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THE INCORPORATION OF SUSTAINABILITY IN HIGHER EDUCATION:
A RESEARCH SYNTHESIS

The incorporation of sustainability in higher education: A research synthesis

Catherine M. Bartolini

Merrimack College

THE INCORPORATION OF SUSTAINABILITY IN HIGHER EDUCATION:
A RESEARCH SYNTHESIS

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Abstract

In the past decade, sustainability efforts in higher education have become more prevalent across the nation and the world. However, some institutions lack the resources and information on how to successfully create a campus-wide culture that is dedicated to environmentally friendly practices. This study was designed to help direct institutions on the actions they can take to create a sustainably focused campus. Six participants from the offices of sustainability at Babson College and Bryant University were interviewed for this qualitative study. Findings included the significance of incorporating sustainability into the foundation of the institution through signing specific documents that outline the steps to creating campus-wide sustainable behavior. Participants also explained the importance of fostering behavior change to create campus-wide collaboration and how programming can create activism focused on sustainability. Based on the findings, recommendations for this study include establishing sustainability goals through institutional commitment, creating administrative positions dedicated to sustainability, advocating for student interest and participation in sustainability efforts, implementing sustainability training and education through cross-campus collaboration, producing sustainable infrastructure, and continuing assessment and monitoring of sustainability on campus.

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Introduction

There are 7.125 billion people living in the world today with one birth every eight seconds, according to the United States Census Bureau. On average each human being consumes about 1,400 calories and four pounds of water a day to survive (Hales, 2008). The amount of people living in our world will soon exceed the capacity of the Earth's natural resources to sustain human life. It has therefore becoming increasingly important for mankind to decrease our global footprint through changing our methods of production and consumption and converting to a more sustainable lifestyle (Hales, 2008).

In order to promote sustainable development within our society we need to educate our future leaders about the importance of sustainability. This can be partially accomplished through implementing sustainable practices and theory at institutions of higher education (Cortese, 2003). Through exploring the impact of sustainability practices in higher education, we can better understand the effects these practices have on students and in turn, society.

To allow students to fully conceptualize the importance of sustainable living, universities and colleges need to transform many aspects of higher education. Through a "top-down/bottom-up" approach colleges and universities can successfully achieve a campus that is focused on sustainability (James, 2012; Barth, 2013). Students, faculty and administration must proactively collaborate in order to address and overcome sustainability issues in higher education. The development of offices on campus that dedicate time and resources to ensuring that sustainability is at the forefront of student life can help achieve the overall goal of eco-friendly institutions in higher education. The research conducted in this proposal explores the ways in which institutions of higher education can successfully incorporate sustainable practices on campus.

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In my project, I conducted one on one interviews with professional staff and Student Interns in Offices of Sustainability at two Boston area schools (Babson College and Bryant University). Based on the data I collected through my interviews I created a set of recommendations for college and universities to better understand the importance of incorporating sustainable practices on campus. This research project is designed to show how institutions can produce successful sustainable development in higher education and support the education of future leaders for change.

Literature Review

In order to understand the significance of promoting sustainability in higher education, it is important to understand the concepts that have been developed in existing literature. The literature reviewed in this research project highlight how restructuring the institution, developing core competencies, and curriculum development are all ways in which institutions of higher education can become more environmentally sustainable.

Incorporation of Education for Sustainable Development (ESD)

In 1990, the Talloires Declaration was the first official statement signed by over 350 university presidents and chancellors in over forty countries committing their institutions to sustainability (Wright, 2004). This declaration was followed by the formation of Agenda 21 which developed the idea of Education for Sustainable Development (ESD) and promoted the establishment of sustainability educational policy and practice. The emergence of these two proclamations emphasized the growing need for sustainability awareness in higher education. Through the development of these documents university faculty and administrators acknowledged the importance of promoting sustainable development at the collegiate level.

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Recently, a report from the UN entitled “Decade of Education for Sustainable Development” was published by UNESCO. This document strived to implement ESD in all educational sectors through conceiving a cross-disciplinary approach (Barth & Rieckmann, 2012; Gough, 2008). These documents were devised to educate students, administration and faculty on the importance of developing sustainable practices on campus. Through sustainable development education students can gain perspectives on how to find solutions to real-life problems related to unsustainable practices (Barth & Rieckmann, 2012).

Restructuring the Institution to Incorporate Sustainability

The development of these and other documents, stressing the importance and need for colleges and universities to incorporate sustainable practices, demonstrates the need for institutional transformation. There are many ways in which institutions of higher education can incorporate sustainability, but researchers continue to debate over the most effective method of implementation.

Multiple researchers have agreed that incorporating sustainability in higher education requires a total transformation of institutional practices (James & Card, 2012; Moore, 2005; Shriberg, 2002; Clugston & Calder, 1999; Nejati & Nejati, 2012). The “critical dimensions and conditions” needed to create sustainable practices on college campuses include restructuring the mission, curriculum, and research while constructing institutional support and outreach to local and global communities (Clugston & Calder, 1999). By reconstructing various aspect of higher education we can successfully achieve a sustainably driven campus.

In Barth’s (2013) exploration of the important barriers and drivers behind institutional change, he concluded that small systematic changes can successfully create sustainable development in higher education. In his case study, he explored a “bottom-up” approach

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describing student-led change on campus from informal to formal leadership and how it can create successful implementation of sustainability practices at universities through ongoing communication, systems of support and student leadership (Barth, 2013). Barth explained that student led change will not only produce future leaders who are committed to sustainability, but will also impact organizational change in higher education creating colleges and universities that are environmentally focused.

Levy and Marans (2012) focused their research on the importance of creating a campus culture that promotes sustainability. In their research they explored the sustainability initiatives practiced at the University of Michigan (UM) and decided to form a set of recommendations on how other institutions can create a “culture of sustainability” on campus based on the findings at UM. They formed a team of eight students and one faculty member to help them with analyzing three types of information: research and theory on environmental behavior, efforts to build a culture of sustainability on other campuses, and the status of the culture of sustainability on the UM campus (Levy & Marans, 2012).

The team decided on a set of three practical recommendations that were most important to creating a sustainability campus culture. These recommendations were focused on three areas: education and training, engagement, and assessing and monitoring. Educating campus community members on the importance of sustainability and providing training on how to take steps towards being more sustainable was the first step. The second step emphasized the importance of promoting engagement within the local community in order for students, faculty, and staff to educate others on the importance of sustainability. The third step stressed the significance of assessing and monitoring the development of sustainability initiatives on campus

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to ensure that progress was being made towards a culture that is more focused on sustainability (Levy & Marans, 2012).

