Abstract

Recognizing that 2005-2014 was declared by the United Nations to be the International Decade of Education for Sustainable Development, since 2007 students at the California State University East Bay have been able to satisfy part of their undergraduate general education requirement by passing a geography course on sustainable development. An important element of this course is that students must participate in a visioning process to articulate priorities for sustainability across five interconnected and interdependent geographic and societal scales from the individual, through the corporation, community, nation, and up to the global level. Through exposure to a variety of key readings on sustainable development, individual research on the meaning and practice of sustainability within a given discipline or sector of society, and a careful analysis of their ecological footprints, students rapidly develop an understanding of humanity’s principle adversity challenges and their potential solutions. The course and this key learning outcome, the ability to identify and articulate concrete steps to achieve sustainability, provides a useful example of how geographers can and should take a leadership role in education for sustainable development and in achieving the successful transition to a sustainable future. It illustrates the role stand-alone courses and the faculty who develop them can play in any discipline to spur education for sustainability across the broader curriculum.

Introduction: geography and sustainable development

At the 2002 Rio+10 conference on Sustainable Development in Johannesburg, South Africa, 2005-2014 was declared to be the International Decade of Education for Sustainable Development (IDESD). The primary goal for the IDESD was laid out in the United Nations General Assembly resolution 59/237 which encourages governments to consider the inclusion of measures to implement the Decade in their respective education systems and to promote public awareness of and wider participation in the Decade (United Nations 2005). The IDESD seeks to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. According to UNESCO, education for sustainable development “calls for a re-orientation of educational approaches – curriculum and content, pedagogy and examinations – to ensure that change in public attitudes and educational approaches keep pace with the evolving challenges of sustainable development” (UNESCO, 2005a). The IDESD was designed to encourage changes in behavior that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations (UNESCO 2005b).

McManus (2004) stated that geography is an ideal discipline for the advancement and promulgation of the concept of sustainable development due to the long historical involvement of geographers in investigating environmental processes and nature-society relations. However, he also suggested that there is a sense that geographers have missed the opportunity to be at the forefront of research and teaching on sustainable development. This assertion was recently restated by Lee (2011) in his paper “Where in the World of Sustainability Education is US Geography?”: In it Lee paraphrases Manning’s 1990 observations that … geographers somehow missed the opportunity to be the central unifying discipline for the environmental movement in the 1960s … and that … sustainable development presents a major challenge to geography to
demonstrate its capacity and relevance to what may be the most important public issue of our time (Manning 1990, pp. 299, 290). Lee points out that in a review of sustainability-related course inventories provided by the Association of Advancement of Sustainability in Higher Education (AASHE) for 34 institutions, geography courses had a very limited presence making up only 4.4 per cent of the sustainability courses listed and with less than half the institutions having at least one geography course listed in their inventory (Lee 2011). A review of the more than 60 voluntary associations formed within the Association of American Geographers shows that there is, as yet, no specialty or affinity group in sustainability or sustainable development (AAG 2012). This is surprising given that following a year of discussions and deliberation by delegates to the International Geographical Union’s Commission on Geographical Education (IGUGCE), the Lucerne Declaration on Geographical Education for Sustainable Development was signed in July 2007. It promotes the integration of sustainable development into the teaching of geography at all levels and in all regions of the world based on the belief that knowledge, skills, attitudes and values learned in geography inspire decisions and actions that support sustainability and the goals of education for sustainable development (ESD) (Reinfried 2009).

