Beyond Sustainability: A Context for Transformative Curriculum Development

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Abstract:

Sustainability issues and initiatives are driving change in higher education curriculum. Curricular reform is occurring on college campuses in many ways, but few achieve transformative sustainability curriculum change as a holistic process embedded across the undergraduate curriculum. The authors provide an integrated learning framework for initiating sustainability curricular change. Emphasizing the power of engaging in critical reflection and authentic experience, faculty embrace a self-in-context, place-based approach to curriculum development. Within this framework, a "beyond sustainability" approach to curriculum is articulated using thematic threads to guide a sustainability learning outcomes project. Moving "beyond sustainability," curriculum development is necessarily contextual and praxis-oriented. The article will highlight the process of growing transformative sustainability curriculum with the support of campus leaders and administrators.

Key Words:

Sustainability, transformative, pedagogy, curriculum, learning outcomes, curricular reform.

Introduction

Living and teaching in a world facing critical sustainability issues, the shift in how we create and shape curriculum is urgent. Whether measured by economic, environmental, or social criteria, the vast majority of trends are clearly headed in the wrong direction. Since the global conversation began in the 1970's around 'sustainability' it has become one of the most misinterpreted words in our vocabulary. Sustainability, at times "implies that the goal is to maintain the status quo" (Fang, 2013). 1987, the UN Bruntland Commission formally defined 'sustainable development' as "… meeting the needs of the present without compromising the ability of future generations to meet their own needs" underscoring a sense for maintaining the status quo (Fang, 2013). Unless we reach beyond present ways of developing, delivering and teaching curriculum, we will never achieve a transformative stance.

The field of teaching and learning theory, and curriculum studies advances perspectives from a reductive information transmissive cycle of a "carbon copy" curriculum model (Hensley, 2011), anchored in the twentieth century, to one that moves toward transformative pedagogical practices. Traditional world-views of human learning have introduced a variety of perspectives (biological, behavioral, psychodynamic, cognitive, humanistic, and reciprocal determinism) providing rationales for how and why students learn. Effective sustainability curriculum is necessarily grounded in experience, and like Bandura's (1978) model of reciprocal determinism, considers the interrelationship of our actions (behavior) with and upon the environment and how the effects of the world (environment), influence our choices, tendencies and beliefs (person). The quadruple bottom line (ecological, economical, social and community) offer critical lenses for thinking about and acting upon sustainability principles and practices, sharpened through an interactive process of learning and doing within an experiential or project-based curriculum.

Many undergraduate students may not have a solid framework of sustainability practices yet hold a schema for how they interact with and upon the environment. Assuming a holistic view, transformative learning honors both the affective and rational; creative and critical application of knowledge and skills are supported by authentic experience within the classroom, community and environment to affect positive change.

Supported by Mezirow's (1997) transformative learning theory, sustainability curriculum provokes, challenges and potentially changes students' perspectives and beliefs. The learner is confronted with the sustainability dilemma, and given opportunities to critically reflect on assumptions, participates in dialogue and is moved to take action.

Sustainability curriculum presents the sustainability crisis as an opportunity for dialogue and action within disciplinary, interdisciplinary and transdisciplinary contexts. The primary goal of sustainability curriculum is to raise an acute awareness and engage students in critical reflection about sustainability. This helps to re-shape previously held assumptions, producing what Mezirow (2009) refers to as a premise perspective transformation, which he terms as significant, involving, "…a critique of premises regarding the world and one's self" (p. 22). Premise perspective transformation is reached within a free and open atmosphere for students to exchange ideas in dialogue.

Critical insights and attitudes are developed by both teacher and student in what Freire (1973) terms problem-posing dialogue, its purpose being to "...devote oneself to the constant transformation of reality" (p. 115). Transformative sustainability curriculum is a powerful vehicle in higher education to address the sustainability crisis.

Although opportunities to create transformative sustainability curriculum are narrowed due to educational mandates and initiatives, creative ways to augment curriculum with real life texts, resources and experiences are needed to prevent a prescriptive approach to curriculum. Ironically, now more than ever there is a need for what Cortese (2003) calls change of mindset, a paradigm shift in the way we work within educational systems. There is no time to waste; we must embrace " the ecological significance of now" (Clarke, 2012, p. 117). Evans (2012) builds a framework for the critical pedagogy of sustainability, calling upon institutions of higher education that serve society to move swiftly to examine critically the causes of current and future economic crises, "Higher education institutions must contextualize their conventional efforts within the context of sustainability, and professors and students must engage in praxis toward mitigating these crisis whenever and wherever possible" (p. 224).