The research conducted by Levy and Marans (2012) connects with Wurzel's (2012) review on the impact of a sustainability centered campus culture on student affairs professionals. Wurzel (2012) explained that sustainability is gaining momentum in higher education and therefore the campus community needs to embrace the green initiatives that "encourage multi-disciplinary, cooperative thinking, planning, and implementation" (Wurzel, 2012, p. 80). Wurzel (2012), Levy and Marans (2012) would likely agree that collaboration between faculty, staff and students is a key component to creating a culture on campus that is focused on sustainability.

Institutional restructuring is a crucial component to creating a sustainable campus. All members of the campus community need to work together in order to make changes on campus. The literature reviewed in this section explains how institutions can make systematic changes via a "top down" or "bottom up" approach. All studies agree that collaboration within the community is the most important factor in creating an environmentally sustainable institution. The role of promoting sustainability on campus should not only depend on the actions of the students. Faculty and administration must also be proactive and supportive of the sustainability movement in order to successfully achieve an environmentally-friendly institution.

Development of Sustainability Competencies

In order for institutions of higher education to be successfully restructured, core competencies that focus on sustainability need to be developed. The formation of core competencies that promote sustainable development in higher education is a vital step in creating change. Researchers Barth, Godemann, Rieckmann and Stoltenberg (2007) conducted focus groups comprised of thirteen students from the University of Luneburg, Germany exploring

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which competencies students found to be most crucial to promoting sustainability in higher education based on the three-year program the students participated in called the “Sustainable University”. The data collected showed that students believed interdisciplinary cooperation to be a key component to sustainable development. They also stressed the importance of socio-communicative competencies and voluntary commitment that promotes interaction. The students found it to be effective to learn from others through communication and activities that involved groups of diverse people (Barth, Godemann, Rieckmann & Stoltenberg, 2007).

Through the establishment of basic sustainability competencies, institutions of higher education can educate students to be proficient in applying the skills and knowledge gained at school to a professional context. In their search to develop basic competencies for sustainability in higher education, Hidalgo and Fuentes (2013) concluded after reviewing the work of Barth, Godemann, Rieckmann and Stoltenberg (2007) that there are three types of competencies that can successfully help universities incorporate sustainability practices on campus: cognitive, methodological and attitudinal.

The development of cognitive skills will help students gain critical perspectives on how they can solve socio-environmental issues. Students can then use methodological expertise to take action in order solve these problems. Combined with a shift in attitude towards moral and ethical behavior, social change is fostered at a global scale. Institutions of higher education need to understand the idea that “Achieving a sustainable future requires that individuals adopt different values, attitudes, skills, habits, and behaviors that are often learned and grounded at an early age” (Hidalgo & Fuentes, 2013, p. 454).

Through the incorporation of key competencies institutions of higher education can lay the groundwork for successful implementation of sustainable practices. A commitment to

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Sustainability cannot occur without fully understanding how students and universities can benefit from incorporating sustainable development on campus.

Interdisciplinary, Sustainability Focused Curriculum Reform

Establishing a curriculum that emphasizes the importance of sustainability, can influence students and faculty to promote sustainable practices. The literature reviewed in this section explore the effects of implementing sustainability into the curriculum. Universities thus need to integrate sustainability into modes of teaching and learning in order to promote campus wide sustainable development.

Collaboration is a key factor in creating a curriculum that stresses sustainability. There is too much value placed on individualism in higher education today. Colleges and universities have not devoted enough effort to promoting cooperative and collaborative efforts that can help build a more sustainable future. In Cortese's (2003) review of the role of higher education for a sustainable future he explained the lack of collaboration at the collegiate level, stating that "Learning is fragmented, and faculty, responding to long-established incentives and professional practices, are often discouraged from extending their work into other disciplines or inviting interdisciplinary collaboration" (Cortese, 2003, p 22). Institutions of higher education not only need to integrate sustainable practices on campus, but also need to promote interdependence on the local communities that reflect social and biological sustainability models. Sustainability needs to tie into the curriculum and the social experiences of the students on campus (Cortese, 2003).

In Barth, Michelsen and Sanusi's (2011) review on higher education for sustainable development, they explained the three themes that institutions of higher education need to use in order to successfully integrate sustainability into the curriculum. These themes were created at

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the Third International Conference on Higher Education for Sustainability in 2009. The themes highlighted the importance of “mainstreaming higher education for sustainability” in which innovative pedagogical practices are used to increase student interest in sustainable practices, analyzing the “impact of higher education for sustainability” on society, and creating “innovation in higher education for sustainability” (Barth, Michelsen & Sanusi, 2011).

The article explained the need to completely reorient teaching and learning in higher education. Some researchers suggested that there is a need to question traditional approaches and reshape our curriculum development (Barth, Michelsen & Sanusi, 2011). Restructuring the curriculum to incorporate sustainability will generate critical thinking skills that revolve around issues of sustainability. If topics of sustainability are constantly discussed in the classroom and applied to real life situations students and faculty will be more inclined to be proactive and strive to decrease our global footprint.

The idea of deep-rooted implementation of sustainability in higher education through curriculum reform is further explored in one study conducted by Matthias Barth and Marco Rieckmann (2012). In their research they analyzed a one-year program implemented at a university in Ecuador that gives teachers a basic understanding of ESD and shows them how to apply it to teaching methods. The program focuses on course design that promotes collaborative learning. Professors, from a variety disciplines, were invited to take part in the program. Twenty-five volunteered, and eighteen ultimately enrolled and completed the program. The professors were then instructed to create seminars that encouraged students to find solutions to real-life problems related to unsustainable practices.

Through collaboration and interdisciplinary approaches the teachers were able to reflect on each others approaches to indoctrinating sustainability. Professors that participated in the

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program “acknowledged the relevance of transdisciplinarity and its importance for sustainability related problem solving” (Barth & Rieckmann, 2012, p. 32). Through developing seminars the teachers were able to apply their knowledge to real-world problems. These seminars, in some cases, promoted student participation in the local community. The successful integration of the program promoted self-confidence from the participants and made them motivated to continue to incorporate ESD into their practices (Barth et al, 2012).

The researchers concluded, based on the positive outcomes of the program from students and professors, that: “Organizational change towards sustainability, means considering at least three different outcomes: 1. Individual competencies of academic teaching staff, 2. professional performance, and 3. long-term organizational impact” (Barth & Rieckmann, 2012, p. 31).