The challenge identified by Manning (1990) is not, of course, geography’s alone. In their 2011 paper on sustainability education, Hegarty et al. (2011) make a case for all disciplines to embrace sustainability across the curriculum, stating that “deep integration of EfS (education for sustainability) is crucial as we seek to build sustainable futures. But part of the necessary change process must be that sustainability scholars find ways to introduce EfS principles into their courses and perhaps into elements of those of colleagues, as we seek to build the change that will lead to integration”. This certainly seems to be the position taken by the Lucerne Declaration for geography programs. Reinfried (2009) indicates that “through the Lucerne Declaration, geography educators can turn ESD into a reality in geography classrooms around the world. Designing new curricula, in which the criteria, principles and practices highlighted in the Declaration are taken into account, is a first step toward this goal. The general frame of such curricula should focus on students’ learning outcomes instead of syllabus-oriented teaching; be individualized and personalized; emphasize higher-order skills such as problem solving, communicating, critical thinking and creativity.” It is vital, therefore, that geographers who have developed such curricular innovations promulgate these courses to the profession to stimulate a wider uptake and focus on education for sustainability both within the discipline itself, and as part of a growing trend to develop sustainability-focused degrees, minors and certificates in which geography can be a core focus, as detailed by Lee (2011). This paper, therefore, introduces one such innovative course that might provide inspiration for other educators; GEOG 4330 Sustainable Development, which has been offered at the California State University East Bay (CSUEB) since 1999. This paper describes its genesis, its main characteristics, and how its objective of engaging students in visioning sustainability across interconnected scales fits well with the prevailing wisdom concerning needed learning outcomes for today’s graduates if we are to pursue and achieve a sustainable future (Haigh 2010. Wick 2011. Rieckmann 2012). It concludes with suggestions as to steps needed by institutions like CSUEB to use stand-alone courses within their curriculum as a basis for promoting education for sustainability across the institution and its curriculum in an effort to achieve the goals of this movement and the IDESD.

Sustainability and higher education
A growing body of literature is developing with respect to the role of universities in achieving sustainable development (for example: van Weenen 2000. Martin and Jucker 2005. Lozano 2006. Leal Filho 2010. Wick et al. 2011. Rieckmann 2012). Within this literature exists an expanding core of publications concerned with the pedagogic aspects of sustainability (Barth et al. 2007. Cotton et al. 2009. Bacon et al. 2010. Ceulemans and De Prins 2010. Clark and Button 2011) and the role pedagogy plays in higher education’s efforts to help create a society in which individuals are aware of the impact of their actions on others and on the planet, and that they take
responsibility for those actions (Hegarty et al. 2011). Within this body of literature, papers are appearing dedicated to explaining the nature of courses developed on the topic of sustainability and sustainable development both to inspire others to adopt similar approaches and to share effective pedagogic practices within the wider academic community (for example: Hegarty et al. 2011). This is necessary because, as pointed out by Leal Filho (2010) “there is still a deficiency, in the literature, of empirical works which have tried to ascertain, first hand, what is hoped, expected or otherwise among those in charge of sustainability policies, from attempts to promote sustainability in the framework of institutions of higher education”. As stated by Cortese more than a decade ago, it is difficult to imagine the individual and societal changes needed to ensure a sustainable future could occur without the assistance of institutions of higher education (Cortese 2001) and by extension, therefore, without a systematic effort by educators of all disciplines to address education for sustainable development across the curriculum. There is thus an urgent need to share effective pedagogic practices amongst motivated faculty and expose the wider academic community to the possibilities for effective incorporation of sustainability into the curriculum. Echoing this sentiment, Leal Filho (2010) stated that “proportionally little emphasis seems to be given to sustainability by large universities. Indeed, many universities perform activities in the area of environmental protection and regard this as their contribution to sustainability, neglecting the fact that Campus operations are indeed important contributions, but by far not the only ones”. He details six key areas in which universities must integrate sustainability, a key one being “the implementation of principles of sustainable development as an intrinsic part of university teaching programs” (Leal Filho 2010). Haigh (2010) explains how sustainable development is missing from many degree programs because of the cross-disciplinary nature of the topic; few real-world problems of sustainability rest comfortably within single disciplines. Lee (2011) points out how for geography, for example, human geographers and physical geographers seem to have both assumed that sustainability falls mostly into the camp of the other and thus neither have fully embraced it. This silo problem has been circumvented in many higher education institutions by adding short, usually introductory level stand-alone courses at the early stages of the undergraduate curriculum, offering learners only a small package of ideas on the needs for sustainable development. The problem is that these packages are often seen as something apart from the learner’s main education, a discrete package of knowledge that may not be seen as relevant to their main course of study (Haigh 2010). In Haigh’s opinion, there remains only one solution; the full-scale “curriculum greening” in which the whole academic enterprise is suffused with education for sustainable development topics (Haigh 2010).