Tracing our journey into transformative sustainability curriculum and pedagogy through the lens of our own experience, we see the need to grow faculty and student understanding across the curriculum as integral. Emphasizing the importance of work toward real solutions to real problems (Orr, 2004), real world classroom experiences lay the groundwork for praxis. As Evans (2012) states, "…if stimulating sustainability-oriented praxis is the central goal of the critical pedagogy of sustainability, its process must require students to do more than think about agency" (p. 238). Sustainability curriculum seeks to initiate both learning and doing, to engage students as change agents. The praxis involved underscores curriculum that is creative, fluent, and meaningful in the largest sense.

Even given the clearest vision and best intentions, without administrative leadership and support, curricular change is impossible. As a result of leadership on our campus, five themes emerged as a way to guide a broader view of transdisciplinary curriculum, moving beyond disciplinary silos. Situated within this five-year journey toward cultivating sustainability curriculum across the undergraduate curriculum, we highlight the annual campus wide workshop, which provides the professional development and collegial support necessary for curricular change. Working within a theme based paradigm, faculty were able to link course outcomes and projects guided by thematic threads, crystallizing our view of transformative sustainability curriculum. The following questions guide this inquiry:

1. What are models of sustainability curricular change in higher education?

2. How does leadership affect curricular change?

3. How does the *Kinnickinnic Project* serve as a Transformative Sustainability Curriculum Exemplar?

4. How can a theme-based construct guide the development of a "beyond sustainability" approach and shape sustainability learning outcomes?

Models of Sustainability Curricular Change

The sustainability curriculum movement is widespread across the nation on college campuses. Tilbury and Wortman (2008) note, "Higher education institutions are not only educating future generations of decision makers, including business leaders and government executives, but are also providing skills and training to the core of the teaching profession itself" (p. 5). While colleges and universities are in the midst of engaging sustainability curricular change, few are actually cultivating change that embeds sustainability throughout the undergraduate curriculum and even fewer are able to articulate a set of transdisciplinary sustainability outcomes. Integrating sustainability in curriculum can be done in several ways: student driven initiatives, first year experience initiatives, certificate only or graduate programs, and finally sustainability across the undergraduate curriculum initiatives.

Student Driven Sustainability Initiatives

Student-led groups have a wide impact on college campuses by building awareness of sustainability issues and provoking interest in sustainability studies. One example leading the way is the GreenROUTES (Redirect Our CampUS Toward Environmental Sustainability) envisioned and implemented by third year students in an Environmental Studies Program at Colby-Sawyer College in New Hampshire (Walrod and White, 2013). In Portland, students have worked to design sustainability curriculum for the LSE or Leadership for Sustainability Education specialization at the Masters level. Portland State is looking at designing programmatic changes at the co-curricular and extracurricular activities. Students there are embracing the power of leadership, supporting the belief that "Sustainability literacy, therefore, is inherently acquired through the practice of change agent leadership" (Hamilton & Spaulding, 2012, p. 23). Involving students in curricular design is an excellent model, and has generated many recommendations for future consideration.

First Year Experience Sustainability Curricular Focus

Often, campuses focus on introducing sustainability in an introductory course (AASHE Roundtable discussion, 2013). Some colleges, such as Furman University in Greensville, South Carolina look to engage all incoming first year students in a sustainability orientation session, to expose first year students to sustainability efforts on campus (Horhata, Stratton, Halfacre & Asman, 2011). In our review of the literature one example addressed undergraduate education through an orientation seminar for all new students. However powerful the orientation seminar or first year experiences can be, the sustainability conversation needs to be woven across the fabric of the undergraduate curriculum. Not only does the method of embedding sustainability throughout the curriculum impact the most students, but is necessary to scaffold sustainability literacy.

Sustainability Minors, Certificates, and Graduate Programs

Sustainability education is often housed within sustainability certificate programs, graduate programs, or efforts are based solely in a single department or discipline. For example, with a donation of land, Goshen College in Indiana transformed the property into a living laboratory. In 2006, it opened an on-site, nine-week residential

undergraduate or certificate program (Yoder, Ostergren, and Schramm, 2013). City College of New York created a new M.S. Sustainability in the Urban Environment Program with its first graduating class in 2011 (Jiji and Smith, 2011). Dalhousie University in Nova Scotia, Canada took it one step further by launching the College of Sustainability in 2008 for interdisciplinary education. Dalhousie offered an undergraduate program (Environment, Sustainability and Society) a constellation of graduate programs including a role for community service (Buszard and Kolb, 2011). These kinds of curricular offerings are most common, because it is easiest to isolate the variable as a subset of the whole curriculum rather than integrate sustainability across the undergraduate curriculum.

