perceiving reality.”<sup>83</sup> When instructional librarians and students are self-reflective about power relations, ideologies that move toward justice and diverse epistemologies and paradigms, can be better centered.

### **Deconstructing Hierarchies of Knowledge Production and Decentering Eurocentric Paradigms**

Hierarchies in knowledge production were discussed in other instances by participants. The need to be attentive to deconstructing hierarchies of knowledge production and decentering “old white man” paradigms was indicated as being important in academic library instruction. Along similar lines, participants also mentioned the importance of being aware of issues associated with capitalism, industrialism, and technology. When discussing the student-teacher relationship, one participant acknowledged that “people who work in Indigenous education are

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<sup>82</sup> Chilisa, *Indigenous Research Methodologies*, 237-238.

<sup>83</sup> Chilisa, *Indigenous Research Methodologies*, 237-238.

very aware of hierarchies,” and asked “how do we kind of break down those hierarchies?”

Answering their own question, they stated that having a learning attitude and going into an instructional session with mutual respect for the student and the knowledge they have “from life experience” is one way of doing this. In other instances, a critical approach attentive to the infrastructures of academic education as being “white” and “western” was indicated, including the importance of deconstructing colonial hegemonies to prioritize Indigenous knowledge as an act of restorative justice because of “a catastrophic, horrific genocide that is centuries old, that is continuously being done to people, and I think it needs to be made right.” When asked about information literacy paradigms, the Apache-Comanche Elder elucidates on what is likely a primary reason for such concerns with whiteness and hierarchical structures in education. He states:

I’ve been reading a lot about, and I’ve known some of the people who went to the residential schools that Indians were forced to go to after the Indian wars were settled. It was quite the opposite of what I think should be taught. They forced Native American children to give up their culture. They couldn’t speak their own language, couldn’t practice their own spiritual beliefs. They tried to turn them into white people. When they finally graduated and went back home, they didn’t fit anymore in their own culture and the damage that it caused is still being felt by the tribes nationwide. In Canada it’s really bad right now for that very reason because of the residential schools. They had some that forced the Indian children to forget their own culture, to adopt a new one, and forget their old culture and that’s the wrong approach for sure. Now the Indians are going back and trying to make the governments see how evil and wrong that was. Have you looked into that? In the past few years they’ve discovered how many of those children were abused and died as a result of those residential school policies. I know that right now there’s a big movement by Native Americans to honor and bring back the bodies of those children that have died. It’s been a big spiritual awakening and healing process for the tribes.

The Indian boarding school system history continues to be an impactful issue well into the 21<sup>st</sup> century. Recognizing that “schools serve as a mechanism of social control over non-white populations by the removal of and cultural demonization of children,” the purpose of the boarding schools “was not with the intent of integration, rather, the intent was to create docile,



differentiated bodies for labor and exploitation.”<sup>84</sup> As seen from interviewee responses, these historical traumas continue to shape how Indigenous educators and people think about university education. Despite not asking participants any questions about colonial imperialism, Indigenous genocides and Eurocentric racism, the consequences of these injustices are still affecting native peoples’ attitudes about the public university system today where the extant infrastructures of society and education were constructed through these historical systems of oppression. One participant mentioned the importance of “recognizing structures of power within that paradigm and to question them.” Doing so, they feel, provides an opportunity to recognize what aspects of the infrastructural paradigms are salvageable, and which are not serving justice, humanity, and Indigenous people. Another Native Hawaiian librarian also acknowledged that some of the “old white man” paradigms may have use but that they encourage their students to prioritize Native Hawaiian voices. She stated:

I have actively been trying to not promote “old white man,” you know, especially in Hawaiian study, Hawaiian and Pacific research, you have to use some of the “old white man” but I try to push native voices, native scholarship, you know, it’s great. It’s even better when students can read ‘Ōlelo Hawai‘i because I can push them to the primary documents. And so, again, I think that’s just me, being aloha ‘āina, and trying to elevate Hawai‘i or the Indigenous voice over the voices that we’ve heard for so many years.

As can be seen from these quotes, interviewees are aware that dominant educational practices reflect the infrastructures of a racist Eurocentric past. Yet, there is still an acknowledgment that not all aspects of current societal structures are necessarily bad and that perhaps they can be useful and are necessary. One example is illustrated by Littletree, Belarde-Lewis, and Duarte when they discuss how “Native and Indigenous scholars now publish books and articles to advance metaphysical knowledge of the colonizer in light of their Indigenous experience and

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<sup>84</sup> Chin et al., “Carceral Colonialism: Schools, Prisons, and Indigenous Youth in the United States,” in *Handbook of Indigenous Education*, (Singapore: Springer Singapore, 2019), 578-579.

epistemology,” and they continue on to acknowledge the progress society has made in no longer seeing natives in racist, pejorative terms.<sup>85</sup> Regardless, participants were clear that it is necessary to decenter hegemonies which are the basis of infrastructures in the form of paradigms and institutional practices.

If hegemonic, oppressive and ecocidal social constructs endure, then ongoing discussion on infrastructures and power relations are germane. Information literacy is frequently cited as the skills and competencies required to succeed in inquiry and is often presented as a cyclical model that includes the creation of a thesis topic, locating and accessing information resources, synthesizing information, and presenting a new information product. However, what is often invisible are the infrastructures that information literacy is embedded in. The invisibility of infrastructures is one of their defining characteristics. Gazan explains in his research on the construction of hybrid knowledge that different knowledges are produced “within an infrastructure of specialization, which appears in social institutions in forms such as academic disciplines and communities of practice” and that these infrastructures are “governed by standards, only visible upon breakdown, silently shaping and controlling the conduct of those within, and learned and taught as a part of membership.”<sup>86</sup> Information literacy in post-secondary institutions is constructed upon an infrastructure formed by the intersection of institutional policies, college and departmental policies and requirements, the research methodologies and methods typically determined by subject areas that have been standardized over centuries of practice, societal values, internal review board requirements, the information technology systems required to locate, access and synthesize information, and also the industrial

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<sup>85</sup> Sandra Littletree, Miranda Belarde-Lewis, and Marisa Duarte, “Centering Relationality: A Conceptual Model to Advance Indigenous Knowledge Organization Practices,” *Knowledge Organization* 47, no. 5 (2020), 412.

<sup>86</sup> Rich Gazan, “Creating Hybrid Knowledge: A Role for the Professional Integrationist,” (ProQuest Dissertations Publishing, 2004), 14-19.

capitalistic economic system that has a direct impact on the types of socially constructed knowledge that is valued or actionable. Smith elaborates on this, stating:

From an Indigenous perspective Western research is more than just research that is located within a positivist tradition. It is research which brings to bear... a cultural orientation, a set of values, a different conceptualization of such things as time, space and subjectivity, different and competing theories of knowledge, highly specialized forms of language, and structures of power.<sup>87</sup>

In post-secondary instruction, this results in education that is concerned with “the transfer of academic skills and content that prepares the student to compete in the infrastructure of American society as it is defined by the prevailing political, social, and economic order.”<sup>88</sup>

Although they are invisible, normalized, or taken for granted by members of the over-culture within the institution, these values are the products of a historical lineage of colonial imperialism that sought annihilation and assimilation, and the society these infrastructures perpetuate continue to greatly impact ecosystems and Indigenous peoples globally. These infrastructures determine information behavior, including what is considered knowledge, what modes of cognition and perception are considered valid and necessary to function in a system, and how information is managed and shared. For Indigenous scholars, colonial infrastructures are highly visible and often experienced as deep sources of frustration and limitation.

Post-secondary university infrastructures can seem antithetical to Indigenous information and inquiry behaviors that value education as a pathway of self-actualization and empowerment in relation to community and environment. Kirkness exemplifies this when stating that native peoples prefer “the integration of useful knowledge into a holistic and internally consistent

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<sup>87</sup> Smith, *Decolonizing Methodologies*, 44.

<sup>88</sup> Cajete, *Look to the Mountain*, 19.

worldview, and [express] a disdain for complex organizational structures.”<sup>89</sup> She cites a study that researched contemporary values in a northern Athabaskan community. The study found that:

...aspects of local consciousness create considerable interactional tension and conflict when native people encounter the componentiality, specialization, systematicity, bureaucracy and literate forms characteristic of Western institutions and modern consciousness. The holistic integration and internal consistency of the native world view is not easily reconciled with the compartmentalized world of bureaucratic institutions.<sup>90</sup>

For Indigenous peoples, learning happens through lived experience and the serendipities and intentionalities of human-to-human knowledge exchange, and within a relational social awareness that is dynamic, animated, and flexible. In academia, the act of generating standardized research questions, approaching a research subject, asking questions, extracting the data from the question and recontextualizing the data outside of normal cultural constructs seems inorganic, extractive and relationally insufficient. Standardized questions and interview formats are a method generated through a positivist worldview oriented around principles of rational controls. This produces an undesirable objectification of both the research participants, their culture and shared knowledge and a cognitive frame in which “the observer must divorce himself or herself from the observed.”<sup>91</sup> This objectification results in Harris admitting that despite being a Métis person who has been teaching in both Aboriginal and Western academies for decades, she teaches *about* Aboriginal culture because the infrastructures of the institution determine that othering behavior. The objectivity inherent in qualitative controls and the ontology of binding word to print products replicates itself and forces scholars to talk *about* data as a disembodied, objectified other instead of *living* and *being* the reality of that data in relation. Significantly,

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<sup>89</sup> Kirkness and Barnhardt, “First Nations and Higher Education: The Four R’s,” 101.

<sup>90</sup> Kirkness and Barnhardt, “First Nations and Higher Education: The Four R’s,” 101-102.

