

Alive, Survive, Strive, Thrive: A Grounded Conceptual Sustainability Taxonomy

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Abstract: A conceptual sustainability taxonomy has been needed to better communicate the value of sustainability, to align sustainability scholars' theories and sustainability educators' practices, and to develop curriculum, teaching, learning, and assessment to enhance college students' comprehension of and commitment to sustainability across general, major, and co-curriculum. Original conceptual research, including the grounding of a conceptual sustainability taxonomy with early career student affairs educators in higher education, presents a grounded conceptual sustainability taxonomy (Alive, Survive, Strive, Thrive) for educating college students and initiating scholar-practitioner contemplation, discussion, and research.

Keywords: Sustainability Education, Taxonomy, Student Affairs, General Education

Introduction

In the fall of 2015, 20.2 million students attended American colleges and universities (National Center for Education Statistics, 2016). America worked on economic, environmental, and social/cultural sustainability. Colleges and universities committed to sustainability. Generations X, Y, and Z each showed increased concern for sustainability. All seemed idyllic for this American college student cohort's collegiate sustainability education. However, academic and student affairs educators faced a compound conceptual sustainability problem that impacts students' general and co-curricular education.

The Compound Conceptual Sustainability Problem

The cohort was marked by experiential and generational distinction in regard to sustainability as a concept, an action, and as an outcome. Experientially and generationally, its collective exposure to sustainability was pronounced and disposition toward sustainability was positive. However, for academic and student affairs educators who sought to help the cohort achieve outcomes of sustainability comprehension and commitment via general and co-curricular education, the cohort's intra-cohort diversity regarding the concept of sustainability presented a problem, an issue of practice: Balancing students' diverse sustainability ideas and expressions with opportunity to improve all students' sustainability comprehension and commitment.

Also, the cohort's academic and student affairs educators experienced an issue, a problem of practice to conceptually align philosophical and technical theories of sustainability with sustainability educational practices. While there is a wealth of sustainability theory, many of these educators find it inaccessible, and difficult to bridge to their own experiences and values. Fundamentally, there was no broadly known, accepted, educationally friendly conceptual sustainability taxonomy for considering various levels of sustainability or for guiding sustainability education (curriculum, teaching, learning, assessment).

Research Question, Purpose, and Model

Is there a conceptual sustainability taxonomy for collegiate general and co-curricular sustainability education to improve students' achieving outcomes of sustainability comprehension and commitment? The purpose of this research was to develop a conceptual theory (expressed as a taxonomy) for philosophical, technical, and practical level discussions among scholars and practitioners of sustainability education. Theory/Taxonomy building was to be accomplished utilizing "conceptual" research (Meredith, 1993) in the form of "grounded theory" research (Glaser & Strauss, 1967; Craig & Tracy, 1995). Introductory reviews from literature are provided, grounding a conceptual sustainability taxonomy (Alive, Survive, Strive, Thrive) is described, and analysis and implications are presented to initiate discussion.

Conceptual Theory and Taxonomy Building

The conceptual theory format being proposed, a taxonomy, is a "hierarchy, a series of ordered groupings of people or things within a system" (Vocabulary.com, n.d.), "an ordered system intended to indicate natural relationships" (American Heritage Dictionary of the English Language, 2011). Meredith (1993, p. 8) defines taxonomy as "listings of items along a continuous scale. The items may be classified under different headings and subheadings but they

all have a relative position on the continuum which allows them to be ‘ranked’ in order.” When “two- or higher-dimensional taxonomies, where one dimension is inadequate to classify properly an item and one or more other measures are also needed,” these taxonomies are referred to as typologies.” In the form of a taxonomy or a typology, “the classification does not explain the relationships but simply describes the situation more accurately than other descriptions.” Bradley, Curry, and Devers (2007, p. 1765) point to the utility of a taxonomy, providing common language and clear communication, and being useful for comparison between alternatives. This, in part, is due to a taxonomy disaggregating and/or simplifying complexities into essential components.

In education, one widely accepted and utilized taxonomy is a structural explanation of the hierarchical and progressive orders/levels/classifications of learning achievements. “Bloom’s Taxonomy” (Bloom, 1956) presents a conceptual theory contemplated in the form of a taxonomy, and how concepts, theories, and taxonomies continue to build through their use and scholar-practitioner dialogue. Bloom’s taxonomy of lower to higher order learning objectives (knowledge, comprehension, application, analysis, synthesis, and ultimately evaluation) aids educators to develop and assess levels of learning (Bloom, 1956). Scholar-practitioner engagement with Bloom’s Taxonomy led to a 2001 revision: remember, understand, apply, analyze, evaluate, and ultimately create (Anderson & Krathwohl, 2001).

Is there a conceptual sustainability taxonomy for collegiate sustainability education to improve students’ achieving outcomes of sustainability comprehension and commitment? A conceptual sustainability taxonomy can be developed through conceptual research considering philosophical, technical, and practical voices. It must be discussed and tested; but if the concepts and hierarchy are as simple as those in Bloom’s Taxonomy, it may contribute to academic and student affairs educators’ sustainability education for subsequent collegiate student cohorts.

The Compound Conceptual Sustainability Problem

Conceptual research, not intending to be descriptive, frames the contemplation of parts and patterns within a phenomenon to generate a sense-making theory to be discussed and tested relative to philosophy, technique, and practice. The following is a contemplation of the fall 2015 cohort, and their academic and student affairs educators relative to the compound sustainability problem. The contemplation informs a response to, Is there a conceptual sustainability taxonomy for collegiate general education and co-curricular sustainability education to improve students’ achieving outcomes of sustainability comprehension and commitment?

Students’ Intra-cohort Conceptual Diversity Problem

The 20.2 million student cohort was marked by lifelong exposure to an increasingly important value, sustainability. Its collective and individual members’ perspectives on sustainability were developed through direct and indirect experience with sustainability influences; activism, meteorological and geological phenomenon, and their education.