CSUEB, as a mid-sized university of approximately 14,000 students, currently exemplifies Leal Filho’s observation and, like the majority of United States educational institutions, is yet to achieve Haigh’s objective. The university has excelled in recent years in efforts to implement sustainable resource management policies in campus operations and possesses one of the largest solar photovoltaic energy systems of any campus in the United States. It also houses a state-of-the-art hydrogen fuel cell through a partnership with the regional electrical utility. This provides electricity to the regional grid while a retrofitted co-generation system uses the fuel cell’s waste heat to heat the adjacent campus swimming pools, resulting in considerable annual energy savings. CSUEB has also made great strides in water conservation, waste reduction and recycling, energy efficiency, and purchase of zero-emission vehicles as part of a 2009, 20-year facilities master plan to create a sustainable campus. However, in the area of pedagogy, sustainability currently occupies a much lower profile, as is the case in many other institutions. A meta search of the 2010-2011 and 2011-12 academic catalogs indicated that out of over 2000 undergraduate courses and over 1000 postgraduate courses listed, only 10 individual courses use the words sustainable or sustainability in their title or their catalog description (although clearly, there are many courses who’s subject material support and promote environmental, social and economic topics that are critical to sustainability). The program with the most courses (three) directly focused on sustainability is geography, one of the academic disciplines most clearly aligned with
the sustainable development field as indicated by the Lucerne Declaration (Reinfried 2009). These courses are GEOG 3000 Sustainable Resource Management, GEOG 6820 Seminar in Sustainable Cities, and the aforementioned GEOG 4330 Sustainable Development, the focus of this paper. Each of these courses is taught by the author.

Advancing the Lucerne Declaration at CSUEB: GEOG 4330 Sustainable Development

Pre-dating the Lucerne Declaration and UNDESD, the senior-level (fourth year) sustainability-focused course, GEOG 4330 Sustainable Development, has been taught in the geography program at the California State University East Bay (CSUEB) since the late 1990s. Coincidental to the discussions being held by the IGUCGE to adopt the Lucerne Declaration and in light of the UNDESD, the faculty member responsible for this course, in responding to feedback in course evaluations from students, determined that sustainability should not just be the domain of geography majors but, if the goals of the UNDESD and Lucerne Declaration are to be achieved, should be opened up to a wider audience. It was thus proposed in 2006 that GEOG 4330 be granted general education (GE) credit so as to attract students from a wider variety of disciplines who might take it as an elective, regardless of their degree path. In order to graduate from CSUEB, students must complete 72 credit units out of their total requirement of 180 by taking courses outside their major subject from across the curriculum, the objective being to assure that graduates have made “measurable progress toward becoming truly educated persons for a diverse society” (CSUEB 2010). One of the key purposes of the CSUEB GE program is to provide the means whereby graduates:

“acquire appreciable knowledge about their own bodies and minds, about how human society has developed and how it now functions, about the physical world in which they live, about the other forms of life with which they share that world, and about the cultural endeavors and legacies of their civilizations” (CSUEB 2010).

As the author sought this wider exposure of CSUEB students to sustainable development, the University Committee on Instruction and Curriculum (CIC) that grants GE status to courses was provided with background information on the UNDESD as part of the justification for assigning GE credit. The CIC agreed that there was a good fit between CSUEB’s GE goals and those of the IDESD and thus GEOG 4330 was approved by the Academic Senate for GE credit in the 2007/08 academic calendar and thus became eligible as an elective for any major seeking to fulfill upper-division Social Science GE requirements.