<sup>91</sup> Heather Harris, “Coyote Goes to School: The Paradox of Indigenous Higher Education,” *Canadian Journal of Native Education* 26, no. 2 (2002): 188.

today's academic institution and globalized infrastructures are interdependent on information technology systems. They are rooted in the very systems of rational controls expressed as the antithesis of Indigenous epistemologies by Kirkness above, and inextricable with industrialism and capitalism.

### **Changing our Relationship to Industrialism, Capitalism, and Technology**

I think what is more important is that acre of land you put that house on had plants, animals, nature. That means nothing to no one, so you're destroying what is keeping us alive, you're destroying our ecology, our environment. To me that's what's important. What's important is living within your means, or beneath your means anymore. If you don't need it, don't destroy nature to build something there. We've got the worse society in the world for that. We build big cities, abandon that, let it rot and move 5 miles outside of town and build another city because we don't want to live in the big city and in the process destroy the environment, and keep this cycle. And all that's behind us is wasted environment, everything we've left behind is wasted. Buildings rot and become slums. Instead of us tearing those down, rebuilding there, the cycle repeats and they call it progress. I call it destruction. You don't waste what you don't need, you don't kill an animal you don't intend to eat. You don't cut down a tree to build a tiny fire to whatever. It's wasteful, and I think that's what I see happening in our society all the time, and I think it's all connected to money.

-Apache-Comanche Interviewee

Historical hegemonies that continue to form foundational infrastructures in a globalized world are frequently associated with industrialism, capitalism, and technology. These three sectors are inextricable, following a lineage that have historical associations with Cartesian dualism's dismantling of relational concepts from the collective consciousness of Europe, and on through the industrial revolution which sought to develop technology to maximize productivity and efficiency in capitalism. Similar to concerns with decentering Eurocentrism and hierarchies of knowledge, participants also expressed concerns with mainstream values and consequences associated with industry and development. For example, one Apache-Comanche Elder being

interviewed expressed concerns about this when he stated that “people need to realize that consumerism is destructive.” He reiterated:

Our education needs to work on changing the mindset of people of bigger is better. Bigger is not better if you don't need it, and I think if our education system was more interested in the good of the world, they'd be teaching that sort of thing, that instead of bigger is better, maybe smaller is best or something. That would require some changing of complete social mindset and I'm not sure how they'd do that. I think it would have to start with the universities themselves. Their mindset now is let's have the best football team so we can have more money, build a bigger colosseum and make more money, and universities are just as guilty maybe more so, so it would take a hell of a reversal of a mindset to change. Because instead of trying to teach less, I mean teach that you don't need all that money, they're teaching just the opposite by example if nothing else, continuously trying to add on, increase more. They're teaching just the opposite. In native culture everyone is taken care of by everyone else. People would give away their belongings to people that had less. This is a totally different attitude than mainstream society today.

Citing values such as concerns for constant growth in capitalism and their intersections with development, this participant reveals that this is diametrically opposed to social values of native peoples. In his understanding, native values are egalitarian and concerned with an ethic of care for one another, indicated by his statements about the potlach ceremonies. He also acknowledges that centering egalitarian values in society to correct inequities, problems of development and capitalism in society, needs to take place at the level of the university and suggests a mentality associated with regression from excess as a possible solution.

Another participant spoke about the importance of being aware of chains of consumption in industrial capitalism when asked about reciprocity. She states that “reciprocity encourages a recognition of connectivity,” and continues to emphasize that we should be conscious of where materials for our clothing come from, how it is manufactured pointing out that it is often produced along unethical and unequal power lines in which people are not fairly compensated. She reiterates that by being aware of this we can devote ourselves to a “recognition that those

connections exist and also to a dedication to hoping they don't anymore and to try to make them not exist anymore." Similar to recognizing that highly normalized daily objects in our lives such as clothing have human rights consequences, and that recognizing this can help shape preventative behaviors, another participant also mentioned environmental impacts of technology. She states:

All of the production for the different parts of the computers, and everything like that increases a lot in terms of pollution, and just compounds that we're putting out into the environment. Yeah, it's a huge problem. I think that one of the things I think is important is that right now, you know, there is a generation that is coming up very much embedded in technology, and in these modern day, everyday things, and they're thinking about, you know, how computers are used. But I think there's also a push towards kind of creativity and entrepreneurship. And I think it's really important for kids that are coming up in this area to be thinking about solutions as well. Because at this point, right now we have some solutions, but we really don't have solutions to address these big issues. And I think that is also something that should be, you know, accompanied with learning these technologies is, we're also looking for solutions, it should always be about looking for solutions to the problems that we have, you know, it's we're here, and we have this kind of issue. We don't want to be going up here with no way to bring it back down here. And so I think that is something that needs to be really embedded also in the curriculum is when we're thinking about how we can use technology for education, we should also be thinking about how we're educating to solve problems. It doesn't really address the actual issue, but I think it's a step in the right direction.

Unquestionably, the interviewee recognizes that technology production produces pollution. Like the interviewee who feels that conscious awareness about chains of consumption can bring change, this participant also feels that informing students about these issues is necessary. In doing so, she feels that they can be encouraged to find solutions and that curriculum and education should be a part of this solution. Instead of rejecting technology, she wonders about how learning objectives within curriculum can be used to educate about technology to overcome some of the environmental obstacles that technology presents with. Something that all these participants' remarks have in common is the need for education to take responsibility for the biggest issues facing society today in an industrial capitalist world.

One of the most pressing issues of today's world is the ongoing ecological crisis. Librarianship and academia as a whole lacks critical awareness about the connections between technological development, its direct influence in driving anthropogenic induced climate change and Indigenous genocides in ecological spaces used for resource extraction. One phase of genocides against native peoples and oppression of their knowledge systems historically corresponded with the scientific revolution, a movement defined by the preference for exclusive rationalism in paradigms. This rationality in science, combined with Enlightenment values of free and open education for the public, ignited industrial/technological developments, and the ongoing ecocide and Indigenous genocide nexus that continues to result from these interconnected realities manifesting now through neocolonial liberalisms.<sup>92</sup> A literature review using the basic Boolean expression *mining AND indigenous*, is all that is required to examine how overwhelming this nexus is between destroying environments through resource extraction for industry and technological development, and traditional Indigenous livelihoods and people. Crook, Short, and South elucidate upon this, stating that “the theft of nature, the over-exploitation of land and water, and the desecration of connections between people, their cultures and their lands, can all have ecocidal and genocidal consequences for vulnerable Indigenous peoples who are materially and spiritually dependent upon endangered environments.”<sup>93</sup> In addition to the ongoing destruction of ecosystems for resource extraction, another primary critique concerning information technology infrastructures is that technology is not neutral and “the very act of using technology reproduces what is supposed to be transformed.”<sup>94</sup> In other

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<sup>92</sup> Bobby Subhabrata Banerjee and Stephen Linstead, “Globalization, Multiculturalism, and Other Fictions: Colonialism for the New Millennium?” *Organization* 8, no. 4 (2001), 683–722.

<sup>93</sup> Martin Crook, Damien Short, and Nigel South, “Ecocide, Genocide, Capitalism and Colonialism: Consequences for Indigenous Peoples and Glocal Ecosystems Environments,” *Theoretical Criminology* 22, no. 3 (2018), 299-230.

<sup>94</sup> Andrew Feenberg, *Critical Theory of Technology*, (New York: Oxford University Press, 1991), 65.



words, technology infrastructures reproduce rational epistemologies and practices that are biased toward rational hegemonies. A straightforward way to visualize the impacts of this in information literacy is that regardless of a student's race, ethnicity, language, or paradigm, if they want to locate and access a resource, they will go to a search engine and use keyword expressions to do so. Typically, this also includes the use of a world/colonizer's language. The same hegemonic structure is present in the framework of the university as a system whose primary purpose is to create skilled and efficient workers within capitalism. Unfortunately, modernized Indigenous scholars and educators are becoming complicit in driving this complex, especially as more Indigenous communities integrate information technology systems, and Indigenous educators encourage the use of technology in Indigenous education. Digital equity initiatives are also implicitly biased towards technology as being beneficial and assume everyone should have more of, and equal access to it. Yet, in addition to homogenization and ecocide, the infrastructures of today's information technology systems are built upon older infrastructures that were a part of initial colonial and imperial conquests that facilitate "the total absorption of an ethnic group into the larger, more central society."<sup>95</sup> Thus, ironically, when Indigenous technologists advocate for digital equity initiatives and the use of technology in society, they are enfolded themselves in the very movements that perpetuated genocide against them in the first place, driving genocides against Indigenous peoples in spaces where there is still ecological intactness, and furthering the problem of contributing to anthropogenic induced climate change.<sup>96</sup> However, in some cases tribally controlled information systems lead to acts of

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<sup>95</sup> Mark H. Palmer, "Cut from the Same Cloth: The United States Bureau of Indian Affairs, Geographic Information Systems, and Cultural Assimilation," in *Information Technology and Indigenous People* (Hershey, PA: Information Science Publishing, 2007), 222.

<sup>96</sup> Dustin W. Edwards, "Critical Infrastructure Literacies and/as Ways of Relating in Big Data Ecologies," *Computers and Composition* 61 (2021), 1-13.

resistance from outsider control of natural resources. Palmer mentions instances in which tribal governments gained local management of GIS systems to overcome the control of their natural resources by the Bureau of Indian Affairs.<sup>97</sup> It is recognizably a complex issue, but perhaps like the Apache-Comanche Elder suggested in relation to development, less is best. These concerns are confirmed by Cajete who, ultimately asking where the boundaries will be drawn by modernized Indigenous societies, states:

American Indians have been encouraged to be consumers in the tradition of the American dream and all that it entails. Indians have been encouraged to use modern education to progress by being participants in the system and seeking the rewards that success supposedly provides. Yet, in spite of many that have succeeded in embracing Western education, Indian people must question the effects modern education has had on their collective cultural, psychological, and ecological viability.<sup>98</sup>

This recognition, and acknowledging our collective complicity in extractive technological industries, is one reason that education needs to create learning objectives associated with solving these problems.