Another case study conducted by Barth and Timm (2011) explored the perspective of students on sustainable development programs in higher education. The research was executed at the Leuphana University of Luneburg, Germany where sustainable development practices were fully incorporated into the curriculum. All students were asked to participate in two corresponding surveys that tested the impact of a curriculum centered around sustainability. The first survey received a 93.3% response rate.

The students were equally enthusiastic about the curriculum and a high majority became knowledgeable on the concept of sustainability after completing the program. The researchers concluded from their study that, “For a long term perspective, it seems to be crucial to identify and communicate an added value for students that they can recognize and acknowledge” (Barth & Timm, 2011, p 22).

The literature reviewed in this section demonstrates that in order to successfully integrate sustainable practices at the university level there needs to be a reorienting of the educational

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concept. Institutions of higher education are not only centers of research and teaching, but are also employers and consumers. Therefore, they play a crucial role in the context of sustainable development, “since they (1) educate societies' future decision makers providing them with key competencies to contribute to a (more) sustainable future and also (2) generate, transfer and communicate new knowledge reflecting on and simultaneously innovating, society” (Cortese, 2003; Gough and Scott, 2007; Fien, 2002; Moore, 2005).

Programs such as the ones highlighted in these studies show the organizational impacts curriculum reform can have at the university level. The faculty adjusted their curriculum, were able to work collaboratively, and identified approaches which worked. Interdisciplinary methods are key to establishing and maintaining sustainable development in higher education.

Through collaborative efforts, systematic change towards sustainability can become possible. The restructuring of the curriculum will promote critical thinking skills and challenge teachers and students to solve real-world problems. A sustainability-focused curriculum will enhance global perspectives and make an impact on our society and the world.

Methodologies for Sustainability Focused Research Collection

Each article in this literature review demonstrated the variety of ways in which sustainability can be incorporated into higher education. The researchers in each study conducted their inquiry through the use of different methodologies. The methodologies exercised in the articles varied, but were mostly case studies. The majority of articles used interviews and surveys to collect data on the impact of sustainable practices in higher education. Many of the researchers interviewed students and faculty to understand the benefits and effectiveness of incorporating sustainable development on campus.

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Corcoran, Walker and Wales (2004) explored the benefits of using case studies for research on sustainability in higher education. Through their study they hoped to determine the most effective method of data collection for creating a critical research model on the topic of sustainability in higher education. The researchers analyzed multiple major journals on environmental education and focused in on articles that conducted case studies on sustainability in higher education. They found case studies to be an ineffective methodology for data collection. The researchers concluded that case studies would be more effective in bringing about change if they were better theorized and documented (Corcoran, Walker, & Wales, 2004).

Another study conducted by Fien (2002) explored the paradigms used to conduct research on sustainability in higher education. Through comparing the four paradigms used in data collection: post-positivist, constructivist, transformative and pragmatic, the research aimed to understand which paradigm would be most effective in promoting sustainability in higher education. They found that the paradigms are all valuable depending on the issue and on the institution. However research is conducted it is to be done in a manner that is “to be of the most benefit to human and non-human nature” (Fien, 2002, p. 144).

Corcoran, Walker and Wales (2004) found the use of case studies to be ineffective in improving sustainable practices on campus. Further research should be made on the transferability of information gathered when conducting single case-study research. It is valuable to provide contextual relevance to various stakeholders at other institutions in order to create change (Corcoran et al, 2004).

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Research Focus and Design

The choice in methodology depends on the nature of the research conducted. In the literature reviewed, the studies focused on ways in which higher education can incorporate sustainability on campus. It seemed most effective for the purpose of my research to conduct case studies at two institutions that have what appear to be integrated sustainability programs, and interview participants individually to collect data about their experiences. Due to the limited amount of time allotted for my project and the resources available, conducting my research in the Boston area, and interviewing professional staff at two institutions, was the most effective and practical method of data collection.

The intention of my research was to understand how institutions of higher education can successfully implement sustainability into campus life through dedicated administrative roles. The literature reviewed for this research shows there is a lack of information on how administrative and other campus leaders can help implement sustainable practices on campus. Many of the articles reviewed explored ways the curriculum and core competencies can be restructured to create sustainable development. However, it is important to understand the various outcomes an Office of Sustainability could generate in creating sustainability in higher education.

Paradigm

I chose a constructivist approach in collecting my data. Constructivism is a research paradigm based on qualitative and participatory action (Mertens, 2010). This paradigm seemed most effective for data collection on sustainability in higher education because it aims to understand the different social views on the benefits of having sustainable practices on campus.

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As Mertens, 2010 explained, constructivism creates an “interactive link between researcher and participant” which, in turn, helps raise awareness on the importance of sustainability through expressing the realities and viewpoints of the people who have first-hand experience. Constructivists acknowledge that there is not ‘one’ reality and strive to understand how multiple individuals use an interpretive lens to describe the meaning of an experience (Mertens, 2010).

Methods for Data Collection

The main methodology used for data collection was through conducting case studies at two institutions in the Boston area, Babson College and Bryant University.

Babson College was founded in 1919 by Roger Babson who intended to create an institution dedicated to creating students proficient in entrepreneurship (Babson College, 2014). Babson is located in Wellesley, Massachusetts, about fifteen miles outside the city of Boston. The undergraduate population consists of about 2,000 students with a graduate population of 1,200 students. The institution is a private, not-for-profit college that is recognized by the Association to Advance Collegiate Schools of Business (AACSB), the New England Association of Schools and Colleges, and the European Quality Improvement System (EQUIS) (Babson College, 2014). At Babson, students are immersed into a living/learning laboratory that prioritizes entrepreneurship. Each student at Babson is encouraged to create global change through an integrated, co-curricular program that emphasizes Social, Environmental, Economic Responsibility, and Sustainability (SEERS) (Babson College, 2014).

Byrant University was founded in 1863 by John Collins Byrant and Henry Beadman Bryant. It is a private, not-for-profit institution with an undergraduate population of 3,180 students and a graduate population of about 400 students. The university is located in Smithfield,

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Rhode Island, about fifty miles from the city of Boston and fourteen miles from Providence, Rhode Island. The interdisciplinary curriculum at Bryant focuses on the integration of business with the arts and sciences with an emphasis on global perspectives (Bryant University, 2014). The School of Business is recognized by the Association to Advance Collegiate Schools of Business (AACSB) and the School of Arts and Sciences is accredited by the New England Association of Schools and Colleges (NEASC).