Altruistic in motive and universally beneficial in effect, or not, sustainability activism in social media and society’s mainstream (government, media, business, education) shaped the cohort. Earth Day, involving 1 billion people, was widely engaged by their schools and influenced laws that impacted cohort experience related to air, water, species, and other aspects of life (Earth Day Network, n.d.). Businesses and media organized around sustainability. They placed the cohort in Leadership in Energy and Environmental Design (LEED) certified buildings and communities (U.S. Green Building Council, n.d.), marketed products as “green,” highlighted

sustainability in news and entertainment, and taught sustainability via a paid advertisement for clean water during Super Bowl 50 (Colgate-Palmolive Company, 2016).

The cohort faced powerful meteorological and geological phenomenon: El Nino, La Nina, Katrina, and tsunamis; “global warming” and “climate change” debate and science; energy development successes, failures, and risks (electric cars, solar and wind farms, Deep Water Horizon, fracking, Keystone Oil Pipeline), and; near pandemic diseases (AIDS, Avian Influenza, Ebola Virus, Zika Virus). They also experienced influential national and global crises of economic and cultural sustainability. As a result, to sustain life, land, water, energy, economies, and lifestyles was part of the cohort’s “brain print” being generally, positively disposed toward sustainability as a concept, an action, and an outcome.

The cohort’s disposition toward sustainability demonstrates a deepening within the successive generations, X, Y, and Z who were the majority of fall 2015 students. An observer of generational distinction noted,

“In terms of CSR [corporate social responsibility] and sustainability, Millennials [Generation Y] seem to be well aware of what a significant role business has to play in tackling the serious environmental and societal issues we are facing. ... I would even give Millennials a new name – the sustainability generation” (Stareva, April 19, 2014). “So, if Millennials are ‘the sustainability generation’, then Generation Z are the ‘natural sustainability generation’ who have sustainability ingrained in their hearts and minds” (Stareva, August 4, 2014).

Some of the cohort’s primary and secondary educators taught them sustainability. Some schools offered events or magnet programs in sustainability. But, nationally, schools did not provide the cohort common (if any) sustainability curriculum and pedagogy, and did require common (if any) high school graduation or pre-collegiate sustainability competencies.

Although it became positively disposed toward sustainability, the cohort was not otherwise educated with a common conceptual sustainability taxonomy prior to entering higher education where it began with intra-cohort diversity of comprehension about and commitment to the sustainability concepts, actions, and outcomes. Students without a common glossary and knowledge proficiency is an educational opportunity but also a pedagogical challenge for academic and student affairs educators across students’ general and co-curricular education.

Academic and Student Affairs Educators’ Conceptual Alignment Problem

While few of the cohort’s academic and student affairs educators were sustainability experts, many collegiate educators valued sustainability and sought to help students achieve sustainability outcomes through general and co-curricular education. These educators, though encouraged by institutional support for sustainability, struggled to conceptually align sustainability philosophies, techniques, and educational practices. They had no conceptual sustainability theory/taxonomy for considering various levels of sustainability or for guiding their practice of sustainability education; curriculum, teaching, learning, and assessment.

On many campuses, the development of sustainability was accelerated by supportive events of compacts, government, and associations. Institutions signed the 2007 American College & University Climate Commitment (EcoAmerica, n.d.; Secondnature, n.d.) and, for the first time, The Higher Education Opportunity Act, Public Law 110–315 (August 14, 2008) addressed “university sustainability programs.” Institutional sustainability expansion was supported by the Campus Environmental Resource Center that provided “individuals and educational institutions with the knowledge and tools to maintain environmental regulatory

compliance, improve management, and operate sustainably,” professional competency (Campus-ERC, n.d.). Also the Association for the Advancement of Sustainability in Higher Education (AASHE) provided the Sustainability Tracking, Assessment & Rating System (STARS) and encouraged “faculty, administrators, staff and students to be effective change agents and drivers of sustainability innovation” (AASHE, n.d.).

Institutional commitments were so rapid and systemic that the National Association of Scholars (NAS) five times critiqued sustainability as a “movement.” Calling sustainability “America’s new fundamentalism,” NAS’ academic educators addressed the movement’s impact on academics, student learning, campus economies, and called for academic and student affairs educators to be made part of the discussion about sustainability in higher education.

This report is the first in-depth critical study of the sustainability movement in higher education. The movement, of course, extends well beyond the college campus. It affects party politics, government bureaucracy, the energy industry, Hollywood, schools, and consumers. But the college campus is where the movement gets its voice of authority, and where it molds the views and commands the attention of young people (Peterson & Wood, 2015).

Student affairs educators recognized a need for professional development and engagement in sustainability education. Kerr and Hart-Steffes (2012, pp. 7-17) stated, “Divisions of student affairs play a crucial role in the sustainability movement in colleges and universities” and “Student services units and personnel have a unique opportunity to affect change in campus practice, policy, and student learning. [And,] ... to integrate sustainability into the student affairs mission.” The American College Personnel Association (ACPA) identified seven sustainability outcomes, competencies, strategies, and bodies of knowledge to which student affairs educators could contribute (ACPA, 2008, pp. 18-21) and expressed the role of student affairs educators in sustainability.

Students affairs can bring together the academic, co-curricular, and operations parts of the institution to help create models and practices of sustainability on campus, and share these models and practices with the larger public. Student affairs can help students understand our sustainability challenges and engage in the solutions. There are many resources to assist student affairs practitioners and scholars. It is not necessary to be an expert. Sustainability can be integrated into our daily work in order to create a future of higher quality of life and less human suffering for all. (ACPA, 2008. p. 22).