Currently, academic education continues to highly emphasize online learning and technology as a tool to improve learning outcomes. Academic libraries have largely discontinued selecting print resources in favor of electronic ones. Furthermore, information literacy instruction is increasingly taking place online, largely in response to the commodification of university education primarily concerned with efficiency and convenience of access. Astonishingly, there is little evidence to suggest that technology enhances academic outcomes. There is, however, a significant body of evidence that demonstrates that overuse of technology in education can be

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<sup>97</sup> Palmer, "Cut from the Same Cloth," 223.

<sup>98</sup> Cajete, *Look to the Mountain*, 22.

detrimental to learning, or at best, the data is inconclusive or negated by the extreme environmental, social, and cognitive consequences.<sup>99</sup>

A study done by Maori scholar Julie Meates shows that overuse of digital technologies is detrimental to cognitive health and overall psycho-social wellbeing. For example, digital technology use is correlated with increases in anxiety, attention deficits, depression, suicide, sleep deprivation, and disruptions on melatonin production, to name a few.<sup>100</sup> Studies also show that childhood bipolar disorder diagnoses increased fortyfold from 1994 to 2003, and ADHD diagnoses have increased by 800 percent in correlation with electronic screen syndrome.<sup>101</sup> With academic libraries now emphasizing electronic resources, online instruction, academic classes being taught online, students already being addicted to social and audio-visual media, and work moving to more online models, students are being forced to spend most of their day in front of LCD screens. As if that's not alarming enough, for Indigenous students, technologies are also "transforming basic cultural concepts and experiences such as those of time, space, reality, privacy, and community, and...also affecting fundamental shifts in cultural practices."<sup>102</sup> In addition to this undermining the quality of academic outcomes and personal health, homogenization, as participants' concerns indicated, the environment is suffering immensely from technology.

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<sup>99</sup> Keri Facer and Neil Selwyn, "Digital Technology and the Futures of Education – Towards 'Non-Stupid' Optimism. Paper commissioned for the UNESCO Futures of Education report (2021); Richard F. Schmid, Robert M. Bernard, Eugene Borokhovski, Rana M. Tamim, Philip C. Abrami, Michael A. Surkes, C. Anne Wade, Jonathan Woods, "The Effects of Technology Use in Postsecondary Education: A Meta-analysis of Classroom Applications," *Computers & Education* 72 (2014), 284; Jing Lei and Yong Zhao, "Technology Uses and Student Achievement: A Longitudinal Study," *Computers & Education* 49 (2007), 288-289.

<sup>100</sup> Julie Meates, "Problematic Digital Technology Use of Children and Adolescents: Psychological Impact," *Teachers and Curriculum* (Online) 20, no. 1 (2020): 51–62.

<sup>101</sup> Meates, "Problematic Digital Technology," 56.

<sup>102</sup> Palmer, "Cut from the Same Cloth," 221; Philip A.E. Brey, "Theorizing Modernity and Technology," in *Modernity and Technology* (Cambridge: MIT Press, 2003) 55.

Edwards emphasizes this reality between digital technologies and the environment. Edwards, when discussing big data states that “while data centers vary in terms of size, efficiency, and purpose, they share a number of characteristics: they often use more energy than small cities [and] they collectively exhaust 175 billion gallons of water per year as part of their cooling process...”<sup>103</sup> Additionally, a report out by the United Nations Educational, Scientific, and Cultural Organization Education Sector titled “Digital Technology and the Futures of Education- Towards ‘Non-stupid’ Optimisms,” recognizes that in addition to showing how technology has little benefit in learning and also replicates inequalities, states:

At present, however, ambitions for the massively increased global use of online, data-driven and AI technologies in education are dependent on unsustainable levels of energy and natural resource consumption. This includes the “dirty material origins and processes” of digital hardware production (Miller 2015), the vast energy requirements of data-processing and data storage, and the growing problem of e-waste associated with the increased use of digital devices and screen-based education. It is reckoned that training a typical machine learning model emits the equivalent of around 300,000 kg of carbon dioxide -comparable to the lifetime carbon emissions of five cars (Strubell et al. 2019). All told, digital education is founded on a technology industry that has an ‘explosive’ footprint in terms of global greenhouse gas emissions – a trend that is set to increase in an ‘alarming’ manner over the next few decades (Belkhir and Elmelgi 2018). There is then, the very real prospect that future forms of remote, individualized and automated education might be curtailed by: (i) awareness of their increasing role in the ongoing depletion of natural resources, and (ii) attention to the unsustainable energy demands arising from the production and consumption of digital resources.<sup>104</sup>

Even with data suggesting that pedagogy and technology can have minor beneficial impacts in learning, the consequences of homogenization and ecocide far outweigh the benefits. Currently,

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<sup>103</sup> Edwards, “Critical Infrastructure Literacies,” 1-13.

<sup>104</sup> Facer and Selwyn, “Towards ‘Non-Stupid’ Optimism,” 15; Toby Miller, “The Internet of Things Will be an Internet of Obsolete Junk,” *The Conversation* January 28, 2015, <https://theconversation.com/the-internet-of-things-will-be-an-internet-of-obsolete-junk-36814>; Emma Strubell, Ananya Ganesh, and Andrew McCallum, “Energy and Policy Considerations for Deep Learning,” In the 57th Annual Meeting of the Association for Computational Linguistics (ACL). Florence, Italy. July 2019; Lotfi Belkhir and Ahmed Elmelgi, “Assessing ICT Global Emissions Footprint: Trends to 2040 & Recommendations,” *Journal of Cleaner Production* 177 (2018), 448-463.

anthropogenic induced climate change is becoming a regular aspect of our daily lived experiences.

Ironically, ecocide driving an increase in global temperatures and extreme weather events are disrupting the very infrastructures that technologies are dependent on. During the time of this research, multiple natural disasters occurred in the United States alone that include a global pandemic whose root cause is either laboratory induced viral manipulations or exploitative relationships with wild animals. Either way, a lack of healthy relationships with nature is at the core and this event has led to many disruptions in normal production that included computer chips. Another disaster occurred in the winter of 2021. An unprecedented weather event known as the February 2021 North American cold wave swept across the continent. This cold wave was a polar vortex that spanned from Canada to Mexico, generating billions of dollars in infrastructure damage that caused widespread long-term electric outages. This event also took a few hundred lives, again, setting historic records in southern geographies where cold weather patterns of those extremes are rare.

These weather events are affecting the way libraries across the United States are providing services. Merck, when discussing how libraries have increased their function as centers providing social services, stated that “in recent years, [libraries] have also served an additional public health role: As a cooling or warming center when their regions are struck with extreme and dangerous temperatures, something that’s happening more and more often as climate warming’s impacts accelerate”<sup>105</sup> The bottom-line reality is, as much as libraries uncritically advocate for the technologies that are simultaneously responsible for our current

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<sup>105</sup> Amy Merck, “U.S. Public Libraries Serve as Cooling Centers in Extreme Weather,” *Library Journal* August 9, 2019, <https://www.libraryjournal.com/story/US-Public-Libraries-Serve-as-Cooling-Centers-in-Extreme-Weather>.

ecological crisis and the genocide of Indigenous peoples in ecologically threatened spaces, we will be back to card catalogues in no time. This is assuming we will even have the ability to be concerned with such privileges as education, as likely our most immediate future generations will be predominantly concerned with surviving the toxic wastelands and gross inequalities technologies leave in their wake.

It is unfair to discuss technology without acknowledging that there are some benefits, examples and realities of which, are non-exhaustive. However, as indicated by participant responses and the above discussions, society at large has major problems to solve in relation to technology. These problems considered along with the benefits of technology is the reason this data is coded as changing relationships to technology instead of not having it all. Continuing along the need to be critical about hegemonic infrastructures, technology infrastructures must be included in this critique if the profession is serious about equity and as the profession just begins to wake up to sustainability and the eco-crisis. If society and the academy emphasize technology so greatly, then strategic planning and curriculum planning need to include information literacy objectives concerning using technology wisely in ways that avoid ecological disaster and issues that include genocide for Indigenous people in non-developed environments. Interviewee responses show that prioritizing native knowledge and listening to native voices provides pathways to empowering native students while centering concepts that directly address paradigms driving issues that include anthropogenic induced climate change.

## Informing Paradigms

### **Prioritizing Native Knowledge**

Prioritizing native knowledge extends beyond decentering hegemonic structures of power and changing relationships to industrialism, capitalism, and technology. It is also a result of a sense of responsibility that many native scholars feel and that urges them to participate in scholarship that is relevant and responsible to their communities and ancestry. One participant reiterated community and ancestral responsibility when emphasizing that responsibility is “literally just inherent in Indigenous people” and that “Indigenous people hold each other more responsible.” She goes on to state that “we haven’t lost our sense of responsibility, especially to our families and to our communities, and so in terms of info lit, you know, I think we have a kuleana to prioritize, like I was saying earlier, prioritize native voices and native knowledge. That’s our kuleana to our kupuna and to our community.” In the post-secondary institution, the prioritization of native knowledge happens in relation to educational objectives and infrastructures. As established previously, classroom paradigms and objectives are determined by faculty and in relation to subject area requirements. Prioritizing native knowledge can also “implement new ways of educating for ecological thinking and sustainability.”<sup>106</sup> Additionally, prioritizing native voices in information literacy paradigms contributes to culturally relevant learning styles in local contexts while also providing opportunities for Indigenous librarians and faculty to contribute to strategic planning, curriculum development and other institutional processes. Responses to questions indicate that prioritizing native voices can support braiding knowledge systems, embedding Indigenous values, and centering relationality, and that doing so, provides opportunities for knowledge exchange between communities.