The larger goal of SEEDING the undergraduate curriculum

The evolution of our project grew from a mere desire to integrate sustainability in curriculum, to creating a space for collaborative curricular innovations across the university curriculum, supporting the belief that, "It is innovation, not integration, that is required to enable change for sustainability in both the curriculum and the broader organization" (Tillbury and Wortman, 2008, p. 10). Like Puget Sound's model (Chase et al. 2008), "...creating inter-institutional groups of faculty thinking about how to integrate sustainability concepts into lower division and introductory courses" (p. 364), the *Kinnickinnic Project* threads sustainability concepts and issues throughout the undergraduate curriculum regardless of discipline, from introductory courses to advanced. A cross campus initiative model seeks to truly transform undergraduate curriculum to prepare all students to understand and meet 21st century sustainability issues.
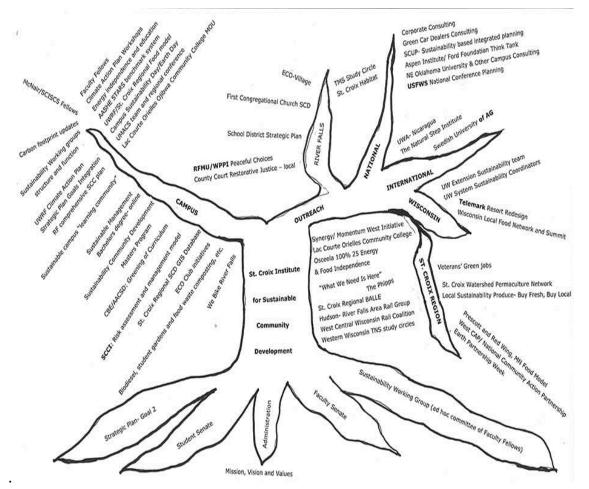
Leadership and Professional Development for Faculty

Enacting change from the ground level up is most successful when met with the support of administrative leaders who understand that incentivizing faculty toward revision of courses or creating new courses takes a step forward in the direction of positive change. This is not an easy task; without leadership the conversation can quickly turn circular or diminish altogether. Conversations surrounding the difficulty of engaging reluctant professors in opening up the pseudo constraints within their discipline have been around for years. In 2009, in an AASHE Roundtable discussion, Paul Rowland (Rowland, 2009) asks where the responsibility for driving curricular change rests at a university. Answers range from provost, to chancellor to academic officer or sustainability coordinator; each type of leader is championing sustainability curricular change on college and university campuses. According to the 2009 AASHE Roundtable discussion (Rowland, et al., 2009), there has been an "Exponential Change in the interest at higher levels of administration" (p347). Leadership is a key force driving sustainability curricular change in higher education.

In his seminal article, Planning for Higher Education, Cortese (2003) posed the question, "What if higher education were to take a leadership role, as it did in the space race and the war on cancer, in preparing students and providing the information and knowledge to achieve a just and sustainable society?" (p. 17). In order to provide campus wide sustainability curriculum change, several action steps need to be taken.

Learning opportunities within the curriculum are necessary for sustainability initiatives to be successful. Higher education institutions need to provide professional development for faculty, new resources for teaching and learning, opportunities to re-develop old courses, and/ or create new courses, and revise existing courses (Tillbury &Wortman, 2008).

Universities would be well advised to seek out individuals who have the experience, expertise and sustainability content knowledge to advance curriculum initiatives. The former Director of the St. Croix Institute for Sustainable Community Development (SCISCD), now an independent entity as the St. Croix Institute (SCI), a Public Benefit Corporation in Minnesota guides our work. The SCI focuses its work in cross sector consulting approaches that strategically assist clients in getting 'beyond sustainability' through a wide range of integrated planning, facilitation, training, research, strategy, and media services on a local, regional, and national scale.

FIGURE 1: Mapping the St. Croix Institute's impact on campus and community illustrating our "Beyond Sustainability" initiatives.

Faculty and staff from each college across campus, represented on a Sustainability committee such as our *Sustainability Working Group Committee* or SWG, gives voice to a wide range of campus constituents as part of the sustainability conversation. Often the conversation begins in debating the very definition of sustainability. Tillbury & Wortman

(2008) point out, "...the term sustainability and the idea of learning for sustainability vary widely across higher education, demonstrating that there are no common definitions..." (p. 5). By tackling *definitions* of sustainability on campus, we crafted both a working definition and one that defines sustainability as couched in research, creative and scholarly activity. Our definition parallels the wide variety of resources, community outreach projects, and campus involvement inspired and supported by the Institute whose far-reaching initiatives affect not only the university but also the surrounding communities. Using the metaphor of a strong, tall oak tree, the various initiatives stemming from the tree as roots or branches provides a visual of the institute's impact on our campus, community and beyond, representing our "beyond sustainability" view [See FIG. 1].