There was growing institutional support for sustainability and academic and student affairs educators agreed it was important. But, there was a fundamental educational problem: no guiding conceptual sustainability taxonomy by which to align sustainability education philosophy, technique, and practice (curriculum, pedagogy, learning, assessment). Conceptually and practically, the relationship between the philosophical (basic research generated theories), technical (applied research generated theories), and problem levels (Craig & Tracy, 1995) of sustainability did not perfectly align to support sustainability education. To which philosophical and technical theories should educators align sustainability educational practice? While diverse philosophies and diverse techniques can be made to interact with, inform, and impact each other, an ongoing conceptual conversation is required to align them with each other.

Given this compound conceptual problem, conceptual research as an avenue for sustainability theory and taxonomy building is introduced to inform a discussion of the question, Is there a conceptual sustainability taxonomy for collegiate general and co-curricular

sustainability education to improve students' achieving outcomes of sustainability comprehension and commitment?

Research for Conceptual Sustainability Taxonomy Building

Sustainability is a conceptually complex, "supradisciplinary" field (Barresi, *et. al.*, 2015); therefore, conceptual research approaches may address the question, Is there a conceptual sustainability taxonomy for collegiate general and co-curricular sustainability education to improve students' achieving outcomes of sustainability comprehension and commitment? Three approaches were reviewed; "conceptual" (Meredith, 1993), "grounded theory" (Glaser & Strauss, 1967), and "grounded practical theory" (GPT) (Craig & Tracy, 1995). Conceptual research frames contemplation of parts and patterns within a phenomenon, generating a sense-making theory to be discussed and tested relative to philosophy, technique, and practice. Conceptual, grounded theory, and GPT research approaches have been respected for usefulness in fields that are emerging or evolving, interdisciplinary or complex, involve a high level of human interaction, and have philosophical theories and technical theories that may not align with real world issues of professional practice.

Their methodology is shaped in a broad, very limited way by researcher awareness of preexisting literature. This is important when seeking to explore concepts, discover patterns, and to build new theory. The analysis of exploration and discovery leads to the generation of theories that are beyond descriptive. Researchers explore concepts, formalize them as statements of theories, may systematize them in the form of taxonomies, and demand and may guide subsequent concept discussion, testing, and application. However, the evaluation of the proposed theory will benefit from and influence a wider range of literature: In scholar-practitioner discussion, "Integrate with the literature after" (Glaser, 2010).

In the schematic of systematic scientific inquiry (Borland, 2001), conceptual research contributes to the processes of building and testing theories. Utilizing descriptive (rather than explanatory), empirical methodologies such as observation, logic, interpretation, and inference, conceptual research generates simplistic, realistic, logical statements (description, reflection, replication) in the form of proposed models of abstracts or concepts within perceived systems of reality (Meredith, 1993). Conceptual research proposes to generate a conceptual or mental model, a theory. "The (*sic*) credibility of the model, framework, or theory is gained through its simple face validity (the intuitive recognition of its correctness)" (Meredith, 1993, p. 10): Does it make sense?

Grounded theory is a form of conceptual research. Glaser (2010), suggested the paradigmatic relationship between conceptual and grounded theory research.

Grounded (*sic*) theory is the study of a concept. It's not a descriptive study of a descriptive problem, it's the study of a concept. That's why we have to get off the tiny topic level, off the descriptive level, and get the concept. And the concept names a pattern. In that pattern you are going to see ... general implications every which way you look. ... Although (*sic*) you are studying it in one substantive area it applies all around you. (Glaser, 2010)

Methodologically, Glaser and Strauss' "discovery of grounded theory" (Glaser & Strauss, 1967) contributes to or extends building scientific theory through comparative qualitative research. Extended from grounded theory (Craig & Tracy, 1995, p.251), GPT is "metatheoretical" research for theoretical and simultaneously highly applied disciplines experiencing tension between philosophical, technical, and practical levels (Craig & Tracy,

1995). Three voices ground a practical theory and initiate scholar-practitioner discussion to improve scientific theory, normative theory, and practice, and the relationship between theories and practice. Intending that theory can better address “actual problems and requirements” (p. 250) “in the everyday world” (p. 265), GPT proposals focus on informing “practical reflection” and stimulating scholar-practitioner discussion to improve alignment of ideal concepts to guide ideal actual practice, “what ought to be”; “a guide to the conduct and criticism of practice” and “rational reconstruction of situated ideals discovered in the discourse of practitioners” (Craig & Tracy, 1995, pp. 249, 266-69).

Sustainability Concepts and Taxonomies

This conceptual research required a review of concepts and conceptual models related to the question, Is there a conceptual sustainability taxonomy for collegiate general and co-curricular sustainability education to improve students’ achieving outcomes of sustainability comprehension and commitment?

Throughout millennia, cultures around the globe and have expressed the relationship of people with the physical world. Dominion, reciprocity, care, and other philosophies, principles, practices have been codified as conceptual models or human “systems” within their mythology, religion, enterprise, law, customs, arts, and education. The placement of Adam to cultivate and keep the Garden of Eden, the Hebrew Sabbath for the land, North American indigenous peoples’ relationship with Mother Earth and Father Sky, the Iroquois notion of seven generations, and Gandhi’s sarvodaya policy predate most Eurocentric concepts and systems of sustainability.

Concepts: Brundtland, Smyth, Reiter, *et. al.*

One of the germinal, defining, and influential conceptual sustainability statements is the United Nations’ *Report of the World Commission on Environment and Development: Our Common Future* (Brundtland, 1987). “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, Chapter 2: Towards Sustainable Development). Further, Brundtland framed an essential sustainability-humanity relationship, “meeting humanity’s goals and aspirations” in the face of environmentally “urgent but complex problems bearing on our very survival....” She emphasized, “The environment does not exist as a sphere separate from human actions, ambitions, and needs, and attempts to defend it in isolation from human concerns have given the very word ‘environment’ a connotation of naivety in some political circles” (Brundtland, 1987, Cahirman’s Foreword). Environmental and social sustainability had to be considered in relation to one another. However, the Commission did not design a conceptual sustainability taxonomy.