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<sup>106</sup> Cajete, *Look to the Mountain*, 23.

## **Braiding Knowledge Systems**

Responses from participants frequently indicated that information literacy informed by IRM and IE provides opportunities for knowledge systems to inform one another. The consequence of braiding knowledge systems, they feel, is innovation and opportunities for cultures to learn from and benefit each other. For example, one librarian participant spoke about how Indigenous research that leads to innovations can be readily accepted by all. She states:

Yeah, and you know, they may be interviewing Indigenous people to find out, how do you survive when food prices just keep going up and up, and you can't afford it? Right? Learning about how community takes care of each other, such as people who hunt and provide for others beyond their immediate family, and other kinds of innovations. like, you know, having greenhouses in colder climates that are run with solar energy, and that sort of thing. So, if it's something that's innovative, it usually will come across and be well received, especially if it's something that can be applied to all people, right, because usually what's good for Indigenous people is good for everyone.

This statement demonstrates reciprocity and braided knowledge moving in multiple directions. For example, Indigenous communities in colder climates utilizing greenhouses and solar panels to grow food is an indication of utilizing modern technologies to enhance and benefit Indigenous communities. The participant, however, also acknowledges that solar panel greenhouse systems and Indigenous knowledge is of benefit beyond Indigenous communities and can be broadly applied. The ability for braided knowledge systems to enhance knowledge production was also acknowledged by another participant who works closely with Indigenous communities in Hawai'i and the Pacific. For her, these relationships provide opportunities for self-development and growth in which "it is ultra-inspiring to constantly be exposed to new ideas and new ways of thinking and being exposed to the world." She also feels that she brings value as an outsider to the communities she works in and that this is of reciprocal benefit, stating:

I represent a certain amount of ideas and values that the people in my organizations that I work with aren't that exposed to and I bring those insights to them, and they can utilize



them as they desire or not, or whatever, right? But that is the value and that is inspiring to them because they have more knowledge to work with, and vice versa. Like I can see how some of the things I know to be true, can dovetail with some of the things they know to be true to solve a problem. So it actually strengthens and broadens.

As can be seen, this interviewee works in native environments where Indigenous colleagues find value in collaborating with a multiplicity of perspectives resulting in an enriching of project outcomes and knowledge production. This braiding of knowledge systems allows for what another Native Hawaiian informatics scholar calls “seeing the bigger picture.” She states:

I think, to have a multiplicity will help to at least cover more of the bases than if you were just looking at just one thing, and you should never look at something from just one angle, right? You should always try to look at it from as many different angles as you can, and then try to get an idea of the big picture. And I think that is something that Indigenous epistemologies really enforces is let’s look at the big picture.

In addition to this bigger picture perspective that “enables incredible innovation” at salient levels through cross cultural sharing, participant statements reveal that braiding knowledge systems also has implications for native students who utilize skills associated with border crossing to navigate multiple communities of practice.

Native students and librarians in the university systems bring with them paradigms that are specific to their cultural knowledge systems, and this is sometimes discussed in terms of inhabiting multiple worlds. Several participant statements demonstrate that in this case, border crossing can be considered an information literacy skill that is of direct benefit. One participant acknowledges this directly stating, “so I think for people who have to operate in both of those worlds, it’s a skill set.” Another participant also states that Indigenous students “learn to operate in two different worlds...it’s like speaking different languages, right, you’re speaking to different values, you’re embracing other worldviews, you’re occupying an understanding and operationalizing them.” Again, one participant recognizes that the ability to “entertain a variety

of perspective or to access other value systems” produces “well rounded human beings” who have the essential ability to engage multiple intelligences, something they feel is a “critical one” in “a world that’s so interconnected.” This ability to navigate post-secondary education through being conscious of and inhabiting multiple realities through the braiding of knowledge systems also allows for enriched perspectives across the disciplines. For example, one librarian interviewee when discussing science and Indigenous science stated:

If you’re doing a session on Indigenous science, for instance, there’s going to be some aspects of scholarship that will incorporate Western science methods. But there’s going to be other kinds of methodologies that will come up in the materials and the results that you search for. So people like to say that Indigenous people use certain aspects of Western science like observation and experimentation, and, you know, that sort of thing. But we also use dreams, right? We also use visions as part of part of our Indigenous knowledge. And so in my view, it’s rich, it’s that much more meaningful because you have multiple perspectives that are informing that topic.

This interviewee recognizes that when Western science and Indigenous science share common ground, understanding can be “more meaningful.” This happens by braiding knowledge systems in which she also feels that science can be augmented by multiple perspectives, in this case, revelatory epistemologies including dreams and visions. Braiding knowledge systems can also provide opportunities for Indigenous students to be their authentic selves by incorporating traditional knowledge into academic subjects such as dentistry.

Another example of braiding knowledge systems in the academy was presented when one participant shared a story about her experience with native dentistry students. These students were having a difficult time locating research about traditional treatments in dentistry and “nobody was talking about what Indigenous people did in terms of health, dental health, from even prior to contact, or during contact.” She told them of a story about her own father who learned traditional medicines growing up. In her own words, she said:

You know, I told them a personal story about how my dad was taught about different medicines that were readily available that people were using since time immemorial and based on the land where they were living. [He was told] just to pick off a piece of Spruce gum and chew that. And, you know, he never had one cavity in his whole life. He had all of his teeth by the time that he passed into his 70s. And, you know, I find those kinds of things are very helpful for those Indigenous students that, you know, keep searching for this kind of thing. And I said, you know, there may not be any papers written on this, but maybe that's your job. Maybe that's your job is to collect these stories from Elders and others that you may know and then publish your own paper. Then, other people will have that when they're going through the program.

By braiding Indigenous knowledge into academic disciplines such as dentistry, this librarian encourages opportunities for new innovations and understandings. This quote shows that students are enriched because knowledge systems are supplemented by one another. Antoine et al. explains that Indigenous and non-Indigenous knowledge systems should not be considered as diametrically opposed to one another, but instead seen as “concepts that complement each other, with Indigenous knowledge as a source to fill the gaps within Eurocentric models of teaching, learning, research, and education processes.”<sup>107</sup> Battiste elucidates on this when she explains that Indigenous scholars learned through the application of their own traditional knowledge systems with those of Eurocentric ones, that the two systems are more than just opposites. Instead, “by animating the voices of the cognitive ‘other’ and integrating them into the educational process, it creates a new, balanced center and a fresh vantage point...”<sup>108</sup> With this frame of mind, braiding knowledge systems becomes a pedagogical system that can enrich learning for everyone while providing a framework that supports Indigenous students in academic information literacy.

Other curriculum models in Indigenous education also use pedagogical systems that are reflective of braiding knowledge systems. These culturally relevant systems include “Two-Eyed

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<sup>107</sup> Antoine et al., *Pulling Together: A Guide for Curriculum Developers*, 10.

<sup>108</sup> Marie Battiste, “Indigenous Knowledge and Pedagogy in First Nations Education: A Literature Review with Recommendations,” *National Working Group on Education and the Minister of INAC* (2002), 8-9.

Seeing” and “Both Ways.”<sup>109</sup> Two-Eyed Seeing was developed by Mi’kmaq Elder Albert Marshall and the Both Ways system is used by Aboriginal peoples in Australia. Reinforcing what interviewee data demonstrates, Two-Eyed Seeing and Both Ways “encourages all participants on any given [learning] journey to realize that beneficial outcomes are much more likely when we are willing to bring into play two or more perspectives.”<sup>110</sup> In this pedagogy, each eye respectively represents one of the knowledge systems. One eye represents seeing through an Indigenous knowledge system and the other eye represents seeing through a Western one. When this is done, learning objectives and information from each tradition are included in a lesson. As lessons are implemented, students have the opportunity observe differences and make comparisons that that can sometimes lead to observing congruencies. The outcome is that “rather than finding the knowledge to be in conflict, some students and their lecturer found them to be complimentary.”<sup>111</sup> Through this expanded understanding and enriched knowledge production experience, new threads of connectivity are generated for those involved.

In addition to enriching knowledge production, braiding knowledge systems also provides foundations for the next generation of scholars to build upon, centering meaningful scholarship around relationality. Relationality was revealed reiteratively within the data and falls within categories associated with relationships between people such as family, tribe, clan, generations, or colleagues, relationships between people and the environment, and concepts associated with the interconnectedness of all things.

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<sup>109</sup> Michael Michie, Michelle Hogue, and Joël Rioux, “The Application of Both-Ways and Two-Eyed Seeing Pedagogy: Reflections on Engaging and Teaching Science to Post-secondary Indigenous Students,” *Research in Science Education* 48 (2018), 1205-1207.

<sup>110</sup> Michie et al., “The Application of Both-Ways and Two-Eyed Seeing,” 1207.

<sup>111</sup> Michie et al., “The Application of Both-Ways and Two-Eyed Seeing,” 1216.

## Centering Relationality

This is kind of similar, I think, to how I interpreted relevancy. But maybe even more so in terms of environment. Not just the physical environment, but also the social environment, the scholarly environment, and how you are representing yourself, thinking about, again, everything that makes you and how you are relating to all these different environments and the different agents within those environments.

-Interviewee

There is a very much so the idea of, again, not just me as an individual, alone on my raft out at sea, but me as a part of a community of a society of an environment and my responsibility to the environment.

-Interviewee

### Relationality: Kinship

Relationality as a concept correlated with values associated with community, family, Elders, and researchers' embeddedness in environment, appeared frequently in participants' responses. For participants, recognizing that research should be done with a responsibility to their communities was also a common revelation. One participant who works with Pacific Island communities emphasized relationality through kinship when she said that values in Indigenous information literacy should "privilege Indigenous perspectives and communities' needs, but then also, it would take into consideration kupuna and keiki, right, and in generations to come..." She also demonstrated the gravity of community connections in relationality, expressing that:

The recognition that the shittiest person in your community is your shitty person, they're part of your community, and you have an indebtedness to them. And often they drag on resources, and often they're a pain in the ass, but you still have an indebtedness to them. And you, you are still obligated to help them. It's not fair, but that's not the point of it. Justice is actually more equality. And justice also is recognition of your interconnectivity to humans and then other life, and the land that sustains it and the oceans that sustains it. In every Pacific Islander group I have ever worked with, the Elders are constantly talking about that.