The Kinnickinnic Project: A Transformative Curriculum Exemplar

At the annual AASHE Sustainability Curriculum Leadership Conference at Emory University, sustainability curriculum is "uncovered" through readings, conversations, and presentations from key players on a national scale. This foray into faculty leadership for sustainability curriculum fuels dialogue with colleagues regarding curricular change on campus. The conference models how to lead and direct ongoing faculty sustainability curriculum workshops with the goal of inspiring faculty to modify course design to include issues of sustainability. Based on the highly successful sustainability curricular reform efforts such as *The Piedmont Project* (Emory University) and *Ponderosa Project* (Northern Arizona University), the workshop provides a holistic model for developing and sustaining curricular change on campuses across the country.

Throughout the five year period, we have trained forty four faculty from diverse disciplines to date, and named our workshop the *Kinnickinnic Project*, in honor of the Kinnickinnic River, a Wisconsin state "outstanding resource water" and Class A trout stream that winds through the campus and community. Kinnickinnic, an Ojibwa word meaning, "what is mixed," underscores our belief that sustainability curriculum is mixed or integrated across disciplines to fulfill curricular goals and objectives. The *Kinnickinnic Project* encourages sustainability curriculum integration in any of three ways: 1) development of a single course module for inclusion in an existing course, 2) redesign and revision for infusion throughout an existing course, or 3) creation of an entirely new course.

The annual two-day workshop, modeled after the AASHE Sustainability Curriculum Leadership Emory workshop, begins with a social event providing faculty a space to present a personal persona in place of their somewhat fixed disciplinary academic identities. Notable sustainability readings and resources frontload domain knowledge surrounding the definition of sustainability, sustainability models. Professional development planned for the workshop included our campus sustainability leader of the St. Croix Institute, as well as local community leaders representing the quadruple bottom line model of sustainability (ecologic, economic and social, and community). Nationally recognized sustainability curriculum expert, Dr. Jim Farrell, (2010) author of *The Nature of College: How a New Understanding of Campus Life Can Change the World*, was invited to discuss ways to integrate concepts of sustainability into post-secondary curriculum.

In an intimate natural setting new faculty members immerse themselves in listening, talking and learning about sustainability as connected to all of the disciplines represented. Ideas for how to infuse sustainability into courses are shared, as faculty explore pedagogical strategies suggested by AASHE and others who have since refined the typology (Meagher, 2013). Administrative presence, such as the provost, chancellor, and sustainability director, emphasize the critical need for academic leadership to support sustainability across the curriculum, and sustainability as it applies to research, creative and scholarly work. An overview of the "beyond sustainability" approach, presented by the director of sustainability on campus widens understanding of the ecological, social, economic, and community impact upon sustainability curriculum design. Our thematic Sustainability Learning Outcomes Project framework, (SLOP) was introduced linking sustainable literacy outcomes to five 'beyond sustainability' themes developed as a guide for transdisciplinary thinking.

Honoring disciplinary knowledge, a Geography professor led the cohort in a "Meditation on Place" activity as modeled at the AASHE Sustainability Curriculum Leadership workshop [See Fig. 2]. As Chase et al. (2008) suggest, "Place is important to faculty as they begin to think about introduction of sustainability across the curriculum... [faculty members might have] grown up in another bio-region, another geographical location, gone to graduate school somewhere else, and then ended up in Maine or in Alabama or California or the Pacific Northwest" (p. 367). Simply put, place is intimately connected to identity, which in turn affects course design. The place-based activity engages faculty in interacting with ecological text, making curricular connections with the bio-region the campus is situated on. Hensley (2011) defines ecological text as "the natural and social relationships that surround us. It is a form of text that we find in a natural landscape, the cultural terrain of our surrounding community, or in the topography of wilderness" (p. 137). Interacting with ecological text and its experiential impact on learning, supports a "beyond sustainability" approach to curriculum development, beginning with self-in-context. After taking a guided nature walk and talk along the Kinnickinnic River, faculty participants spent time meditating, silently contemplating their surroundings, attending to sensory stimuli, and considering insights gleaned from the experiential exercise that might bear influence or shape curricular design.