I chose these colleges specifically due to the small size of the institutions and the location. I felt that it would be ideal to measure and compare the effectiveness of having an Office of Sustainability on a smaller campus. It was also easier to communicate with local institutions. Both schools have incorporated Offices of Sustainability on campus and have employed two professional staff members in each office, a Director of Sustainability and a Coordinator. They also both employ student interns to work in the office to help promote sustainability on campus.

When designing the interview protocol I created questions (see Appendix A for Interview Protocol) that reflected the information reviewed in the literature. Many of the questions posed were specifically geared towards what an Office of Sustainability does each day on campus and how the presence of the office effects students, faculty and other offices on campus. The main focus of the protocol focused on the daily and annual tasks and programs of the Office of Sustainability, and how they have created a campus culture that places emphasis on sustainability.

In order to recruit participants for my study I contacted the professional staff members of the Office of Sustainability at Babson College and Bryant University. Initial contact was made through email in which I introduced myself and explained what I was hoping to understand and

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gain from my research and how their input would be helpful to other institutions. I then set a date and time in which to conduct interviews lasting anywhere from 30-60 minutes. All of the interviews conducted were done via phone and were recorded through an application downloaded to my iPhone, called Recorder.

Following each interview I transcribed and analyzed the data collected in order to create my findings. I then organized the responses by question and coded the information provided by each participant. I made sure to comment on whether or not the response was negative or positive and sorted the information by the nature of the response. I then organized the responses into an ‘administrator’ category and a ‘student’ category in order to appropriately emphasize the perspective of the participant.

Limitations

I encountered a few difficulties when trying to collect data for my research. Sustainability in higher education is becoming more prominent on campuses around the country, but it is still difficult to find institutions that have administrative offices with professional staff dedicated to sustainability. The offices I contacted in the Boston area were mainly small offices consisting of one or two professional staff members.

Despite repeated efforts at outreaching to various institutions, I mainly received responses from sustainability professionals at Babson and Bryant universities, which ultimately led me to choose these two institutions for the case study. Due to the limited amount of time allocated to collect my data and lack of responses from administrators in sustainability offices, I was reduced to doing case studies at two institutions. However, I found that both Babson College and Bryant University participants were incredibly informative and I felt that I collected sufficient information on the role of the Office of Sustainability at both institutions.

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Findings

The findings from the data collection showed that there are more similarities than differences between the two institutions in their rationale for developing an Office of Sustainability on campus. The intentions and methods in reaching the goal of sustainability at both schools are closely aligned. These parallels are highlighted in this section.

Creating Institutional Commitment to Sustainability

Each institution decided to incorporate an Office of Sustainability after realizing that sustainability was an important component to promoting student integration and behavior change on campus. Both Babson and Bryant hired sustainability consulting firms to come into their institutions and implement an Office of Sustainability on campus. Babson hired a firm called GreenerU and Bryant hired Ecomotion. According to an administrator at Babson, the college decided to hire GreenerU under the following circumstance:

The President [of the college] signed the President's Climate Commitment in... 2007 and that committed the institution to a goal of climate neutrality by 2050 and I think that sort of prompted... this commitment, but they needed a singular entity to sort of catalyze the office progress. So, the office was set up to actually follow through and implement that climate commitment.

Babson's Presidents' Climate Commitment (2014) states that in order to effectively create a "climate neutral" campus, institutions need to start: "reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society" (American College & University Presidents' Climate Commitment, 2014). By signing this commitment Babson was able to set a concrete goal of reducing carbon emissions by a certain date and through hiring GreenerU they created an office that was dedicated to accomplishing this goal.

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Bryant University decided to implement an Office of Sustainability after they received a “D+” on their Green Report Card, a free public assessment tool for universities and colleges in the United States and Canada created by The Sustainable Endowments Institute (Sustainable Endowments Institute, 2011). A staff participant noted, “I brought that [the Green Report Card] to them [higher administration] and they were pretty horrified. But, it was actually STARS [Sustainability Tracking Assessment and Ratings System] in particular in which the Chief Financial Officer and the senior administration realized that they wanted to be ranked and measured with their sustainability efforts”. Bryant also set a goal of decreasing their carbon footprint by the year 2020 through campus wide initiatives. As noted by a professional staff member, “we have this guiding document and direction around sustainability, but we also have the flexibility to respond to new ideas.”

It would appear that institutional commitment to sustainability is directly correlated to understanding what sort of carbon footprint the institution or college is creating. By having tangible evidence that shows how institutions are negatively impacting the world, colleges can be motivated to produce change. It was also clear through my study that a key factor in the creation of an Office of Sustainability on campus is through the encouragement for university and college presidents to sign proclamations committing the institution to sustainability. It is through the incorporation of these documents that institutions can begin the process of creating a sustainable campus. The Talloires Declaration (1990) includes a list of ten actions that universities should take in order to be more sustainable. The Declaration explains:

Universities have a major role in the education, research, policy formation, and information exchange necessary to make these goals possible. Thus, university leaders must initiate and support mobilization of internal and external resources so that their institutions respond to this urgent challenge.

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The literature suggests that the acknowledgment and inclusion of these documents into higher education practices will help educate students, administration and faculty on the importance of developing sustainable practices in higher education (Wright, 2004). It is by signing these commitments that institutions can begin to set the foundation for sustainability in higher education practices.

Fostering Behavior Change Towards a Campus Culture Dedicated to Sustainability

Another important responsibility of the Office of Sustainability is to foster behavior change on campus through campus wide collaboration. The daily tasks in the Sustainability Offices at Babson and Bryant include meeting with various stakeholders at the institution. Through these meetings, administrators, faculty, and students learn how to incorporate sustainability into daily practices.

One administrator from Babson explained these meetings as: “providing the support to get them from point A to point B, but still giving them autonomy so that they take on the responsibility and it is not all on the Sustainability Office.” The concept of interdepartmental cohesion is supported by James and Card (2012), specifically when they reported that without the involvement of all stakeholders on campus, sustainability progress would not be possible.

The Sustainability Offices at Bryant and Babson further influence social change on campus by employing Student Interns. Babson College has even appointed an Eco Representative Team (Eco Reps). Eco Reps are select undergraduate students who live on campus and are given the task of spreading awareness to students, faculty and staff on the importance of living sustainably. These programs allow students to directly influence individual and group change.