This statement captures the fullness of the concept of relationality, showing that it is the holistic interconnectedness of community members with one another, the earth and oceans, and rooted in

a sense of responsibility and care that serves justice. It also captures the value of Elders' knowledge. Further emphasizing kinship in relationality, other statements were made that display relationality as person, family, community interconnectedness. One participant emphasized, "if you're understanding what relationality is all about, you're going to draw upon kinship first." She went on to acknowledge the benefits of bringing kinship into information literacy with Indigenous students. For her this "can provide a story that can mean something to the students, and they can connect it to something that's happened in their own experience." This demonstrates that relationality can reiteratively manifest as connections in multiple levels of experience, including cognitive ones, as connections between students' experiences in their lives and the projects they are working on in the academy. For another participant, relationality in their understanding of research and knowledge production was expressed as an "ancestral reciprocity" in which she recognized that the knowledge she shares is the culmination of her self-knowledge in relation to "perpetuating the beliefs of my ancestors." She describes knowledge production as a type of "snowball effect," recognizing that it happens between a network of connections between people, words, and ancestral realities.

#### Relationality: Post-Secondary Relations

Centering relationality as a concept and practice that can happen within networks of researchers' relationships within the academy was also represented in participants' responses. These relationships were expressed as happening through interdisciplinarity, collaboration with faculty, and human to human information exchange with colleagues. One participant's response captured a global perspective, stating:

I think how Indigenous studies scholars have gotten by all through these years is because of the relationships that they have with other scholars. They find out about new publications, whether they're books or articles or whatever, based on the network of relationships that they have in academia. It's like the people that they know are the subject headings, you know, so they don't need to use subject headings because they find most of what they need through their networks. That's an Indigenous knowledge kind of methodology. It's using that reciprocity of relationships, you know?

This statement reveals relationality as an interconnected network of connections between colleagues. Library information systems and methods of categorization may not always be the most accurate information retrieval processes for Indigenous scholars. Instead, human to human knowledge exchange through the sharing of information resources with trusted colleagues is highlighted. In another example, another participant spoke about how interdisciplinarity strengthens knowledge production. She stated that "there is a lot of stress now on interdisciplinarity, and that, yeah, it's definitely something that one, makes a lot of sense and two, is going to [result in] better [research] because the more you know, I feel like the more eyes you have on things, the better you're able to address problems and come up with solutions." This statement re-circles back to the benefits of braiding knowledge systems. Also, reiterating the ontological omnipresence of relationality, this interviewee demonstrates a recognition that communities of practice within the university working together enhances research. This sentiment was also expressed by another interviewee who said:

I think what is important is that you're making those connections with the people who are studying in similar areas that you are. Sometimes you will bump into someone who studies in a different area, but it can be cross disciplinary, and sometimes it will be a really good collaboration to work with somebody who's in a little bit different field than you.

In both instances, these interviewees emphasize that relationships formed across disciplines and between a network of scholars benefits knowledge production. Relationality between colleagues

in academic practice does appear in literature about IRM and Indigenous education. For example, Cree scholar Shawn Wilson provides an example about relations with people when he discusses relationality as a type of networking that happened at an Indigenous conference. Demonstrating the benefits, he recognizes that “the existing network of relations between us scholars was used as something that help these new and immerging researchers become stronger and empowered as Indigenous researchers.”<sup>112</sup> In addition to emphasizing relationality as networking, there is also an element of collectivism here. In this example, Wilson is demonstrating an awareness of the importance of empowering others in their own academic journey. This type of relationality between people can also facilitate collaborations between instructional librarians and faculty.

Another participant’s responses demonstrate relationality between librarian and faculty collaboration in creating information literacy services. Implying that it can sometimes be challenging to find collaborative faculty, she also finds that there are supportive ones. She states, “I think working with professors, even non kanaka professors, a lot of the professors I work with are actually not kanaka, but they’re incredibly supportive of this whole ‘ike Hawai‘i and ea for Hawai‘i and everything. The problem is finding that, and you have to kind of do that on your own and seek them out. But yeah, working with professors is very, very important.” This statement, although it also implies that finding sympathetic faculty might sometimes be a problem, reveals that there is an emphasis on the importance of working with collaborative faculty who share congruent goals, objectives, and values. For this librarian that includes ‘ike

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<sup>112</sup> Wilson, *Research is Ceremony*, 84



Hawai‘i and ea, Hawaiian knowledge and sovereignty. This participant demonstrated the importance of faculty collaboration and shared value systems another time when she stated:

I’m the Hawai‘i Pacific resources librarian, and so a lot of the classes I teach are, you know, ‘āina based and so, you know, I encourage our students, yes, use our library collections, use what databases you can use, whatever you can find on the internet. I mean, you know, but let’s vet that. At the same time, I do also still encourage them to go out and talk to their community, talk to the kupuna, talk to their own kupuna, go out onto these pieces of ‘āina and see what do you observe, what do you kilo out of this place. I have thankfully also been able to work with a lot of professors who understand that as well, and they encourage their students to do the same.

Relationality through faculty collaboration in this quote is seen in the congruence between shared goals and objectives with ‘āina methodologies in this librarian’s information literacy instruction, and what the faculty supports with the students in their classroom. The reiterations of relationality as a concept connecting students to their communities, families and Elders, and their land is also demonstrated again. Participants responses show that this is embedded in their information literacy practices, demonstrated by this statement when the interviewee said that “aloha ‘āina is, it is part malama ‘āina but it’s also to aloha kanaka, aloha your lāhui, you know, malama your kuleana, and that’s all kind of incorporated into aloha ‘āina. So for me, that’s, again, one of those things that are is just inherently in my sort of info lit teaching style, I would say.” As can be seen, relationality courses through connections between responsibility in care of others and the community. It is also expressed as reciprocity between self in relation to people and land.

Relationality: Ecocentrism

Connections and responsibility to the land appears frequently in participants’ responses to interview questions. Responses frequently demonstrate that the land is an interwoven aspect of

the daily lived experiences of participants and inherent to their languages. Responses also show that the land is a part of ongoing conscious consideration and informs their academic and information literacy practices. Highlighting the embeddedness of the land, one participant spoke of their perception that “everything has a spirit, every blade of grass has a spirit and things are all intertwined.” He went on to state that when “we are aware of this, we live in tune with all things around us,” demonstrating that relationality through being aware of our connections with the earth generates harmony.

The sentiments of another Cree librarian interviewee also emphasize the harmonizing effect relationality with the land has for her, as well as the connections between her language and the environment. When talking about doing an information literacy session for a land-based education class, she stated:

And even using the word askîy in the session was helpful for me and for the students as well because it really brings in a feeling of comfort, when we hear the Cree or the Nehiyaw word for land, it just takes you there to the land when you say it that way. And how often when you’re doing land-based education, the language of that land is going to permeate the education that goes along with it.

Revealing again the relationship between people, language, and land, this statement highlights the effect cultural knowledge and peoples’ embeddedness in place can have on affective wellbeing. For this librarian, the feelings associated with land and their native language had emotional outcomes that are recognized as being conducive to learning. The educational benefits of ecocentrism were demonstrated by another instructional librarian interviewee who speaking of her students said:

You know, they’re interested in learning about what Hawai‘i means to them, and what Hawai‘i means to Hawaiians, so I think that the aloha ‘āina info lit approach speaks to everybody and even people who grew up here. Local kids, they, especially when we talk about ‘āina itself...they’re so interested in learning. Actually, you know, some kids grew up

in Waipahu and had no idea that it's actually Waipahū and, what does that mean? Why is it called that? And so they're really actually hoihoi [interested] to learning that.

Considering the statements about centering relationality to the land presented so far, the land is never considered isolated or “othered” from the people. In the above example, discussion about ‘āina is a center of focus for Hawaiian identity and lived experience. Similar to the statement about the Nehiyaw word for land, askīy, the place-based topic of ‘āina and discussion of the place name Waipahū for the Native Hawaiian instructional librarian and her students also produced beneficial educational outcomes because it increased their hoihoi, interest. The immanence of relationality in IE produces physiological feelings of well-being. An eco-social/psychological/spiritual model emerges that is demonstrated by statements about self-responsibility and knowledge in relation to the whole, stated as human communities, plants, animals, the land and more.

Another participant buttresses this sentiment of responsibility to the whole and ecocentrism, emphasizing relationships between ourselves and the earth, and other-than-human beings. She claims:

I think it is very common in Indigenous epistemologies to consider yourself as a part of a greater whole, you know, and so that is really important when you're thinking about relationality, because it is never just me, it is us, it is kāua, it is kākou. And what is included in kākou, may not be just humans, it's the land, it's trees, it's the environment, it's the microorganisms. And so, how you are relating and representing yourself, within a greater context, I think it's really important when you're trying to think about Indigenous epistemologies.

Reiterating again the community and environment nexus, and concepts of wholeness, kākou in ‘Ōlelo Hawai‘i is translated as an inclusive form of “us” or “everyone.” Here, relationality is the concept that centers us in relation to all other things, and “everyone” also includes the other than human biological life forms and the land. When the interviewee spoke of “relating and

representing yourself within a greater context," she is also revealing an understood level of self-awareness about being responsible for all your relations. She is actively thinking about these relationships, demonstrating this is a cognitive process and thus, has implications in inquiry, and can be socially conditioned.