For non-geography students who take it, GEOG 4330 fits what Hegarty et al. (2011) refer to as the “bolt-on” or “stand-alone” course model, taught by a faculty member with a strong ethical commitment to sustainability. Unlike Hegarty et al.’s course Sustainability, Society and Environment at RMIT University in Australia, which is an introductory course, GEG 4330 at CSUEB is a senior undergraduate class taken near the end of a student’s studies. However, like the RMIT course, it is available as an elective that could be taken by any undergraduate at CSUEB, regardless of their major, thanks to its designation as a general education course for upper division social science. For most non-geography students who take it for GE credit, it will be the only course they get that focuses explicitly on sustainability.

GEOG 4330 meets twice per week over 10 weeks for two-hour seminar sessions (with asynchronous online discussions in between times) and is a survey of the processes by which sustainable levels of development might be achieved across the human and natural geographical dimensions of time and space. It provides an assessment of the personal, corporate, local, national and global dimensions of sustainability with special emphasis on policy questions and the identification of options and practical alternatives for the future at each scale. As recommended for geography courses that meet the goals of the Lucerne Declaration (Reinfried 2009), it takes a systematic approach to addressing the various interconnected scales at which decisions must be taken and policies must be made to achieve a level of societal development at which the welfare
of today's generation can be met without compromising the welfare of future generations. Building off a body of literature that has expanded exponentially since the Brundtland Report (WCED 1987), the course taps into the views of key thinkers about sustainability and synthesizes important issues from the individual to the global scale. The course presents a triple-bottom line perspective (advanced by Elkington 1997, Hawken et al. 2000, McDonough and Braungart 2002a and others) on the world, one in which the joint concerns of economic viability, environmental integrity, and social equity are effectively balanced in the decision-making process through which our human systems are designed and implemented. As such, it provides a valuable case study of how this complex topic can indeed be addressed in a comprehensive, yet condensed manner to provide students that are new to the topic with a chance to acquire vision and insight into society’s many challenges and opportunities.

Students engage in guided readings (for example, Berry 2001. Brown 2009. Cairns 2004. Curtis 2003. Hart 1997. Hawken 1997. Johnston et al. 2007. Kates et al., 2005. Mazurkewich 2004. McDonough et al. 2003. McDonough and Braungart 2002b. McGranahan and Satterthwaite 2003. Moran et al. 2008. Myers 1997. Redefining Progress 2009. Pillarisetti and van den Bergh 2007. Rockström et al. 2009. WCED 1987), participate in lectures, construct, evaluate and model changes to their ecological footprints, and conduct individual research designed to relate the topic of sustainability to their own degree programs and/or projected career interests (e.g. sustainable food systems, sustainable design, sustainable tourism, etc.). A key component in the course relates to intensive class and online discussion on the subject of sustainable development at the five scales, the goal being to reflect on and fashion a collective set of fundamental actions to be taken if society is to advance to sustainability. The most recent model for this evolving class has the students divided into groups of 4-5 students assigned group names such as groundbreakers, innovators, pioneers, trailblazers and trendsetters. At the end of each lecture sequence on the five sustainability scales, each student must vision and articulate three actions they believe are needed to advance sustainable development at that scale and present them as manifesto prescriptions to the group in an online threaded discussion. In articulating the prescription, they are instructed to be clear what action is being proposed, which actor is responsible for its implementation, and why it leads us toward future sustainability (note that based on student feedback, in the next iteration of this class students will also be required to specify an appropriate indicator/metric by which progress toward sustainability can be gauged). At the subsequent classroom session, the students break into their groups to discuss the suggested prescriptions and to vote on their top three. The class then reconvenes and each group presents their priorities, which are discussed and, as appropriate, modified and reworded to best capture and articulate the action from the broader class perspective. During the discussion the opportunity is taken to draw connections between prescriptions offered at a smaller scale and/or think ahead to identify obstacles at larger scales that might make implementation difficult or ineffective. The result is a powerful manifesto of between 12 and 20 prescriptions for each scale and 60-100 for the set of five. The students are presented with the full manifesto at the end of the course.