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Each year the Babson Eco Reps design a project centered around sustainability. Many times the program is incorporated annually into campus infrastructure. A student participant from Babson described one project designed by the Eco Reps called “Slash the Trash.” As one staff member at Babson described it, “at the end of the year when everyone moves out we set up areas for people to put all their old clothes that they don’t want anymore or electronics that they don’t want anymore and so instead of all those things getting thrown in the trash it all gets donated or reused.”

Bryant University has incorporated a similar program to Babson called the Sustainability Ambassador Program. This program is dedicated to spreading awareness of sustainability to other parts of campus through student leadership. An administrator from Bryant described the program as follows:

We have established this ambassador program as a leadership development program for students that are interested in sustainability and creating positive changes. So, that’s our approach on how we interact with students and cultivate leadership potential and entrepreneurship so that they can link their passions and their values to their careers.

Bryant University currently has ten student Sustainability Ambassadors from a variety of majors which helps with outreach to other students and departments.

The idea of creating social change thorough student leadership is supported in the literature by Barth (2013). These small systematic changes suggested by Barth can foster ongoing communication, systems of support, and student leadership. Student led change will not only produce critical thinkers that are sustainably focused, but can also create campus wide behavior change that emphasizes collaboration to achieve the goal of creating a sustainable world (Barth, 2013).

Creating Activism for Sustainability through Programming

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In order to engage the student body, both campus offices found it imperative to create events and programs that promoted the campus community to actively work together to be more sustainable. Each institution puts on various events each year that focus on sustainability. An administrator described a few programs incorporated at Bryant University: “We ran a campus [energy reduction] competition within our three dorms and saw energy reductions up to eleven percent in one of our dorms.” The event enables students to see the effect they are having on the environment. Babson College has an event each year called From Day One Fest explained by an administrator as follows:

It’s an annual fall sustainability event that’s not too long after school starts and it’s basically we just bring together all different sustainability stakeholders on campus and alumni groups and local town groups to share their sustainability opportunities and have some music and food and whatnot.

Other programs that have created activism and promoted sustainable initiatives on campus have been the multiple waste reduction and recycling programs on both campuses. At Babson they have the “Zero Waste Challenge” which encourages people around campus to carry a Ziploc bag with them for a week and put all of their trash in the bag. If they cannot recycle or compost an item it has to go in the bag. Student Intern from Babson described the event as:

always really interesting... because it gets people asking questions... they start looking for ways to reduce their waster because they know it’s going to be embarrassing to carry around a lot of trash all week. It creates a new reason to look at these things closely and creates behavior change long term because you realize how much people waste in a week.

Babson also has an event called Slash the Trash which is similar to a program at Bryant called Recyclemania. This event encourages people, at the end of the year, to put things that they no longer want together and either donate or recycle the items. The event not only promotes waste reduction and recycling, but also fosters collaboration between students and different departments on campus. A staff participant from Bryant explained an electronic recycling

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program they coordinated as: “one of our major, most successful events... we diverted recyclables and donated 6,266 pounds of waste to Goodwill.”

These events and programs at Babson College and Bryant University help students and faculty educate each other on importance of being sustainable therefore producing sustainable change on campus. The ideas highlighted in the research of Cortese (2003) are reflected through these practices at Babson College and Bryant University. Cortese (2003) stressed the importance of engaging students through active participation. He stated in his study that it is important to make students aware of their ecological footprint so that they can become more interested in sustainable living (Cortese, 2003).

Assessment of Sustainability on Campus

Another important finding from this study was that participants reported using an assessment tool to help rate the effectiveness of the programs and incentives created by the Sustainability Office. In 2010, the Association for the Advancement of Sustainability in Higher Education developed a comprehensive tool called the Sustainability Tracking and Assessment Ratings System (STARS) in order to help institutions of higher education measure their progress towards creating a sustainable campus.

STARS rates each institution on various areas of higher education, such as infrastructure, curriculum and student life. The system uses the information entered by administrators, faculty or students to calculate the level of sustainability at the specific institution. Based on their score, the institutions are either given a Bronze, Silver, Gold or Platinum rating. The information and scores are then made public to other STARS participants. The publication of these reports

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enables other institutions to improve their sustainability initiatives by allowing them to compare themselves to high rated institutions with similar demographics.

Bryant University and Babson College are members of AASHE and are active reporters on STARS. Both institutions currently have been awarded a “Silver” rating. One staff member from Bryant University stressed how they “really advocate for STARS... and discover that it helps catalyze the conversations that make sustainability relevant to all different departments as well as educating the campus at the same time that... sustainability is not just recycling.”

At Babson College, one Student Intern dedicates most of her time in the office to filling out the STARS Report for the campus. She described her role as, “doing research around campus to find out each part of the process. I’ve talked to faculty about where they see strengths and weaknesses in our academic offerings for sustainability. I’ve talked with facilities about what types of improvements happen, things like hot water, heaters being more efficient in the different buildings or changing out lighting.”

The STARS platform assists institutions of higher education in accomplishing the goal of creating sustainable practices on college campuses through restructuring the mission, curriculum, and research. Participants who are involved in compiling information for the STARS Report on their institution spend the majority of time meeting with various stakeholders on campus to learn how other areas can improve in their sustainability efforts. A staff participant from Babson College explained that:

through our stars report we reach out to different departments and let them know that this is part of our reporting and who from their office can be the lead so they learn very specifically what they can do that is within their skill sets that can help Babson achieve its goals.

This system helps administrators, faculty and students understand how to successfully reconstruct various aspect of higher education in order to successfully achieve a sustainably

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driven campus. The idea of incorporating a method of assessment for sustainability on campus is reflected in the research of Shriberg (2002). Shriberg (2002) describes the importance of creating a system of assessment for sustainability in order to achieve successful collaboration between offices and departments on campus as well as create “cross-institutional sustainability assessment...to advance strong initiatives and assist lagging colleges and universities.” (Shriberg, 2002).

Interdepartmental Collaboration

Creating a campus that is dedicated to sustainability requires fostering collaboration between all areas and departments of an institution. Students, faculty and staff need to work together in order to accomplish the goal of sustainability. One of the main responsibilities of the Office of Sustainability is to interact with other stakeholders on campus in order to help other offices and departments understand how they can impact sustainability development. After being prompted to describe a typical day in the Office of Sustainability, participants from both Bryant University and Babson College stressed that the majority of their days are dedicated to meeting with various stakeholders on campus.