The embeddedness of participants' environmental consciousness and practice affirmed that this paradigm should also be included in information literacy curriculum. Similar to other interviewee statements showing the affective benefits of invoking homelands, a Native Hawaiian information scholar again showed the reciprocal nature of relationality with land when she discussed how an ethic of care and awareness of the land, *malama 'āina*, can be interwoven with library practices and vice versa, stating:

...how often people think that a certain kind of experience like *malama 'āina*, has to be on the land itself. And I think that is an interesting, interesting challenge is how do we challenge this idea, when you can *malama 'āina* in other places. And so for the library and learning in there, you know, can we learn about informatics and information systems somewhere else? How do you take that outside? And how do you engage people outside of that environment while still keeping those, you know, different techniques and skills fully working in action. I think that is something that should be addressed if we're talking about modern day curriculum. These are the kinds of things we should be thinking about, how to make all of these things intersect so that you're learning how to *malama 'āina* in a library, and you're learning how to use library skills on the land. Because I think overall, right, these are not, these are not mutually exclusive things.

As can be seen, this participant centers the environment in this statement by claiming that environmental education can happen in libraries, and also, library education and skills can happen on the land, invoking listeners to question how the two can exist in a reciprocal state. Comparably, another instructional librarian stated that "one of the big things that we should be trying to promote [is] our environment as a part of everything that we're doing." She feels that "the more you do overall, you know, the more of an impact you're going to have. And by kind of thinking about that more and finding ways to incorporate that, then we're going to be better off

as a society, will be a little bit happier, but also we'll be creating a better society to leave behind." Interestingly, as this participant acknowledges that ecocentrism should be promoted as a frame in both libraries and embedded in our lives, she also acknowledges that there are affective benefits affirming that relationality with the land improves our wellbeing.

Relationality is our embeddedness in nature and our communities of practice. Expressed ecologically, Bird Rose explains that relationality is "bonds of mutual life-giving subtend relationships among individuals and groups, across species."<sup>113</sup> She continues to explain that these relationships include a multiplicity of lifeforms, including "landforms."<sup>114</sup> Deemphasizing anthropocentrism, she claims that "these relationships are the result of creation, and they enmesh beings, including humans, within life-giving bonds that are inclusive, that do not have humans as the focal point or apex, and that are pervaded with an ethics of care and responsibility."<sup>115</sup> Our species emerged from and is embedded in nature by default of being a biological species interdependent upon ecologies. We are responsible to the communities, human and other than human, that we live within and the earth we inhabit. This embeddedness is apparent by acknowledging basic realities such as every breath that we breath is oxygen produced by plants, and the reality that we can't survive without water. Our relationality also extends out beyond the birth of the very first star. Kolopenuk, in an act of truth-telling states that "among Cree peoples...we know the stars as ancestors (pastpresentfuture) [sic] and as ourselves."<sup>116</sup> This is not a metaphor or a belief. When relationality is emphasized in Indigenous methodologies, it is because of scientific realities that many of our Indigenous ancestors understood. The fabric of

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<sup>113</sup> Deborah Bird Rose, "Connectivity Thinking, Animism, and the Pursuit of Liveliness," *Educational Theory* 67, no. 4 (2017), 496.

<sup>114</sup> Bird Rose, "Connectivity Thinking," 496.

<sup>115</sup> Bird Rose, "Connectivity Thinking," 496.

<sup>116</sup> Kolopenuk, "Miskâsowin," 17.

human existence is woven with the knowledge that all elements in existence were birthed in the ecstatic explosions of stars. The same elements from the birth of stars are found in our bones and our bodies, connecting us to the elements present also in the bodies of plants, animals, the salt of the ocean, and the stone of the mountain. We are all related, connected by stardust, and embodied. This fact is accentuated by Schrijver and Schrijver who, in addition to acknowledging that the hydrogen in our body is “as old as the universe,” states:

...the elements that build our bodies are inexorably intertwined with other animals, plants, single-celled organisms, general biological and geological processes, and with the Solar System, the Milky Way Galaxy, and all of the Universe that stretches out to infinity. The diversity in the connections and all their processes is achieved by variation among molecules and the particular assembly of the millions of atoms from which these molecules are made. Life on Earth is based on the elements that are accessible in a form that supports chemical reactions and that are most readily available. Therefore, hydrogen, oxygen, carbon, and nitrogen comprise almost all of our body weight. What the human body is made of, the origin of its components, how it is maintained yet always changing, and how it is intimately connected with everything around it and with the history of time and space may remain obscure most of the time, yet human beings are never separate from a magnificent, all-encompassing, universal ecology. We embody the Universe in a literal sense.<sup>117</sup>

Demonstrating that relationality is the tangible reality that our existence is inextricable with nature, that we are nature embodied through elemental relationships, sustainability is critical to the health and survival of our species. What we do to the environment, we do to ourselves and other communities. This is reciprocity, and no human or human society is exempt from taking responsibility for caring for land. Recognizing this reality is paramount to solving today’s greatest issues associated with industrial and technological developments that are regularly eroding our ecosystems to toxic wastelands, driving cultural genocides and mass extinctions. Scholars consistently agree that the paradigm associated with this behavior is a pernicious form

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<sup>117</sup> Iris Schrijver and Karel Schrijver, “The Matter of Life and Death: How Humans Embody the Universe,” in *A Multidisciplinary Approach to Embodiment*, (New York: Routledge, 2021), 12.

of mind-body and body-nature dualism perpetuated through rationalism. Plumwood calls this “hyper separation” in which “dualisms that are ordered in pairs that oppose each other reinforce structures of exclusion, hierarchy, and power” within modern consciousness.<sup>118</sup> Furthermore, according to Walsh, Böhme, and Wamsler “there is broad consensus that modern Western epistemologies arising from the Enlightenment and scientific revolution are largely responsible for creating profound divisions and patterns of exploitation between humans and nonhumans.”<sup>119</sup> This implies that we and modern paradigms that emphasize rationalism and dualisms are largely responsible for the climate disaster we now live in.

René Descartes is credited for the development of Cartesian dualism, the philosophical idea that the mind and the body are separate, and that other life forms contain no essence and are thus, purely material objects. The result of this philosophy was the development of a paradigm that perceived the body and nature as mechanical. This objectification is correlated with delusional mentalities that need to be corrected as a matter of imminence. These mentalities are associated with mastery and domination over nature that contributed to contemporary projects of civilization that have resulted in ecocide, anthropogenic induced climate change, and systems of inequality. René Dubos elucidates, stating that “what is really peculiar to the modern world is the belief that scientific knowledge can be used at will by man to master and exploit nature for his own ends...the direction of scientific effort during the past three centuries, and therefore the whole trend of modern life, has been markedly conditioned by an attitude fostered by the creators of utopias [who] fostered the view that nature must be studied not so much to be understood as to be mastered and exploited by man.”<sup>120</sup> Additionally, this mentality of rational control allowed

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<sup>118</sup> Bird Rose, “Connectivity Thinking,” 493-495.

<sup>119</sup> Zack Walsh, Jessica Böhme, and Christine Wamsler, “Towards a Relational Paradigm in Sustainability Research, Practice, and Education,” *Ambio* 50, no. 1 (2021): 4.

<sup>120</sup> William Leiss, *The Domination of Nature*, (New York: George Braziller, 1972), 13.

for the development of positivistic, empirical science that in imperial nations became known as the only legitimate way of knowing.<sup>121</sup> Before Descartes decided to assert mind body dualism with his idea that the *cogito*, the mind-ego-intellectual complex, was separate from the body, Aristotle's tripartite soul model dominated philosophical thought in Europe. Sullivan states in *Sleep, Romance, and Embodiment* that these three souls were identified in terms of "vegetative, sensitive, and rational souls" and that as a paradigm, they connected humans to other life forms through a theory of relationality.<sup>122</sup> To elaborate on the sets of abilities that the three souls have, Park states:

The lowest, called the vegetative soul, included the functions basic to all living things: nutrition, growth and reproduction. The second, the sensitive soul, included all of the powers of the vegetative soul as well as the powers of movement and emotion and the ten internal and external senses. The intellective soul, finally, included not only the vegetative and sensitive powers-the organic faculties-but also the three rational powers of intellect, intellective memory (memory of concepts, as opposed to sense images) and will.<sup>123</sup>

A self-reflexive person can identify aspects of these qualities within them. Contemporary psychology continues to also use a tripartite psyche model, generally conceived as the ego, subconscious, and super conscious selves, but Aristotle's system was both embodied and relational. It did not separate mind and body, and it is relational in that it connected humans to other forms of life, plants, and animals, acknowledging that vital forces and elements are shared by plants, animals, and humans. Aristotle's view was Indigenous to his own time and place, and it is worth drawing a comparison to Aristotle and the relationality foundational to Indigenous

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<sup>121</sup> Neeta Mehta, "Mind-body Dualism: A Critique from a Health Perspective," *Mens Sana Monographs* 9, no.1 (2011), 202-209.

<sup>122</sup> Garrett A. Sullivan, *Sleep, Romance and Human Embodiment: Vitality from Spenser to Milton*, (Boston: Cambridge University Press, 2012), 480-481.

<sup>123</sup> Katharine Park, "Psychology: The Organic Soul," In *The Cambridge History of Renaissance Philosophy*, (Boston: Cambridge University Press, 1988), 464-484.



cultures globally in which “relationality is also informed by holism, an Indigenous philosophical concept referring to the interrelatedness between the intellectual, spiritual, emotional, and physical realms to form a whole, healthy person.”<sup>124</sup> However, Descartes directly dismantled the relational paradigm of Europe and “it is a relational conception of the human that [he] refuses by elevating the *cogito* to a precondition for being, rejecting the vegetative and sensitive souls, and ascribing machinic status to both animals and the human body.”<sup>125</sup> Indigenous voices centering relationality through education is an opportunity to re-embed the very aspect that was mistakenly removed, resulting in devastating social complexes for the past several hundred years that have driven rational systems in favor of industrialism and dualistic hierarchies of oppression and control to produce economic and technological efficiencies.