Conceptual models did multiply to educate and to improve sustainability. Robèrt, in 1989, established the Framework for Strategic Sustainable Development or “The Natural Step” to underscore four systemic conditions needed for sustainability. Sterling (2001) offered a paradigmatic approach to the theory, practice, and policy of education (at all levels), with a view to systemically change its culture for human potential, and interdependent ecological, economic, and social wellbeing. Holmgren (2002) put forward Permaculture, an opportunity-focused design, a system of principles and pathways related to seven domains, to move beyond sustainability. Hopkins, in 2006, developed the Transition Town process, a system utilized to organize communities to “reimagine and rebuild” (<https://transitionnetwork.org/>). In 2010, AASHE launched STARS to specifically rate American higher education institutions’

sustainability while aspiring (in no specific manner) to “engage students, staff, and faculty in the reporting process and build a culture of sustainability on campus.”

Smyth (2006, 2016), attempting “to review the state of environmental education from the viewpoint of one involved in international and national strategies for its development,” conceptually considered “the whole system of human-environment relationships.” He saw “environmental education not as a separable package but as a movement for fundamental educational reform, in a rapidly changing world under increasing stress both from human-induced change and from human nature itself.” Smyth seemingly desired a conceptual theory or a taxonomy related to sustainability, noting the concept of sustainability begged for “further development and careful use.” Beyond Brundtland, he encouraged theory and practice bringing “environmental and social systems together into a single conceptual structure, and to keep the development clear of misconceptions which are none of its making, to tackle the global issues that challenge survival and yet to remain realistic and practicable within the system in which it must work.” (Smyth, 2006, 2012). However, this concept did not evolve into a conceptual structure.

Reiter, *et. al.* (2011) captured the conceptual work of the Roundtable on Environmental Systems and Sustainability (Roundtable) that primarily sought to improve the standing of college and university programs in interdisciplinary environmental education (IEE). Contemplated from a transcendent vantage point, the Roundtable’s work also demonstrated the challenge of aligning philosophical levels and technical levels with the practice of environmental or sustainability education within and beyond IEE programs. Conceptually, the philosophical concept put forth by the Roundtable was a system, relationship, interaction of human activity and the environment; “how the environment relates to human lives (and vice versa).” However, the Roundtable unable to unanimously define sustainability, established a goal for sustainability and “the basis for developing a coherent IEE program regardless of the program’s context.” The goal was, “The holistic, adaptive management of the health and resilience of the systems [“human” and “ecological”] at the human-nature interface necessary to support stewardship of the natural environment and long term improvement in human condition.” (Reiter, *et. al.*, 2011, p. 66).

The Roundtable, Brundtland, and Smyth did not produce a conceptual sustainability taxonomy for collegiate sustainability education. However, their environmental and social system interaction, one conceptual structure, and human and ecological health and resilience concepts are respected, inspired the valuable sustainability systems work of many, and could be foundational for building a conceptual sustainability taxonomy.

Conceptual “Sustainability” Taxonomies

Is there a conceptual sustainability taxonomy for collegiate general and co-curricular sustainability education to improve students’ achieving outcomes of sustainability comprehension and commitment? A literature review yielded no widely-accepted taxonomy paralleling Bloom’s Taxonomy or complementing the sustainability concepts of Brundtland, Smyth, and Reiter, *et. al.* Sub-field specific sustainability taxonomies exist for economics (Pearce & Turner, 1990), engineering (Seay, 2015), life-cycle assessment (Jin & High, 2004), etc. These do not address the compound conceptual problem of intra-cohort conceptual diversity, and academic and student affairs educators’ theory-practice conceptual alignment. Analysis of the literature suggests the answer to the research question is “No.”

One of the seven “core questions of sustainability science” demonstrates the need for and struggle to achieve such a taxonomy. “How can today’s operational systems for monitoring and

reporting on environmental and social conditions be integrated or extended to provide more useful guidance for efforts to navigate a transition toward sustainability?" (Kates, et al., 2001, Core Questions Table). Yet, an aligning conceptual sustainability taxonomy, remains absent. "The approach on how to deduce indicators from more abstract terms is not new, however it is a fact that to this day there is no widely applicable strategy on how to measure and qualify social sustainability" (Widok, 2009, p. 49).

Although Parris and Kates (2003) reviewed 500 attempts to develop quantitative indicators that could indicate levels of progress toward sustainability objectives, they drew this conclusion about sustainability indicators when there is a lack of specificity.

There (*sic*) are no indicator sets that are universally accepted, backed by compelling theory, rigorous data collection and analysis, and influential in policy. This is due to the ambiguity of sustainable development, the plurality of purpose in characterizing and measuring sustainable development, and the confusion of terminology, data, and methods of measurement. A major step in reducing such confusion would be the acceptance of distinctions in terminology, data, and methods (Parris & Kates, 2003, p. 559).

Without a conceptual sustainability taxonomy, how can environmental or social phenomena be assessed relative to progressive sustainability objectives and achievements? Further, how can academic and student affairs educators align general and co-curricular education philosophies, techniques, and practices to improve students' achieving outcomes of sustainability comprehension and commitment?

To Develop a Conceptual Sustainability Taxonomy

Given the desire expressed in the literature for a conceptual sustainability taxonomy, it seemed reasonable and necessary to ground a simple taxonomy for assessing and improving sustainability, and for collegiate sustainability education. Simple conceptual taxonomies are not without their challenges; but, they are reasonable places to start when no taxonomy of sustainability concepts, objectives, and achievements is available.