Figure 2: Meditation on Place activity along the Kinnickinnic River

The *Kinnickinnic* Project, now in its fifth successful year, provides community for faculty members; deepens awareness of the ways in which sustainability can be integrated into all academic disciplines; and fosters intellectually stimulating dialogue around local, national, and global sustainability issues among our colleagues and students. Our project underscores the view that community, awareness, and dialogue are vital catalysts to precipitate economic, environmental, and social action in support of a prosperous and sustainable world.

Reaching Beyond Sustainability Within a Theme Based Paradigm

As a context for creating course outcomes, five themes were generated that resonate with our belief that we must go beyond merely discussing sustainability and nesting it as a topic within coursework. The themes act as a conduit for guiding faculty within a critical pedagogy of sustainability, or CPS (Evans, 2012). Though disciplines remain segregated, the themes provide an opportunity for transdisciplinary conversation grounding the topic of sustainability in student engagement, promoting activities that affect change. According to Hensley (2011, p. 19), sustainability is itself "a transdisciplinary and emergent concept" highlighting the prefix *trans* in transdisciplinary as meaning 'to go beyond'. These five thematic threads guide the ongoing writing of our learning outcomes on our campus, and collectively represent the breadth and depth of comprehensive contexts for sustainability-based literacy that we desire from our students, faculty, staff, and stakeholders from local to global. Looking at outcomes,

rather than inputs (Jenson, 2013) faculty are able to reflect on what they want students to do and how to change curriculum and pedagogy to get there.

The first theme, 'Holistic Systems in Time & Space' could easily be articulated as the primary umbrella [See Fig. 4] under which the other four are understood and applied in personal, professional, and civic life.

Figure 3: Thematic Construct for Sustainability Curriculum

The other four themes represent a quadruple bottom line approach to sustainability as opposed to a triple bottom line approach. The only difference between the two approaches being that 'Community: Local to Global' metrics are purposely called out. This is essential to emphasize the fact that unless community is strengthened as a result of an integrated approach to the environmental, social, and economic contexts of sustainability, our efforts might hit the sustainability target, but we will be far off the bulls eye. In that case, the argument can be made that genuine sustainability-based outcomes that are re-localizing, restorative, regenerative, and ultimately resilient in nature, will never be achieved. Each theme described below includes examples of ways to connect the theme to contexts. Using the understanding by design (UbD) model (Wiggins & McTighe, 2007), each faculty participant worked with his or her curriculum to describe an essential question, a course outcome and course activity. Within UbD, essential questions are purposefully constructed to be broad, providing students opportunities to probe "big ideas" underscoring the real world relevance of curriculum. Course outcomes strive to meet higher levels of Blooms taxonomy, requiring an end product (city analysis, lesson plan, evaluative paper, business correspondence, essay) that engages students in applying and synthesizing thinking related to the "big ideas".

Theme One: HOLISTIC SYSTEMS IN TIME & SPACE

HSITS is the fundamental platform and foundation for sustainability literacy as the single most trans-disciplinary field of study in contemporary existence. It is the underpinning of integrated knowledge, understanding, and applied skill across the breadth and depth of disciplinary fields of study (i.e. natural sciences, social sciences, economics, mathematics, humanities, etc.), applied to judgment, decision-making, and action at any moment of need or opportunity in personal, professional, or civic life. In an academic setting (among students, faculty and staff, much less alumni and all other stakeholders), that moment can range from the signing of the American College and University Presidents Climate Commitment (ACUPCC) and initiation of campus climate action planning for carbon neutrality and adaptation strategies target of 2050, to choosing to ride a bicycle to class in the snow, to spontaneous acts of protest and/or civil disobedience to encourage fossil fuel divestment, to shopping at the regional food hub outlet store rather than a national chain. It is a moment-by-moment awakening and deepening of awareness and commitment to the endless struggle between freedom and responsibility in our relationship with each other and with the natural world. There is wisdom in the saying, "Freedom without responsibility is not really freedom. It is simply the desire to be irresponsible."

Examples of Context:

- Political Systems
- Economic Systems
- Natural & Ecosystems
- Social & Cultural Systems
- Human Physiology & Homeostasis
- Secular / Religious / Spiritual Systems
- Meta vs Macro vs Micro Systems
- Sustainable vs Un-Sustainable

**ESSENTIAL QUESTIONS/ LEARNING OUTCOME EXAMPLE:
HOLISTIC SYSTEMS IN TIME & SPACE**

Geography 322	Essential Questions	Learning Outcomes	Course Activity
Urban Geography and Sustainability	How do cities provide sustainable places in which to live? Can cities be sustainable?	Identify where and what practices are creating sustainable cities. Document how sustainable cities currently are sustainable.	Analyze an aspect of a city that should be more sustainable and recommend strategies for achieving this.