Interviewee responses frequently demonstrated that earth centeredness is a frame that is a natural extension of themselves within their information literacy sessions. By re-embedding relationality into educational objectives and information literacy curriculum, instructional librarians can take responsibility for the toxic and destructive flaws of a delusional dualistic and exclusively rational paradigm. Modifying paradigms through information literacy by centering relationality further leverages this essential emergence back into healthy relationships with land, fostering change for the earth, other than human species, and our own communities. Furthermore, relational cognitive models in information literacy provide researchers with a framework for self-reflexivity. Considering Loyer’s concern with Indigenous research often being traumatic for the researcher, and stated stresses associated with research in general, providing models of self-reflection coupled with tools of emotional self-care, can both benefit

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<sup>124</sup> Littletree et al., “Centering Relationality,” 10.

<sup>125</sup> Sullivan, *Sleep, Romance, and Human Embodiment*, 7.

the research process and potentially save lives and careers.<sup>126</sup> Cognitive models also enhance contemplation during the inquiry phase associated with analysis and synthesis of information. When coupled with a relational paradigm, cognitive models can further provide an “affective, sensual mode of being-in-the-world that reveals fundamental integration between what we conventionally understand as *self* and *world*.”<sup>127</sup> With relationality being central to Indigenous knowledge systems, this is possibly why interviewee statements frequently acknowledged that Indigenous knowledge is good for the whole.

### **Indigenous Knowledge for the Good of the Whole**

Make your work useful by your meaning and truth. I know it sounds somehow ethereal, but this is the point: Knowledge that does not heal, bring together, challenge, surprise, encourage, or expand our awareness is not part of the consciousness this world needs now. This is the function we as Indigenous people posit. And the great clarity that I have been waiting to express through the beautiful mind of our beloved kupuna healer Halemakua: ‘We are all Indigenous.’  
-Kumu Manulani Meyer

Participants’ responses often reveal a global awareness in which in addition to acknowledging that different cultures can share and learn from each other, that Indigenous knowledge is also beneficial for the good of the whole. These statements continue to interweave with sentiments that demonstrate braiding knowledge systems create connections for information and knowledge exchange. For example, the Apache-Comanche Elder emphasized this at separate times. In one response, he said that “there’s knowledge in every group of people that if shared could help everyone.” He also mentioned that Indigenous knowledge, “if given the chance, would be beneficial to everyone else in the world,” and speaks of finding “common ground” by

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<sup>126</sup> Loyer, “Indigenous Information Literacy: Nēhiyaw Kinship Enabling Self-Care in Research,” 147.

<sup>127</sup> Adrian Harris, “Embodied Eco-Paganism,” in *The Handbook of Contemporary Animism*, ed. Graham Harvey (Durham: Acumen, 2013), 403.

teaching cultural curriculum that supports native “kids,” showing how paradigms “intertwine and help each other because there’s a lot of things that native culture can teach that can help the world itself.” Other participants also acknowledged the global benefits of Indigenous knowledge. One stated, “I think that responsibility to other things, to other places and environments is something that is very much an Indigenous epistemology, but I really think it needs to be a global one,” showing her belief that Indigenous epistemologies have implications for society at large. Finally, reemphasizing reciprocity and relationality, another librarian interviewee said in reference to Indigenous based research projects and knowledge in the university as benefiting all, that if “it’s something that can be applied to all people...usually what’s good for Indigenous people is good for everyone.” Summarizing all these statements, participants reveal sentiments that express concerns for the greater good. While maintaining a sense of prioritizing native voices and their communities, they also recognize that there is benefit in cross cultural sharing of ideas, reinforcing the immanence of relationality running through all things.

Indigenous discourse and knowledge operational within the post-secondary institutions benefits everyone, especially in their ability to inform social systems and paradigms that originally selected against IE in perpetuation of modernity. With a responsible approach, Indigenous knowledge is something that everyone can learn to remember and embody again. Librarians and scholars find in the post-secondary institution a network of scholars using relational discourses that can assist society in collectively addressing some of modernity’s most pressing issues. Walsh, Böhme, and Wamsler demonstrate that in addition to Indigenous scholars, a growing body of scholastic disciplines are calling for re-animating, relational paradigms while critiquing the history, discrimination within, and environmentally devastating

consequences of the current Cartesian, imperialist hegemony.<sup>128</sup> In response to these consequences, some scholars have declared the modern world is disenchanted, yet an interdisciplinary review of literature and lived experience demonstrates that the threads of relational thinking have never ceased to run deep in the underbelly of humanity and academia. Despite attempts at suppressing it, relationality is inevitably re-emerging in the mainstream and being rebranded in contemporary terms. This re-emerging holism, largely in part due to the ongoing efforts and contributions from Indigenous peoples, is seen in multiple disciplines including ecology, the natural sciences, physics, medicine, and business. More scientists and scholars are realizing that their work must be approached from a systemic perspective instead of a reductionistic one, contending that interdisciplinarity is necessary to address the most pressing issues of our time. Generating threshold concepts that “are among the oldest continuing expressions of ‘environmental’ education in the world,” indigeneity can be broadly applied in support of diverse Indigenous scholars while also informing post-secondary information literacy as a whole, empowering pathways to healing, ecocentrism, and respectful relationships.<sup>129</sup> Meyer explains that “a beloved Elder, Halemakua, a leader and teacher for our Hawaiian people and for many around the world,” claimed that “we are all Indigenous.”<sup>130</sup> Meyer believes that “he meant that at one time we all came from a place familiar with our evolution and storied with our experience...and that we can tap into this knowing to engender, again, acts of care, compassion, and the right relationship with land, sky, water, and ocean-vital for these modern times,”

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<sup>128</sup> Walsh et al., “Towards a Relational Paradigm in Sustainability Research, Practice, and Education,” 74-84; Iveta Silova, “Anticipating Other Worlds, Animating Our Selves: An Invitation to Comparative Education,” *ECNU Review of Education* 3, no. 1 (2020): 138–159.

<sup>129</sup> Cajete, *Look to the Mountain*, 21.

<sup>130</sup> Manulani Aluli Meyer, “Indigenous and Authentic: Hawaiian Epistemology and the Triangulation of Meaning,” in *The Global Intercultural Communication Reader*, eds., Molefi Kete Asante, Jing Yin, and Yoshitaka Miike, (Routledge: 2014); See footnote eight in this article.

reiterating, “to take this universal idea into race politics strips of it of its truth.”<sup>131</sup> This understanding can be applied within information literacy objectives in the academy through strategic planning, general education development, curriculum development, paradigm modification, and informing students’ research paradigms and questions. Doing so responsibly also requires community engagement with Indigenous stakeholders in local contexts.

Providing services in the public post-secondary institution that are responsive to a spectrum of local contexts, cultural specificity, and universalisms is done by using frames of mind that Meyer states as “hinging upon respect and honoring distinctness.”<sup>132</sup> Kovach, reiterating a shared congruency among cultures, also describes how this is possible, stating that Indigenous epistemologies can be generally applied in research because “Indigenous people contextualize to their tribal affiliation,” and that “other Indigenous people will understand that though the specific custom and protocol may vary, the underlying epistemology for approaching the research is known.”<sup>133</sup> Identifying core epistemologies such as relationality can be contextualized by instructors and students in this same spectrum of universal and distinct. In addition to supporting culturally relevant spaces of learning for Indigenous people, relationality is reflective of our lived, daily lives and has the potential to provide opportunities for reconciliation and unity through reimagining education and our collective *public* futures in a way that supports sustainably and these essential modifications to paradigms. Silova expresses this poignantly, stating:

If education was premised on the deep interrelatedness of everything and everyone, both human and more-than-human, it would surely look very different. It would be no longer tasked with the “hyper separation of humans as a special species and the reduction of

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<sup>131</sup> Meyer, “Indigenous and Authentic,” see footnote eight.

<sup>132</sup> Magnat, “Can Research Become Ceremony?” 34.

<sup>133</sup> Kovach, *Indigenous Methodologies*, 37-38.

non-humans to their usefulness to humans, or instrumentalism” (Plumwood, 2009, p. 116). Similarly, it would be no longer driven by the structure of dominance that underlies all modern Western dichotomies-nature/culture, female/male, chaos/order, self/other-and that relegates the “other” side to a position of oppositional subordination (Rose, 2013). Rather, education would serve as “a connective tissue” between the different worlds and between the numerous dualities of the modern human psyche, connecting everything and everyone into the “relatedness of the whole,” a relatedness of the pluriverse.<sup>134</sup>

Mainstream society re-engaging relational epistemologies is necessary to deconstruct the false nature/human binary currently predominant in mainstream consciousness and provides opportunities to heal the pathologies that drive ecocidal and oppressive behaviors. Together with mass capacity, collaboration, adaptability, and well-informed innovations, we can move forward to educate our future generations to face the inevitabilities of these challenging times.

### **Actionable Implications**

Information literacy in post-secondary institutions is a requirement that universities must meet to receive accreditation. This means that libraries are critical stakeholders in the strategic planning process. The expectation from accreditation organizations is that “in order to integrate information literacy skills appropriately and effectively into the general education curriculum, writers and accreditation organizations point to the importance of collaboration between librarians and teaching faculty.”<sup>135</sup> Librarian participation in the strategic planning process provides opportunities to implement the frames that have determined through this research. IRM emphasizes prioritizing Indigenous and diverse voices to inform educational goals and objectives

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<sup>134</sup> Iveta Silova, “Anticipating Other Worlds, Animating Our Selves: An Invitation to Comparative Education,” *ECNU Review of Education* 3, no. 1 (2020), 144; Val Plumwood, “Nature in the active voice,” *Australian Humanities Review* 46 (2009), 116; Deborah Bird Rose, “Val Plumwood’s Philosophical Animism: Attentive Interactions in the Sentient World,” *Environmental Humanities* 3 (2013).