When describing a typical day in the Office of Sustainability at Babson College, one staff participant explained his interdepartmental duties as being “involved in a lot of meetings with facilities looking at different energy initiatives and meetings with purchasing to work on our purchasing policy to make sustainability a core part of it, plus a lot of meetings with students.” A typical day in the Office of Sustainability at Bryant University was similar. She described her day as having:

five or six meetings a day when we’re on campus and that means having to check in with our facility folks that we report to. We meet with the sustainability

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ambassador's program...with faculty members... with staff... It's also, a ton of corresponding and building in-person connections, but also corresponding and sending resources via email to multiple stakeholders.

Both Offices of Sustainability at Bryant and Babson dedicate time and effort to spreading awareness of the importance of sustainability initiatives throughout campus. Various teams and groups have been formed by other offices and departments that are devoted to sustainability. At Babson they have created a: "sustainability leadership team that is from several different departments on campus and that has facilitated a lot of collaboration as well as putting together people that are interested in different things."

The emphasis on interdepartmental collaboration directly relates to the findings of Levy and Marans (2012) when they stated that educating campus community members on the importance of sustainability and providing training on how to take steps towards being more sustainable was the first step towards creating a campus culture dedicated to sustainability (Levy & Marans, 2012).

Interdepartmental collaboration requires a restructuring of the curriculum that focuses more on sustainability. Participants from Bryant University explained their role in helping faculty with curriculum reform. One staff member described how their office "led several faculty presentations around sustainability to raise awareness around how we can incorporate sustainability into the curriculum."

Curriculum development that raises awareness on sustainability issues is another important component to developing a sustainable campus community. This idea is reflected in the literature through the research conducted by Barth and Rieckmann (2012) who "acknowledged the relevance of transdisciplinarity and its importance for sustainability related problem solving." (Barth & Rieckmann, 2012, p. 32)

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The findings suggested that there are a multitude of ways in which institutions of higher education can dedicate themselves to sustainable practices. These include: creating institutional commitment through the incorporation and signing of climate plan documents, fostering behavior change on campus through student interaction, creating activism through programming, the continuous assessment of sustainability programs and initiatives, and interdepartmental collaboration.

After analyzing the data collected from interviews with the Office of Sustainability at Babson College and Bryant University and connecting the information to the literature reviewed, I was able to develop a set of recommendations describing the ways in which other institutions can increase sustainability on campus.

Recommendations

This study showed that relatively small organizational changes at institutions of higher education can foster sustainable practices. Based on the literature reviewed and the findings from my research I have designed a set of recommendations for institutions of higher education to follow in order to become more sustainable.

Colleges and Universities Should Establish Sustainability Goals through Institutional Commitment

Colleges and universities should begin to measure the impact their institution has on the environment. Calculating the level of carbon emissions released annually on campus can help institutions set a goal to reduce their carbon footprint. This can be done through the execution of an Energy Audit on the campus. Energy Audits measure the amount of energy usage in buildings on campus. An analysis of the Energy Audit can assist institutions in understanding the amount

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of carbon emissions the university is creating. They can begin the process of establishing a more sustainable campus through setting goals and a date to reduce these emissions.

Each institution is different and must contextualize their own sustainability efforts based on their needs. Signing documents such as the Talloires Declaration or, the more recent, Presidents' Climate Commitment, can help institutions begin to set goals and create plans to implement sustainability on campus. Moore (2005) highlights the importance of infusing sustainability into all levels of decision making in order to shift the vision and "over-arching" goal of the institution towards sustainability (Moore, 2005).

Institutions can further their engagement by incorporating sustainability into the strategic plan. Embedding sustainability into the fundamental values of a college or university can help outline the goals and progress of sustainability efforts on campus and therefore assist the institution in creating future initiatives. This can also be done through a restructuring of the mission and values of the institution.

The first step in creating a campus that is dedicated to sustainability is setting achievable goals. An institution interested in being sustainable should measure their current carbon emissions and create a plan to reduce their footprint based on their findings. The next step is to create an administrative position on campus that is dedicated to accomplishing this goal, such as a Sustainability Coordinator.

Institutions Should Create Administrative Positions Dedicated to Sustainability

My findings suggested that the incorporation of an Office of Sustainability has helped many campuses become more dedicated to sustainability initiatives. These offices have fostered and maintained campus-wide collaboration. Institutions can begin the process of creating a more

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sustainable campus by hiring a Sustainability Coordinator or a consulting firm such as GreenerU or Ecomotion.

It is important to have a point person dedicated to creating sustainable initiatives on campus. Many times the task of implementing sustainability on campus is given to someone who has other responsibilities and therefore is unable to commit the necessary time to sustainable programming. (See Appendix B, Figure B1 and B2 for a table on the average salary of sustainability staff in higher education)

I asked participants in my study what recommendations they would give to institutions to incorporate more sustainable practices. An administrator from Babson College explained how many campuses struggle to: “take ideas from point A to point B. That is where GreenerU comes in, we have a group of really strong facilitators that work with colleges and universities to help guide their ideas into action.”

Another option is to hire a consulting firm such as GreenerU or Ecomotion to come onto campus a few times a week to help direct sustainability efforts. GreenerU and Ecomotion both provide colleges and universities with the proper tools to creating sustainability on campus. The services of these firms can be useful for institutions that are not prepared to hire full time sustainability staff. One administrator from Bryant explained how: “a lot of schools... haven’t really justified within their own culture why they would hire a sustainability coordinator. So, our business model [Ecomotion] is basically helping schools by providing a cost effective alternative to hiring a full time staff member.”

Depending on the degree to which an institution dedicates itself to sustainability they can create an Office of Sustainability on campus or house the Sustainability Coordinator in an already existing department, such as facilities. My findings suggested that locating the Office of

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Sustainability in a central area, such as the Campus Center, would be most effective in creating change. An administrator at Babson College explained how the location can impact the amount of recognition that office receives:

our office is located in the middle of the campus center and therefore we are constantly interacting with students from day to day. Our office has anywhere from 4-12 students working with us depending on the year in an internship role... People have begun to recognize us so I think in that regard it is helpful because of all the traffic through the campus center.

In contrast, Bryant University has their Office of Sustainability located in the facilities building. An administrator at Bryant describe the downside of the location:

Students aren't necessarily aware of the building or even know where it is. We work hard to bring students into the office so we hold some of the ambassador meetings in the office... If we were in more of a central location on campus, we could have more engagement with students.

By creating a point person who is focused on forming initiatives on campus that create sustainable practices institutions can begin to foster sustainable change. However, some institutions may not be ready to spend the money required to hire a sustainability coordinator. If this is the case, there are alternatives to creating behavior change on campus, such as student interest, training and education, infrastructure and ongoing assessment. The following information highlights other ways in which institutions of higher education can successfully incorporate sustainability into the campus culture.