Theme Two: ECOLOGY & A SENSE OF PLACE

The difference between survival and quality of life is the difference between how a culture adapts to its ecology and identifies with its sense of place. Indigenous / native people have known and lived this for millennia. Theirs is a culture of adaptation and pronounced kinship to the land, while non-indigenous tend to adapt the land to satisfy aspirations the land does not naturally provide. Survival and quality of life for a culture, is ultimately dependent on its ability to live within its means. Limits, as imposed by its resident eco-systems, influences resource availability and attenuation of waste on a local, regional, and planetary scale. Ecosystem Services is the contemporary context by which this is theorized, managed, and economically valued. Environmentalist is the most common reference to those who advocate on behalf of ecology and a sense of place.

Sustainability literacy in this theme is most closely aligned with the holistic values, principles, and practices as expressed by Aldo Leopold's, A Sand County Almanac, Rachel Carson's Silent Spring, and other environmental writers, past and present, but most recently by Richard Louv in his renowned book, Last Child in the Woods. As Hensley (2011) notes, "It is the holistic quality of ecology that promotes transdisciplinary inquiry" (p. 127). Without understanding the structure and function of eco-systems as life support, and sense of place as intellectual, emotional, and spiritual grounding, the social and economic systems that do not fit will ultimately not survive. The classic conflict between systems imposed by uninformed human nature upon the bio-geo-chemical systems evolved over billions of years now illustrates the difference between being a part of versus apart from.

Examples of context:
- A Part Of vs Apart From Nature
- Las Vegas vs Beijing vs "My Little Town"
- Self-Sufficiency vs Mutually Dependent
- Adapting Culture to Fit the Ecology Vs Adapting Nature to Fit the Culture
- Survival vs Subsistence vs 'Quality of Life'
- From Desert to Tundra & Condensation to Ocean
- Biophilia, Biomimicry & Bioregionalism
- Local to Global

ESSENTIAL QUESTIONS/ LEARNING OUTCOME EXAMPLE:
ECOLOGY & A SENSE OF PLACE

TED 211	Essential Questions	Learning Outcomes	Course Activity
Educational Psychology	What is the relevance of sense of place? What are the boundaries to appropriate energy and transport within a sense of place?	Articulate a sense of place, and the boundaries for appropriate energy and transportation systems within a sense of place	Research and write a lesson plan integrating sustainability into a content area for elementary aged students.

Theme Three: SOCIAL JUSTICE, DEMOCRACY, & CITIZENSHIP

The essence of understanding one's evolving knowledge, maturity, and active practice lies in re-imagining personal, professional, and civic life 'beyond sustainability.' This action- oriented praxis assumes a critical pedagogical stance. According to McLaren, (2007), if we seek critical pedagogy, schools "as democratic social spheres function to dignify meaningful dialogue and action and to give students the opportunity to learn the language of social responsibility. Such a language seeks to recapture the idea of democracy as a social movement grounded in a fundamental respect for individual freedom and social justice" (p. 252). Transformative sustainability curriculum provides experiences for students to walk-the-talk, truly living in community in a restorative, regenerative, and resilient manner across all contexts of economy, ecology, and culture. To understand and practice this would invite a re-negotiation for equitable distribution of resources, safety and security, and quality of life for all human beings (regardless of gender, race, ethnicity, religion, sexual orientation, ability, and socio-economic class). This theme emphasizes that air, water, plants, animals, and the soil as 'citizens' of one's community as grounded in the Land Ethic defined by Aldo Leopold. It is this individual and collective reckoning that decisions and behavior determine the inter-generational fate of all.

Examples of context:
- Freedom vs Responsibility
- Ethics/Morality vs Human Rights vs Non-Human Rights
- Majority Rules vs Minority Rights vs Civil Disobedience
- Equality vs Equity vs Individualism
- Personal vs Professional vs Civic Life
- Liberal vs Conservative vs Libertarian
- Diversity, Tolerance and Inclusivity vs Egalitarian Culture (based on gender, race, ethnicity, religion, sexual orientation, ability, and socio-economic class)
- History of Slavery, Genocide, Discrimination, & Retribution and Reparation vs Pragmatic Realities
- Environmental Justice vs Victims of Circumstance
- Corporate Social Responsibility vs Transparency

ESSENTIAL QUESTION/ LEARNING OUTCOMES EXAMPLE:
SOCIAL JUSTICE, DEMOCRACY, & CITIZENSHIP

CHEM 300	Essential Questions	Learning Outcomes	Course Activity
Sustainable Practices and Environmental Health	How can implementing sustainable practices improve the health of individuals and communities?	Define what makes a practice sustainable. Evaluate how practices are sustainable. Analyze the health impacts of sustainable practices.	Substantial paper that addresses all three learning outcomes.