<sup>135</sup> Laura Saunders, “Regional Accreditation Organizations’ Treatment of Information Literacy: Definitions, Collaboration, and Assessment,” *The Journal of Academic Librarianship* 33, no. 3 (2007), 318.

at the institutional level. When this criterion is met, these objectives can then be implemented through curriculum development throughout the disciplines, within specific courses by faculty and librarian partnerships, as seen in Figure 2.

An example of Indigenous voices informing educational objectives is demonstrated in the recently released University of Hawai‘i proposal for redesigning general education requirements. While the proposal contains tensions between local and global, holistic and industrial, and likely contains contested issues and various conflicts of interest on this spectrum, Native Hawaiian educators have been included in the process. The resulting proposal now includes revolutionary and essential general education objectives oriented around sustainability, healing the world, disaster survival and adaptation, humanistic values about “the universe, life and meaning,” and sustainable science.<sup>136</sup> Observing a tangible example of how prioritizing Indigenous voices in planning processes reinforces what is demonstrated in this research: Indigenous voices and braiding knowledge systems lead to essential innovations that is beneficial to Indigenous, place based and global contexts.

In addition to informing strategic planning, Indigenous and Indigenous allied librarians can also work with curriculum developers to inform course content and pedagogy and directly with faculty. Librarians also serve students directly through information literacy course work and have direct opportunities to advise students in how to develop inquiry-based research questions and assist them in developing their research paradigms and frameworks in alignment with values that center relationships to environment and prioritize solving problems that benefit the whole. The combined elements of Indigenous voices informing academic information literacy

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<sup>136</sup> “Place Based Capacities Proposal for General Education,” University of Hawai‘i, 23.

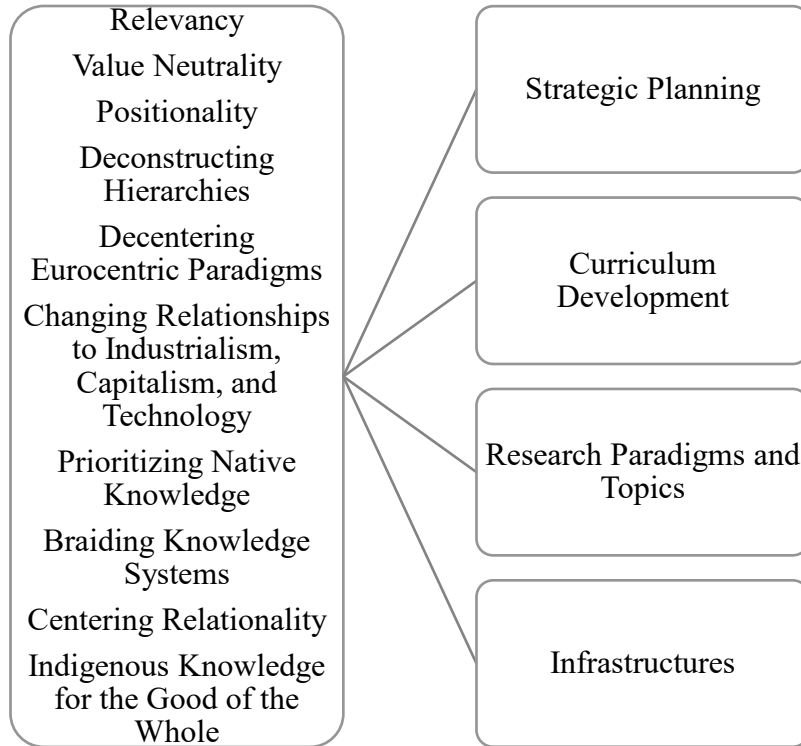
infrastructures can be seen in Figure 2. Finally, there remains a critical point that must be acknowledged about infrastructures.

According to Feenberg, social change cannot take place from above. Citing the “paradox of reform from above” when discussing the infrastructures of technology, he states that “since technology is not neutral but fundamentally biased toward a particular hegemony, all action undertaken within its framework tends to reproduce that hegemony.”<sup>137</sup> Applied to infrastructural theory at large, this means that if changes aren’t made to the fundamental infrastructures that society and education is situated within, then the core problem of industrialism driven by consumerism and capitalism will prevail and continue to drive the inequalities that enable them. Essentially, without infrastructural change that transforms the industrial, technological and economic system, changing social paradigms from the top-down produces students who have ideologies and stated behaviors, e.g., “I am relational and ecocentric,” who are then forced to replicate actual behaviors of industrial capitalism that are in conflict with those ideologies and stated behaviors. Currently, oligarchical systems of technology, capitalism, and power have rendered the proletariat population largely incapacitated and unable to influence infrastructural changes without radical actions most seem unwilling to take.

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<sup>137</sup> Feenberg, “Critical Theory of Technology,” 65; Anthony Giddens, *Central Problems of Social Theory* (Berkeley: UC Press, 1979), 91-92.





**Figure 2. A figure illustrating data codes (left) applicable to multivarious aspects of information literacy and infrastructures (right).**

## Conclusion

Indigenous education in the post-secondary institution has a contentious past. In many ways, Indigenous scholars, especially those with colonial histories with the United States, are still in the process of negotiating and contesting relationships with university infrastructures. This has limiting factors on the depths of inquiry, modes of inquiry and cognition, and expressions that are being represented within the academy. However, Indigenous research methodologies are succeeding in providing theoretical frameworks that are empowering Indigenous voices to have impactful influence in classrooms and at administrative levels, including Indigenous voices informing information literacy in academic libraires.

The data represented in this research demonstrates that Indigenous voices can inform information literacy in academic libraries by emphasizing relevancy frames, being critical of infrastructures and hegemonies including industrialism and technology, prioritizing native knowledge, braiding knowledge systems, and centering relationality. These objectives and values are particularly relevant at the level of informing paradigms. This indicates that in the contexts of this research project., IRM and IE are especially suitable for informing frameworks in how knowledge is produced, are considerate of how knowledge production can help support cultural relevancy for Indigenous students, and also contributes knowledge that modifies paradigms in society and education as a whole. A defining characteristic of modernity is that it was historically developed through selecting against relationality. IRM and IE can specifically re-embed relational principles in social paradigms by using information literacy as a fulcrum to educate future scholars toward greater states of egalitarianism and social responsibility necessary to address critical issues. Without infrastructural transformations, however, people are forced to replicate behaviors inherent to the infrastructures, namely those associated with industrial

capitalism, emphasizing the critical need for more systemic collaboration to generate immediate changes essential to address the most pressing issues of our time.

## Appendix

### Semi-structured Interview Questions<sup>138</sup>

1. Should information literacy paradigms be neutral or promote an ideology?
2. How do we make decisions about which, what and whose paradigms are privileged in multicultural, post-secondary institutions?
3. How can indigenous epistemologies be utilized to re-embed ecocentrism and relationality into modern paradigms?
4. What objectives and values should indigenous information literacy practices promote?
5. Relational and indigenous research paradigms are emerging across multiple academic disciplines and are being utilized by a diversity of stakeholders both indigenous and not. How can these paradigms inform information literacy frameworks?
6. How can Indigenous epistemologies and paradigms be expressed through pedagogy in a multicultural post-secondary library instruction session?
7. In today's information infrastructure if an Indigenous student wants to become a medical doctor, or essentially any other professional that requires science education and a license to practice, they inevitably need to be able to succeed in multiculturalism and conduct research within a diversity of paradigms. Conversely, non-Indigenous students also need to be able to traverse multiplicities in culture and paradigm. What ways of knowing are involved with this?
8. How should information literacy be structured to support Indigenous scholars entering medical professions and other STEM related fields?
9. Let's talk about cosmologies and mythologies as frameworks, guides, or organizational tools in information literacy program development and libraries. (Examples: Medicine wheel and Seven Directions, World Tree, the Ahupua'a system)
10. Is it necessary to integrate understanding and discourse concerning intangible realities and visionary states of consciousness, and their relationship to inquiry, epistemology, and Indigenous information literacy into post-secondary education?
11. How can, or should, intangible realities and visionary states of consciousness and techniques be integrated into an ethical practices of Indigenous information literacy?

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<sup>138</sup> These questions were used as a guideline to conduct semi-structured interviews. Some of the questions were sometimes skipped over, and not all got asked to every person depending on the context of how the interview was going. Similarly, data pertaining to embodied knowledge and intangible realities such as dreams and visions were not included in the results section of this thesis.

12. How can instructional librarians best support students and scholars who have shared they want to provide voice to intangible realities in their research?
13. What needs to happen for Indigenous information literacy to support a diverse variety of Indigenous scholars, students, and careers and other paths?
14. The university and libraries are organized and categorized utilizing rational, reductionistic paradigms that separate disciplines resulting in the creation of scholarship that doesn't interact despite the same or interrelated topics being studied. This influences information retrieval in computer systems based on what keywords disciplines use to describe those topics, how librarians catalogue information, and creates information vacuums where researchers only locate resources associated with their known keywords.
- a. How can indigenous epistemologies and information literacy function to address this issue?
15. How do library information systems influence information literacy practices for Indigenous scholars?
16. How does the structure of the university influence information literacy practices for Indigenous scholars?
- a. What modifications, if any, should happen?
17. The following concepts were generated from the literature on relational paradigms, indigenous epistemologies, and research methodologies. How can [ ] inform information literacy?
- a. Respect
  - b. Reciprocity
  - c. Relevancy
  - d. Relationality
  - e. Responsibility
  - f. Multiplicity of perspective
  - g. Embodied Knowledge

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