The learning outcome; a manifesto for sustainability
The following section provides examples from the set of prescriptions offered by a single group of students who took the class in order to qualitatively illustrate their broad range and level of insight.

Manifesto for a sustainable individual
The following prompt was provided to solicit student prescriptions on individual-scale sustainability: While we do not and probably cannot know the exact parameters that must be met for individual lifestyles to collectively result in a sustainable world system, we offer the following as some critical characteristics that a sustainable lifestyle must logically include and which must be adopted and replicated, first and foremost, by all Americans and others living a materially-intensive, industrial-style life across Europe, Japan, Australia and the other OECD regions and
nations. This list, it must be noted, must also be applied to the elite, affluent minorities of the developing world as well as to the growing ranks of middle-class in those nations that are swelling with new members due to the growing prosperity of their emerging economies, especially China and India. Three of the manifesto prescriptions provided and endorsed by the class in response to this prompt included:

**Practice voluntary simplicity:** Every individual should seek to practice a form of voluntary simplicity – minimizing their ecological footprints from the use of materials, energy and so forth by practicing frugality (using only what is necessary) and efficiency (when using them, using only the minimum necessary to satisfy the particular objective).

**Seek services not products:** Every individual should seek out services rather than products in their satisfaction of needs and wants. Thus they should seek to become customers, rather than consumers, allowing our needs to be met by corporations seeking to satisfy those needs with the highest degree of reuse, thus placing value on cradle-to-cradle efficiency, longevity, repairability and so forth, and not on disposability and rapid obsolescence.

**Shorten food chains:** Every individual should eat as low down the food chain as possible, securing most or all of their nutrition from producer organisms rather than consumer organisms. The foods consumed in this low energy input diet should come, as much as possible, from local sources, including home gardens, with minimal processing and grown in season.

**Manifesto for a sustainable business**

The following prompt was provided to solicit student prescriptions on corporate-scale sustainability: While we do not and probably cannot know the exact best management practices and standards that the business sector must adopt to help consumers pursue more sustainable lifestyles and for communities to function with a sufficiently small ecological footprint to stay within the earth’s carrying capacity of renewable resource production and waste assimilation, we propose the following actions that could help shift corporations involved in retail, manufacturing, service provision and so forth in a direction toward sustainability. Three of the manifesto prescriptions provided and endorsed by the class in response to this prompt included:

**Reduce disposability:** Businesses should minimize disposability in all aspects of their operations – internal or external. For example, internally they should eliminate single-use items in cafeterias or for special events (or, at a minimum, replace these with biodegradable items made from renewable materials that are designed to be composted – they would also have to have an effective green waste separation program for these items). And externally, for example, they should eliminate the manufacturing of single-use or substitute reusable or compostable ones for non-compostable items.

**Practice social responsibility:** Businesses should be socially responsible, facilitating employees to make positive contributions to society by being active in their own communities and in the community in which the business is located or in which its products or services are employed. Resources (time, matching funds, material support, etc.) should be made available to employees to encourage volunteerism and other beneficial individual behaviors whether independently or as part of corporate-directed collective activities.

**Incentivize workers:** Employees should be offered direct incentives to shift to greater personal sustainability especially in relation to commuting, i.e. reducing the energy cost of getting workers to their workplace which is part of the ecological backpack of the products and services produced. Workers should be assisted financially or materially so that they can take public transport, live closer, car-pool, drive more fuel-efficient vehicles, and so forth.