"One of the main problems when conceptualizing these new systems [e.g., a taxonomy] is, if one makes the system to (*sic*) complex people will have difficulties to understand it and hence its introduction is less likely, while if one makes it to (*sic*) easy its outcome may have no real application" (Widok, 2009, p. 51). But a first step could be a simple "system of different levels which could be introduced over a longer duration of time." "Quotients (*sic*) could be extrapolated in a broad view of the ... actions at first and over time being sharpened corresponding to different levels of sustainability deepness." "It would also help to promote the idea, if the first concepts would be "small and simple" they could easily be understood and implemented and once a broad acceptance of the first levels would be reached the higher levels could be introduced." (Widok, 2009, p. 51). This suggests a taxonomy should be developed prior to a more complex typology (Meredith, 1993, p. 8).

Another problem to conceptualizing a sustainability taxonomy is sustainability lacking specificity regarding "emphases on what is to be sustained, what is to be developed, how to link environment and development, and for how long a time." Further, "The emphasis on sustainability indicators has multiple motivations that include decision making and management, advocacy, participation and consensus building, and research and analysis" (Parris & Kates, 2003, p. 559). Address anthropocentric bias. In addition to aligning philosophies and techniques, a conceptual sustainability taxonomy must address these problems of practice.

Developing a conceptual sustainability taxonomy that supports Brundtland, Smyth, and Reiter, et. al., and is simple, general, and adaptable to multiple philosophical, technical, and practical levels would be a useful start for scholar-practitioner discussion. As with all conceptual theories, the taxonomy will yield to discussions and tests, and to emerging, more specific, and widely accepted sustainability notions, terms, methods, and research. So, if there is no conceptual sustainability taxonomy for collegiate sustainability education to improve students' achieving outcomes of sustainability comprehension and commitment, what might it be?

Alive, Survive, Strive, Thrive Conceptual Sustainability Taxonomy

A graduate course on assessing educational environments for early-career student affairs educators in one of the nation's leading college student personnel/student affairs programs was being redeveloped. Relative to these educators' academic and professional development, three limitations of the literature emerged. Most sustainability theories were too advanced or specialized for these educators' and their students' comprehension and professional practice. Sustainability concepts and language were not commonly defined and applied; especially, in higher education and student affairs literature. There was no conceptual sustainability taxonomy to guide improvement of students' achieving outcomes of sustainability comprehension and commitment, or curriculum, pedagogy, learning, and assessment, or environments.

Grounding the Conceptual Sustainability Taxonomy

It was necessary to ground a conceptual sustainability taxonomy with and fitting for early career student affairs educators and their work with students. Across 2 ½ years, 76 of these early-career student affairs educators, in groups that averaged 13, participated in guided sustainability discussions lasting 2 ½ hours. Field notes were taken. The 76 educators, most recent college graduates, were completing an M.A. or concentration in higher education administration or college student personnel at the same university while working "full-time" as student affairs educators in one of 11 institutions. Most of their undergraduate experiences were at different institutions from most of the United States. None of the educators had academic or professional expertise in sustainability, and few took a sustainability related undergraduate course. In their aggregate they represented a high level of human identity diversity.

Before each discussion, each educator read identical higher education and student affairs sustainability literature. Prior to reading, they were told the articles addressed principles and practices of sustainability as considered and implemented by higher education leaders and educators. They read the literature no sooner than a week prior to a discussion guided by four questions and facilitated by the professor. Responses were analyzed using the constant comparative approach. Several weeks following the discussions, each educator utilized the taxonomy to assess their own student affairs professional work and environment. Questions, findings, and analyses were organized by themes.

What is sustainability? Discussions began with this conceptual question. Educators' definitions varied and these themes emerged. The primary definition was preservation and/or wise consumption of the physical and natural environment itself. The secondary definition linked preservation and/or wise consumption of the physical and natural environment to availability of resources for the next generation. The tertiary definition was preservation and/or wise consumption of the physical and natural environment resources for reasons of economics. Sustainability was often defined by the slogan or notion "green," without defining "green." It

was also defined as an action expressed by a popular “R-verb” such as reduce, recycle, reuse, repurpose, rethink, or by the word “saving” (saving the economy, energy, environment, etc.). Missing from definitions were notions related to improving the environment, sustainability education, and sustainability of cultures, communities, and civilizations.

How could sustainability terminology in the literature you read be improved? This second conceptual question focused on sustainability language. The educators noted approximately 10 terms like sustainability were used synonymously between and within the articles, and no utilized terms were defined in the articles. A participant gained group support when noting, “These seem to be ‘buzz words’ that no longer have a clear meaning.” There was frustration regarding sustainability language used within higher education and student affairs. Though committed to some aspect of sustainability being part of professional and educational outcomes, they were not interested in scientific/technical/scholarly sustainability language for their work in higher education and student affairs. Also, they were not satisfied that the sustainability language they encountered in the higher education and student affairs literature was beneficial for achieving the educational and professional outcomes of their work.

How do you nurture students to learn, grow, and develop in regard to sustainability? This third conceptual question related to early-career student affairs educator work. Responses clustered into two themes. The second most supported theme was a combination of passive modeling of sustainability behaviors (carrying reusable water bottles, reducing printing, etc.) and indirect sustainability communications (the presence of posters and containers). The theme generated by most early-career student affairs educators was, I do not know enough about sustainability, had not thought of sustainability as an outcome I could nurture through my work in student affairs, and/or I would not know how to nurture student learning, growth, and development in regard to sustainability.

How do you measure sustainability improvement? Though each educator had a common scholarly knowledge of assessment (and some had hands-on experience), none had suggestions regarding this final conceptual question about their work. They contributed these themes about why they did not know. They had an inability to discern the meaning of the word sustainability and an inability to operationalize the sustainability concept for measurement, evaluation, and decisions relative to accomplishments and improvements. They lacked a conceptual sustainability taxonomy alignment or fit for their work in higher education and student affairs, an inability to define and distinguish lower and higher orders of “sustainability.”