Theme Four: ECONOMICS & ENTREPRENEURSHIP

Economics is fundamentally the umbrella system of value by which all resources, e.g., material, energy, labor, & intelligence, are distributed among and traded between humans. The price of something is determined by supply and demand, and the profit from that trade the incentive for providing products and services desired by consumers; in other words, doing business. Entrepreneurship is the art of doing business by meeting needs and/or wants of others in uniquely efficient, and/or effective ways. Those uniquely efficient, and/or effective ways are consistent with the regenerative capacities and limits of the eco-systems from which they are sourced and waste returned. Choosing between *green* or *not green* practices is the entrepreneur's choice of Capitalism With a Conscience versus Capitalism Without a Conscience. All the costs and benefits (internal and external), of having chosen wisely, or not, affects both the community and the planet. A design-based project approach to sustainability curriculum advances entrepreneurial opportunities for students to work on real life business ventures. Using a pragmatic approach Barlow (2013), students' strategies can be grounded in fiscal realities as their work on campus and in the community brings about positive change based upon real world problems.

Examples of context:
- Capitalism with vs Capitalism without a Conscience
- Internalized vs Externalized vs Ecosystem Services
- Climate Catastrophe vs Opportunity of the Century
- Corporate vs Consumer vs Government
- Subsidized vs Green vs Free-Market
- Status Quo vs Incremental vs Disruptive
- Payback vs Return on Investment vs Total Cost Accounting
- Embedded vs Performance-Based Energy & Carbon
- Leaving the World a Better Place for the Next Generation

ESSENTIAL QUESTION/ LEARNING OUTCOMES EXAMPLE: ECONOMICS & ENTREPRENEURSHIP

English 266	Essential Questions	Learning Outcomes	Course Activity
Business Writing	How can sustainability practices improve business on economic, ecological, and social levels?	Define sustainability in business as increasing both stakeholder and shareholder values	Sustainability problems and practices explored through business correspondence assignments, employment writing and research on "green jobs," blogging and analytical business proposals & reports

Theme Five: COMMUNITY: LOCAL TO GLOBAL

Community is the holistic system in which culture expresses and manages itself in time and space; how it holistically fits its economic social systems and ecosystem, successfully or unsuccessfully across multiple generations. Community is often expressed in scale of local, as in village, town, city, or broader in terms of regional, national, international, and even planetary community. It is the expression by which humans interpret a sense of familiarity, safety, belonging, and all other human contexts by which one attributes and lives out positive attributes, such as in Maslow's Hierarchy.

Survival and quality of life over the long haul is dependent upon how a culture includes soil, water, air, plants, and animals as citizens within their definition of life in the community. Fundamentally, a community is sustainable only to the degree to which it is locally self-sufficient in energy, food, water, shelter, clothing, transportation, health care, education, safety/security, employment, and commerce scaled to the equitable needs of all its citizens and within the carrying capacity of native ecosystems over multiple (7) generations.

Examples of context:
- Village, City, Township, County State, National, and International
- Critical Metrics of Collective Norms (quadruple bottom line or 4XBL)
- Pacifists vs Police vs National Guard vs Militias
- Melting Pot vs Tossed Salad Vs Tolerance
- National Sovereignty vs UN Agenda 21
- Tribal / First Nation Sovereignty vs Non-Tribal
- Relevance of Think Global: Act Local

ESSENTIAL QUESTION/ LEARNING OUTCOME EXAMPLE: COMMUNITY: LOCAL TO GLOBAL

English 200	Essential Questions	Learning Outcomes	Course Activity
Reading and Writing in the Disciplines	How can the essentials of effective argumentation and research writing be used to examine contemporary issues and debates around sustainability?	Define sustainability as the nexus of economic and ecological health rooted in social justice.	Essays cultivating skills of summary & analysis (tar sands oil production/pipeline), rebuttal ("fracking"), research (climate change), and visual argumentation (geoengineering).

Concluding Thoughts

Our understanding of sustainability curriculum has evolved from merely seeking to include issues and concepts of sustainability in curriculum, to a transformative learning model (Mezirow, 2000, 2009) embedding rich place-based experiences within courses, to purposefully trouble assumptions, change or transform values, beliefs and behavior through action to enact positive change. In new or revised sustainability based courses, students experience dissonance as they confront previous assumptions counter to new learning. Our hope is that through thoughtful experiences and critical reflection, students will be moved to action within the course and beyond. Though there are many models of sustainability curricular change in higher education, a holistic model, threading sustainability across the undergraduate curriculum has the largest impact, reaching the greatest breadth of students both on campus and in the community. It also clearly sends the message that sustainability touches everything and therefore should be embedded in and across every discipline.