Colleges and Universities Should Advocate for Student Interest and Participation in Sustainability Efforts

Institutions that are not prepared to hire a full-time Sustainability Coordinator can create a campus focused on sustainability by fostering behavior change through student interaction. If there are students interested in creating organizations dedicated to sustainability then it is important to advocate for these groups and provide the necessary funding for their events and

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programs on campus. These student groups also need proper mentoring from staff or faculty members that are able to dedicate time and effort to helping the organization create and implement events on campus.

The creation of social programs and events that foster conversation on sustainability could help institutions create a campus culture that strives to be more environmentally aware. An administrator at Babson College explained that a main component to working in the Office of Sustainability is to create behavior change. The administrator explained:

It is important to shift your own personal behavior to become a better change agent and communicator. People are actually quite interested to learn that the majority of the training [conducted by the Office of Sustainability] is on how to change their own behavior... By being more thoughtful about how you are interacting with other people and how you are spending your time, you actually end up being more influential.

Incentives that create behavior change can be completely cost free to an institution. There needs to be proper support and advocacy for students to feel comfortable to spread the importance of being sustainable. Programs and events that promote activism, such as the “Zero Waste Challenge” at Babson College, can be designed frugally (the only material needed is a Ziploc bag).

Another option that I did not come across in the literature or my findings that could create a more sustainable campus is the incorporation of sustainability in Orientation and First-Year Experience (FYE) Classes. By introducing students to the effects of sustainable living during Orientation or FYE, institutions can raise awareness and foster behavior change through showing new students that sustainability is a valuable practice at the institution.

Institutions of higher education can create a campus culture dedicated to sustainability through advocacy for student organizations dedicated to sustainability. It may be necessary to provide students with the proper direction and tools to implement effective events on campus.

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These types of events can be inexpensive, but have a lasting impact. Events and programs that educate the community through social interactions on how to create change in our world is one way in which institutions can begin the process of creating a campus culture dedicated to sustainability.

Implement Sustainability Training and Education through Cross-Campus Collaboration

By empowering students, faculty and staff to spread the importance of sustainability to various stakeholders on campus, institutions can create cross-campus collaboration. This can be done through creating an Eco Representative or Eco Ambassador Program, such as the programs incorporated at Babson College and Bryant University. These types of programs on campus help to engage students to actively promote sustainable living and promote social interaction between campus community members to advance environmental learning and actions (Levy & Marans, 2012). Levy & Marans (2012) also described that the development of Living-Learning Communities that focus on sustainability can be effective in promoting collaboration campus-wide.

Fostering collaboration between stakeholders on campus could help institutions create a social norm towards environmentally-friendly behavior (Levy & Marans, 2012). The first step to creating campus-wide collaboration is the execution of training and education to all departments on campus on how to incorporate sustainability into daily tasks.

It is important for the Facilities Department on campus to be invested in sustainability efforts. Colleges and universities need to implement the proper training for these offices to begin to make change on campus and decrease their carbon footprint. A student from Babson College described, "I've talked with facilities about what types of improvements happen, things like hot water, heaters being more efficient in the different buildings or changing out lighting." By

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educating Facilities staff on what materials and tools are more energy efficient, institutions can not only reduce their carbon emissions, but also save money.

Institutions should provide training and education to every office on campus on the proper way to recycle materials (such as paper) and the appropriate office supplies to purchase that are more energy efficient. If all stakeholders on campus do their part to incorporate sustainability into their everyday tasks then the end goal of creating campus wide sustainability could be accomplished. Sustainability can be promoted through a better understanding of environmental issues and the appropriate ways to solve them (Levy & Marans, 2012).

Produce Sustainable Infrastructure

An effective tool for reducing carbon emission that as not discussed in my findings, is the the incorporation of LEED (Leadership in Energy and Environmental Design) Certified buildings on campus. Levy and Marans (2012) highlighted in their recommendations that material incentives, such as LEED Certified construction, can help promote a campus culture that emphasizes sustainability.

LEED Certified buildings are “recognized across the globe as the premier mark of achievement in green building” (U.S. Green Building Council, 2014). Buildings that are constructed or renovated to fit LEED standards are awarded points and given a rating of Certified, Silver, Gold, or Platinum. The rating is based on whether or not the building criteria satisfies the seven LEED credit categories which include: location and transportation, materials and resources (use of sustainable building materials), water efficiency, energy and atmosphere,

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sustainable sites (points earned for minimized impact on ecosystems), indoor environmental quality, and innovation (creative design, etc) (U.S. Green Building Council, 2014).

The initial investment into LEED certified construction may be expensive, but the savings you gain from the energy efficiency buildings outweighs the cost. The United States Green Building Council (2014) highlighted on their website that: “LEED-certified buildings cost less to operate, reducing energy and water bills by as much as 40%.” (U.S. Green Building Council, 2014). Institutions could promote sustainability through the incorporation of top rated energy efficient buildings on campus. Students, faculty and staff could gain a better understanding of the importance of reducing carbon emissions when they are working in a building that is completely energy efficient. By committing to sustainability through infrastructure, colleges and universities could show the campus community the impact these buildings have on achieving the goal of sustainability.

Continue Assessment and Monitoring of Sustainability on Campus

There are many ways in which institutions of higher education can incorporate sustainability into campus culture. However, it is important to keep track of the methods used to implement sustainability efforts. This can be done through continuous assessment and monitoring of the ways in which the college or university successfully incorporates sustainability into operations, engagement, academics and administrative planning. Based on the findings from my data collection, I would recommend using the Sustainability Tracking and Assessment Ratings System (STARS) as a way to keep track of sustainability efforts on campus. This tool is not only useful for colleges that already have sustainability efforts on campus, but is also useful for institutions that need help setting a foundation for sustainability. When I asked an

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administrator from Bryant University what recommendations they would give to institutions in need of more sustainability efforts, they responded:

We really advocate for STARS, as we discovered that it catalyzes conversations and makes sustainability relevant to all different departments as well as educating the campus that it's not just an environmental issue. Sustainability is not just recycling. It is a social justice issue. It is an economic issue and there's an overlap to the social, economic and environmental pillars... I think STARS educates the campus in a very comprehensive way. It's not a tool just used as a facilitation technique... it's one of the first steps that colleges should take.