The early-career student affairs educators were then provided a graphical depiction of a conceptual sustainability taxonomy *Alive, Survive, Strive, Thrive*. This was accompanied by a verbal explanation of the taxonomy and an illustration of its application. Then the group discussed the conceptual sustainability taxonomy. From each discussion about the conceptual sustainability taxonomy, educators reported learning more about sustainability that was simple to comprehend and applicable to their work with students. They also offered a significant refinement; inclusion of the third level, *Strive*.

The Conceptual Sustainability Taxonomy *Alive, Survive, Strive, Thrive*

The four levels of the taxonomy are graphically arranged to demonstrate an ascending order of sustainability objectives and achievements (moving from lower-to-higher order when

read from left-to-right and bottom-to-top). These simple concepts were defined with simple language and an illustration, the 1995-2016 reintroduction of wolves into the greater Yellowstone eco system. [Note: The professor followed the wolf reintroduction story since 1997, via literature and media as well as personal communications and recreational wolf observations in Yellowstone National Park.] See Figure 1 and the paragraphs that follow.

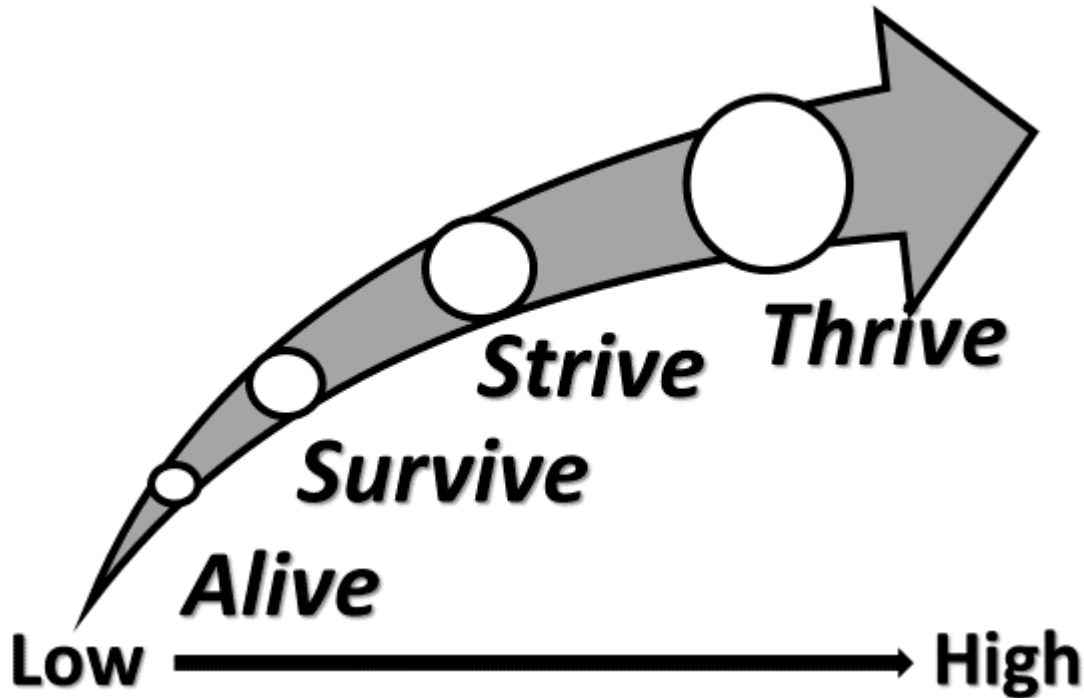


Figure 1. Alive, Survive, Strive, Survive Conceptual Sustainability Taxonomy

Alive The lowest level of sustainability is Alive: The system is functioning at the minimal level above extinction and may require extrinsic challenge and support to persist as Alive. The Canadian grey wolves, reintroduced where wolves had been eradicated, were highly protected and physically supported by humans until their immediate release in Idaho and for a longer period in Yellowstone National Park. For the first time in many decades, wolves were present; but, they were not acclimated nor close to being established. They were, in terms of their sustainability, Alive.

Survive The next higher level of sustainability is Survive: The system is able to continue, maintain *status quo*, without extrinsic support. The Idaho and the Park wolves advanced to independence and stability. They remained in generally good health, and demonstrated the ability to hunt, form packs, and reproduce without direct human support. They were making their own way and, in terms of their “sustainability, were at the level “Survive.”

Strive A system at the next higher level, Strive, has become established or strong enough while at the Survive level to be able to, and does, exert itself to achieve improvement. Over time, the wolf population multiplied, new generations established pack leadership, and it dispersed into numerous competing packs and new territories. They stretched to achieve unprecedented functionality; *e.g.*, alpha males mated with several pack females, packs developed ability to take bison, etc. They moved beyond mere survival to Strive. [Note: “Strive” may be

intentional among human and animal systems; however, pardoning the nearly inescapable anthropomorphism associated with Strive, less or non-conscious systems may also grow toward expansion and domination of other elements within their larger ecosystem; *e.g.*, invasive species of plants, bodies of water changing channels and shore lines, etc.]

The student affairs educators' contribution to the "Strive" level of the taxonomy seemed rooted in their dedication to nurture student striving to "learn, grow, and develop." "Strive" paralleled their perception of students' independent effort, stretching, and breaking boundaries being necessary to authentically achieve the "Thrive" level.

Thrive The highest level of sustainability is when a system independently achieves its highest potential, Thrive. Recently, wolves from Idaho and the Park have mastered their greatly expanded environment. Park wolf descendants have extended northward and southward into several states, and rebalanced Park populations of animals and plants. Idaho wolves expanded their geographical range, establishing packs in Oregon whose descendants established a pack in California in 2016. This system has reached the "sustainability" level "Thrive."