Perhaps one of the most important foundational considerations in launching sustainability curricular initiatives in higher education, is having supportive administrators and leaders. Leadership exists at many levels within higher education and can guide sustainability curricular change in different ways. Recognizing sustainability as an important thread in higher education lays the groundwork for leadership, especially when grounded within the strategic plan. This can be foundational for faculty to access fiscal resources to fund an annual two-day curriculum workshop, in addition to providing a forum for presenting sustainability research locally and nationally.

Using a themes-based construct, our sustainability curriculum flourished using the annual AASHE sustainability across the curriculum workshop model. Furthermore the Sustainability Learning Outcomes Project used the themes to guide course goals and align objectives with an eye toward a transdisciplinary view of curriculum. From the genesis of our project in 2011, when two faculty members attended the AASHE Sustainability Curriculum Leadership Workshop[1], we have grown our curricular fellowship and, have fostered curricular change within each college: Arts and Sciences; Education and Professional Studies; Business and Economics; and Agriculture, Food, and Environmental Sciences; with infused courses available in Accounting, Agricultural Engineering, Art, Biology, Chemistry, Communication Studies, Composition, Crop Science, Digital Film and Television, Early Childhood Education, Economics, Elementary Education, English Literature, Environmental Science, Geography, Geology, Graphic Design, Health and Human Performance, Humanities, Professional Writing, Secondary Education, Soil Science, TESOL (Teachers of English to Speakers of Other Languages), Theatre Arts, Music and Physics.

Sustainability curriculum requires vision, purposeful design and action. Dialogue as a way to connect concepts of self, community and the urgency of current choices related to sustainability, is a place to begin understanding that we are a critical part of the transformative curriculum we write. Despite mental models that interfere with

sustainable choices, sustainability curriculum can highlight the interconnectedness of the universe, as depicted in Bandura's (1978) three circles of reciprocal determinism. Students can reach what Bandura calls self-efficacy (1986) through curriculum that calls for engagement, interacting with information, observing, modeling, ultimately perpetuate and refine sustainability practices. The professional development offered in the workshop includes faculty engagement in group systems exercises, stimulating reflection into why pieces are not enough, and how it is that through complex systems thinking and interrelationships that understanding of sustainability grows. Challenging educators to think about ways to create curriculum that actively engages students with place is a conduit for creative place-making, emphasizing the importance of ecological and social knowledge, experiences, social relationships and identity. More importantly, as indicated in transformative learning theory (Mezirow, 1997) curriculum can shift perspectives and prompt action by immersing students in real world experiences, providing opportunities to problematize assumptions about sustainability practices, engaging in meaningful dialogue, and acting upon new learning.

Now in its fifth year, our challenge is to keep the project's momentum going.

Since the *Kinnickinnic Project's* inception, we have experienced faculty turnover. Some have retired, some have reassigned positions within the university, and some have taken positions elsewhere. Regardless of the reason, we have new faculty who may not be aware of the productive curriculum building thus far. In a politically polarizing climate, which has particularly affected our state negatively in terms of budget, it is seemingly more difficult to enlist faculty to take on "one more thing" such as the concept of integrating sustainability into curriculum. However, this "thing" is tantamount to our very survival. Although faculty are burdened and asked to do more and more with less, the creative task of transforming curriculum, as witnessed in the *Kinnickinnic Project*, revives a sense of autonomy in faculty as change agents. As Ikerd (2010) wisely noted, "Transformational change never comes from those in positions of economic or political power, or from intellectuals subordinate to the powerful...Change always comes from common people when they sense the need for fundamental change in their everyday lives".

Though difficult work, scaffolding understanding throughout the undergraduate curriculum through sustainability infused courses as supported by a themes based construct is a place to begin the complex work inherent in transformative sustainability curriculum. Thematic threads weave in and across disciplines, mirroring the "diverse sectors of society and differing loci of knowledge creation and use" (Evans, 2012, p. 231). Each of the five themes we have described (holistic systems in time and space; ecology and sense of place; social justice, democracy and citizenship; economics and entrepreneurship; and community: local to global) position faculty in the transdisciplinary conversation, as they transform curriculum from a knowledge based learning paradigm, to one that promotes action based on knowledge. Through curriculum and pedagogy, we can be instrumental in being the change we wish to see in the world.

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