It would also be effective to assess and monitor the knowledge and understanding of sustainability on campus by administering a Sustainability Literacy Test. I recently came across some information on the Association for the Advancement of Sustainability in Higher Education (AASHE) website explaining the significance of incorporating a Sustainability Literacy Test for students on campus to assess the "success of their sustainability initiatives" (Association for the Advancement of Sustainability in Higher Education, 2014). The integration of a Sustainability Literacy Test could help test the level of understanding and critical thinking skills that students have obtained through sustainability efforts.

One way in which Sustainability Literacy Tests can be administered is through a survey via email to students. Institutions can then compare what learning has been developed over a period of time in which sustainability becomes more prevalent on campus. This can then help the institution assess the impact of sustainability on campus and whether or not they are successfully engaging students

Colleges and universities should constantly be tracking the effectiveness of sustainability programs and actions on campus. This can be done by assessing and monitoring campus initiatives for sustainability. The STARS Reporting Tool is a comprehensive way to track and rate sustainability in higher education, while also allowing institutions to benchmark other

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schools in order to successfully lay a foundation for sustainability on campus. It is important to check the effectiveness of these initiatives by administering a Sustainability Literacy Test to students to understand the amount of knowledge gained from attending an institution dedicated to sustainability.

Conclusion

As the population continues to grow rapidly worldwide, the need for environmental sustainability is imperative. Colleges and universities need to take the initiative to increase awareness of the growing need for sustainable development in the world. By educating our future leaders on the importance of maintaining our planet, we can create a society where people engage with their community and collaborate to solve real-world problems.

The literature reviewed suggested that institutions can successfully implement sustainability into higher education practices by incorporating Education for Sustainable Development (ESD), restructuring the institution to incorporate sustainability, developing sustainability competencies, and incorporating an interdisciplinary, sustainability focused curriculum.

The findings from my data collection, which involved interviewing the Office of Sustainability at Babson College and Bryant University, are supported by the literature review. Based on the information I collected from the administrators and student interns at Babson College and Bryant University I devised a set of recommendations for institutions to follow in order to incorporate sustainable practices on campus.

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These recommendations explain that colleges and universities should: establish sustainability goals through institutional commitment, create administrative positions dedicated to sustainability, advocate for student interest and participation in sustainability efforts, implement sustainability training and education through cross-campus collaboration, produce sustainable infrastructure, and continue assessment and monitoring of sustainability on campus.

Institutions of higher education stress the importance of creating individuals that are global citizens and critical thinkers. Educating students on the importance of living sustainably could create a positive change in our world by producing citizens with critical and global perspectives.

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Appendix A

Interview Protocol

1. How did your institution decide to implement an Office of Sustainability on campus?
2. What does a typical day in the office look like?
3. How much interaction do you have with students?
4. What activities/events/programs on campus is your office involved in planning?
5. What are the most effective sustainability efforts on campus?
6. In what ways has your office had an impact in creating a more sustainable campus?
7. How does your office impact student life?
8. What have been the most effective sustainable development programs that your office has implemented on campus?
9. How does your office affect other administrative offices? How does it effect faculty roles?
10. How can other campuses effectively incorporate sustainable practices on campus?

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Appendix B

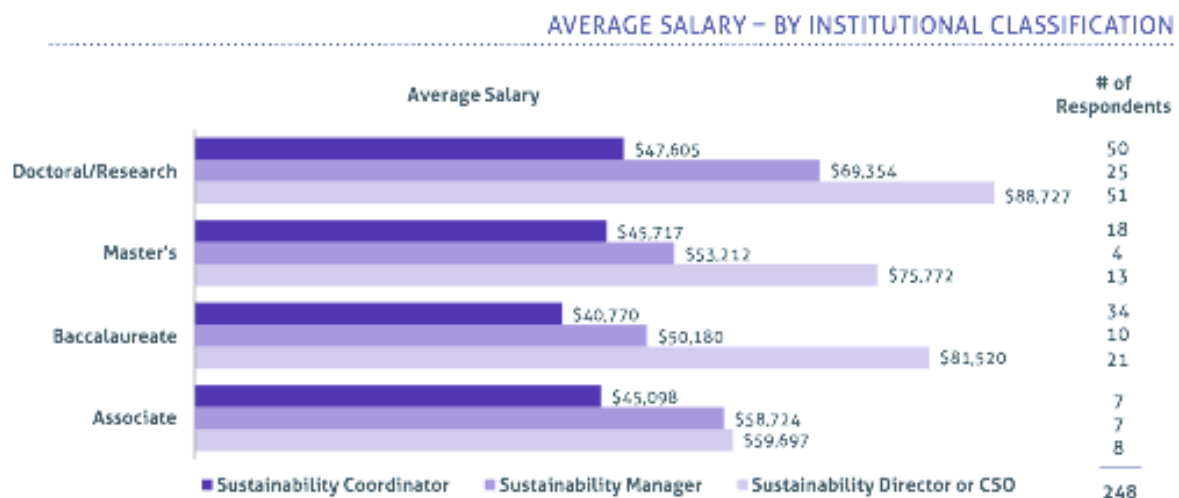
Figure B1: Average Salary for Sustainability Positions in Higher Education – By Region

AVERAGE SALARY – BY REGION

Position Type	All regions		Central	Eastern	Mid- Western	Pacific Coast	Rocky Mountain	South- Eastern
	Average Salary	Standard Deviation						
Sustainability Director or CSO	\$82,791	\$26,147	\$82,782	\$85,155	\$82,364	\$87,852	\$93,818	\$70,732
Sustainability Manager	\$62,059	\$16,509	\$63,867	\$65,679	\$56,940	\$60,109	\$68,571	\$59,003
Sustainability Coordinator	\$45,000	\$14,894	\$48,402	\$43,928	\$44,065	\$50,514	\$40,949	\$46,007
All Respondents	\$58,413	\$26,265	\$60,164	\$62,027	\$56,344	\$58,188	\$58,353	\$54,964

Note. Adapted from the Association for the Advancement of Sustainability in Higher Education (2012). Salaries and Status of Sustainability Staff in Higher Education, p. 28. Copyright 2013 by the Association for the Advancement of Sustainability in Higher Education.

Figure B2: Average Salary for Sustainability Positions in Higher Education –
By Institutional Classification



Note. Adapted from the Association for the Advancement of Sustainability in Higher Education (2012). Salaries and Status of Sustainability Staff in Higher Education, p. 28. Copyright 2013 by the Association for the Advancement of Sustainability in Higher Education.

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