Scholar-Practitioner Discussion and Implications

Immediately after the review of the taxonomy and illustration, the early career student affairs educators (scholar-practitioners) were asked, "Does the taxonomy contain notions of sustainability and language that all undergraduates could comprehend?" Also, "Do the lower and higher orders of sustainability make sense within the educational contexts of student affairs functional areas?" In other words, can you explain these levels of sustainability to students, and can you and they utilize them to assess and improve the environments in which you find yourselves; physical, human aggregate, organizational, and constructed educational environments (Strange & Banning, 2001 & 2015)?

Responses overwhelmingly affirmed the taxonomy's simple concepts, simple language, and the low-to-high ordering of them. Also, these elements of the taxonomy were considered appropriate for student affairs' environmental and social sustainability educational efforts.

Within a month of each discussion, the student affairs educators were asked about the actual applicability of the sustainability taxonomy in their workplace. Did the taxonomy prove useful in assessing the environment in which they work, communicating to students about sustainability, and in framing sustainability interventions? Nearly all of the educators provided specific written examples of how they had used the taxonomy in assessing the physical, human aggregate, organizational, and constructed environments where they worked. In that context, they reported it was an aid to move their observations and analyses beyond static descriptions of disaggregated environmental and social components to comprehending their work environment as more than the sum of its parts, its "health" relative to sustainability levels, and the dynamics of the work environment as a total system.

A majority utilized the taxonomy in their work with student organizations. They used the language and the levels within the taxonomy to talk with organizational leaders about the state of their organizations as social environments and their physical environments, how their organization could move from one level of sustainability to the next. All who used the taxonomy reported it very easy to remember and to communicate with undergraduate students (and colleagues) who were quick to comprehend the sustainability levels and to connect a given level to issues within their organizations.

Relative to environmental sustainability, many reported using the taxonomy to assess the level of environmental sustainability in a residence hall. They used the taxonomy to assess current levels of sustainability and to anticipate new environmental sustainability interventions (programs, communications, etc.) to improve their residence community's level of environmental sustainability.

Overall, the early career student affairs educators were very satisfied that the conceptual sustainability taxonomy was a valuable tool for their efforts in student affairs. Asked how the taxonomy could be improved or what kind of elaboration might be beneficial, as mentioned above, this is when they recommended an improvement to the taxonomy itself, formalizing the third level Strive which had been part of the illustration. Also, they asked for a guide to intervention built upon the taxonomy, that movement beyond each level of to the next higher level be linked to particular educational intervention actions; especially, within student affairs.

This wolf reintroduction illustration has weaknesses and strengths. The story is about a controversial environmental sustainability phenomenon, has been over-simplified, could lead to unintended policies, and it may be overly anthropomorphized. Yet, it effectively demonstrates four observable levels of "sustainability," it may contribute to improved environmental and social/cultural sustainability (given pack behavior is often considered more intentional than random), and it is easy to comprehend in concept and communicate in the common language of a good story.

Due to gaps and confusion in higher education and student affairs literature, these early career student affairs educators who helped to ground the conceptual sustainability taxonomy were not yet able to fully align sustainability across the philosophical, technical, and practical levels.

In summary, the grounding process was successful with early career student affairs educators. Alive, Survive, Strive, Thrive were comprehensible and easily retained sustainability concepts in simple language. Its four concepts, both independently and in a relationship of progression from one to one another, were easily illustrated with a real world sustainability scenario. It was a taxonomy that made sense for their environmental and social sustainability efforts. Alive, Survive, Strive, Thrive had face validity.

In the experience of these educators on the frontline of interaction, very closely working and living among some of the 20.2 million intra-cohort sustainability diverse students in American colleges and universities, the Alive, Survive, Strive, Thrive conceptual sustainability taxonomy was helpful. It helped develop undergraduates' and colleagues' learning about sustainability, and the educators' design and assessment regarding sustainability. They were to link it to particular educational intervention actions within student affairs. They found the conceptual sustainability taxonomy Alive, Survive, Strive, Thrive to have field validity among themselves, and their colleagues and their students.

Conclusion

Alive, Survive, Strive, Thrive is a conceptual sustainability taxonomy that showed potential for collegiate sustainability education to improve students' achieving outcomes of sustainability comprehension and commitment. Certainly, the conceptual research and the grounded conceptual sustainability taxonomy presented above, when grounded with and by 76 early career student affairs educators, showed great promise general, major, and co-curricular collegiate education.

This conceptual sustainability taxonomy now requires discussion to better align the philosophical, technical, and practice levels of sustainability and sustainability education in conceptual and practical ways. All of the above directly or indirectly amounts to numerous points for conceptual contemplation, discussion, research, and refinement. With refinement there can be a much called for conceptual sustainability taxonomy for collegiate education, to reduce intra-cohort sustainability diversity, align educators' philosophical and technical and practical concepts, improving students' achieving sustainability comprehension and sustainability commitment learning outcomes, and sustaining interventions.

References

- ACPA (2008). *Toward a sustainable future: The role of student affairs in creating healthy environments, social justice, and strong economies*. Washington, D.C.: American College Personnel Association.
- The Association for the Advancement of Sustainability in Higher Education. Retrieved December 21, 2016 from <https://stars.aashe.org/pages/about/stars-overview.html>
- Anderson, L. W., & Krathwohl, D. R., et al. (Eds.) (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Boston, MA: Allyn & Bacon.
- American Heritage Dictionary of the English Language (5th ed.). (2011). Houghton Mifflin Harcourt Publishing Company: Chicago.
- Association for the Advancement of Sustainability in Higher Education. Retrieved July 6, 2016 from <http://www.aashe.org/about>
- Barresi, P. A., Focht, W. J., Reiter, M. A., Smardon, R. C., Humphreys, M., Reiter, K. D., & Kolmespp, S. A. (2015). Revealing Complexity in Educating for Sustainability: An Update on the Work of the Roundtable on Environment and Sustainability. In W. L. Filho, et al. (Eds.) *Integrating Sustainability Thinking in Science and Engineering Curricula, World Sustainability Series* (pp. 498-512). Springer International Publishing: Switzerland.
- Bloom, B. S. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals*. New York: Longmans, Green and Co.
- Bradley, E. H., Curry, L. A., & Devers, K. J. (2007). Qualitative Data Analysis for Health Services Research: Developing Taxonomy, Themes, and Theory. *Health Services Research, 42*(4), 1758–1772.
- Brundtland, G. H. (1987). *Report of the World Commission on Environment and Development: Our common future*. The United Nations.
- Camps-ERC. Retrieved July 6, 2016 from <http://www.campuserc.org>
- Colgate-Palmolive Company (2016). *Every Drop Counts* [Super Bowl 50 commercial]. Retrieved July 7, 2016 from <http://www.colgate.com/everdropcounts>
- Craig, R. T. & Tracy, K. (1995). Grounded practical theory: The case of intellectual discussion. *Communication Theory, 5*.3, 248-272.
- Earth Day Network. Retrieved July 6, 2016 from <http://www.earthday.org/about/>
- EcoAmerica. Retrieved July 8, 2016 from <http://ecoamerica.org/programs/american-college-university-presidents-climate-commitment/>
- Glaser, B. G. (2010) *Opening talk by Dr. Barney Glaser at the June 2010 troubleshooting seminar: Grounded Theory is the study of a concept!* [Video tape with limited availability]. (Available from Barney G. Glaser, Ph.D, Hon. Ph.D., Publisher, Sociology Press, P.O. Box

- 123, Mill Valley, CA, 94942). Retrieved from (<https://www.youtube.com/watch?v=OcpxaLQDnLk>)
- Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.
- Holmgren, David (2002). *Permaculture: Principles and pathways beyond sustainability*. Hepburn, Victoria: Holmgren Design Services.
- Jin, X. & High, K. A. (2004). A new conceptual hierarchy for identifying environmental sustainability metrics. *Environ. Prog.*, 23: 291–301.
- Kates, R. W., Clark, W. C., Corell, C. R., J. Hall, M., Jager, C. C., Lowe, ... Svedin, U. (2001). Sustainability Science. *Science*, 292, 641-642.
- Kerr, K. G. & Hart-Steffes, J. S. (2012). Sustainability, Student Affairs, and Students *New Directions for Student Services*, n137 p7-17.
- J. Meredith (1993). Theory Building through Conceptual Methods. *International Journal of Operations & Production Management*, Vol. 13 No.5.1993. pp. 3-11.
- National Center for Education Statistics (2016). Retrieved July 6, 2016 from <http://nces.ed.gov/fastfacts/display.asp?id=372>
- The Natural Step. Retrieved December 21, 2016 from <http://www.thenaturalstep.org/>
- Parris, T. M., & Kates, R. W. (2003). Characterizing and Measuring Sustainable Development. *Annual Review of Environment and Resources*, 28, 559-586.
- Pearce, D.W. & Turner R.K. (1990). *Economics of Natural Resources and the Environment*. Harvester Wheatsheaf: London.
- Peterson, R. & Wood, P. (2015) Sustainability: Higher Education's New Fundamentalism. National Association of Scholars: New York.
- Reiter, M. A., Focht, W. J., Barresi, P. A., Bumpous, S., Smardon, R. C. & Reiter, K. D. (2011). Making Education for Sustainability Work on Your Campus: The Roundtables on Environmental Systems and Sustainability. In W. Leal Filho, (Ed.) *World Trends in Education for Sustainable Development, Vol. 32, Ch. 4.* (pp. 61-76) of the series *Umwelbildung, Umweltkommunikation und Nachhaltigkeit* (Environmental Education, Communication and Sustainability. Peter Lang Scientific Publishers: Frankfurt, Germany.
- Seay, J. R. (2015). Education for sustainability: Developing a taxonomy of the key principles for sustainable process and product design. *Computers and Chemical Engineering* 81, 147–152.
- Second Nature. Retrieved July 8, 2016 from <http://secondnature.org/wp-content/uploads/2015/09/Climate-Commitment-Second-Nature.pdf> and <http://www.presidentsclimatecommitment.org/>
- Smyth, J. C. (2006). Environment and education: a view of a changing scene. *Environmental Education Research. Vol. 12, Iss. 3-4*
- Stareva, I. (April 19, 2014). Millennials - The Sustainability Generation. Retrieved July 13, 2016 from <https://www.iliyanastareva.com/blog/millennials-the-sustainability-generation>.
- Generation Z: The Natural Sustainability Generation
- Stareva, I. (August 4, 2014). Generation Z Natural Sustainability Generation. Retrieved July 12, 2016 from <https://www.iliyanastareva.com/blog/generation-z-natural-sustainability-generation>
- Sterling, Steven, (2001). *Sustainable education: Re-visioning learning and change*. Cambridge: Green Books.
- Strange, C. & Banning, J. (2001). *Educating by design: Creating campus learning environments that work*. San Francisco: Jossey-Bass.

- Strange, C. & Banning, J. (2015). *Designing for learning: Creating campus environments for student success* (2nd ed.). San Francisco: Jossey-Bass.
- Transition Network. Retrieved December 21, 2016 from <https://transitionnetwork.org/>
- U.S. Green Building Council. Retrieved July 6, 2016 from <http://www.usgbc.org/about>
- Widok, A. (2009). Social Sustainability: Theories, Concepts, Practicability. In V. Wolgemuth (Ed.), *Environmental Informatics and Industrial Environmental Protection: Concepts, Methods and Tools* (pp. 43-51). Berlin, Germany: Shaker Verlag.

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