**Manifesto for a sustainable community**

The following prompt was provided to solicit student prescriptions on community-scale sustainability: A community can be defined as a geographic area in which a collection of individuals operates in informal and formal organizational structures. Communities occupy a pivotal point in the continuum of scales over which the sustainability paradigm must be shifted. The informal community is the place and ways in which individuals exert personal decisions and
behavior in a bottom-up manner that will be very significant, due to the collective effects, in achieving sustainability. The formal community is where many top-down decisions take place that stimulate or organize different types of individual decisions that help create unsustainable or sustainable forms of societal organization and actions. They are also the scales at which decisions are focused and implemented, having been made at higher levels of decision-making, for example at a regional or national level. If the informal and the formal dimensions of community, the bottom-up and top-down do not match, then sustainability is unlikely to be achieved. The following actions could help move a community, a population of individuals acting informally (in neighborhoods, for example) and formally (within a city governed by locally elected officials and administered by public servants), toward sustainability. Three of the manifesto prescriptions provided and endorsed by the class in response to this prompt included:

Facilitate non-vehicular transportation: Communities must maximize the opportunities within their community boundaries for non-vehicular modes of transport to reduce vehicle miles driven while at the same time raising exercise levels. Communities should install bike paths, pedestrian walkways and other physical infrastructure modifications while encouraging a culture that respects (e.g. sharing the road by drivers) and promotes non-vehicular uses.

Make public spaces functional and productive: Communities should make community public spaces more functional in ways that enhance their environmental, economic and social benefits. Underutilized space should be put to optimal use, as applicable, as community gardens, community forests (carbon sinks/carbon-neutral fuel sources), urban runoff filters, and the like. For example, areas of public parks could be used as public gardens run by volunteers and/or parks staff directing community service individuals (high schoolers, misdemeanor offenders, and so forth) with harvests used to supply schools, community hospitals, shelters or other food outlets, to be shared with volunteers proportional to their labor inputs, and/or as sources of revenue, to be sold to the community at a community-based farmer’s market.

Favor imbyism over nimbyism: The informal community must favor imbyism (in my back yard) over nimbyism (not in my back yard), the informal community being the private citizens that band together to influence the formal community, i.e. decision-makers, to exclude undesirable land-uses or other such factors from the geographic area the community occupies. Community members must be encouraged to confront the broader consequences of excluding controversial land or resource uses rather than accepting them, and taking those same relatively strong powers to resist (and therefore foist said problem onto a less able community assuming that the object of protest will indeed find a community home somewhere) and using them to force those responsible to eliminate the causes of their concerns.

Manifesto for a sustainable nation

The following prompt was provided to solicit student prescriptions on national-scale sustainability: There are over 200 entities in the world that we recognize as nations, ranging from the population giants of China and India, both with over one billion citizens, to the minnows, the tiny island nations or city-states like the Marshall Islands and Andorra that might number only a few tens of thousands. Collectively, they provide the framework with which the seven billion people that currently occupy the planet are geographically organized and how they are governed. In organizing and governing these peoples, nations have a key top-down role to play in the shift to sustainable development in almost every conceivable area. Collectively, the nations of the world, with their respective ecological footprints and rates of population growth, are critical determinants of global ecological sustainability and will thus determine whether humanity stays within or exceeds the carrying capacity of this planet. Nations, through their ability to legislate, to tax, and to spend, have a key role to play in aligning the behavior of their regions, communities, corporations and individual citizens with the broader goals of sustainable development. It must be recognized that all nations are not of equal importance in this; individual nations have very different roles and abilities to determine the gross outcomes of the multi-level sustainable development process. Unilateral actions by nations can fundamentally alter the
course we take and in myriad ways, from the catastrophic, for example by triggering a nuclear war, to the chronic incremental, longer-term processes such as the failure to switch individuals and corporations away from fossil fuels and towards energy conservation and renewables. Similarly, due to their small size or relatively lowly economic status, other nations are virtually powerless to influence global outcomes yet suffer disproportionately from the changes that have and will occur in global economic, social and environmental conditions, for example the small island nations that produce little of the world’s greenhouse gases but on whom the effects of climate change and sea level rise will be disastrous. They could become fully sustainable, but it wouldn’t make much difference if their bigger fellow-nations do not follow suit. In light of this understanding, we suggest the following actions that could help move every nation, but especially our own, the United States of America, and the other wealthy and powerful economies toward sustainability. Three of the manifesto prescriptions provided and endorsed by the class in response to this prompt included:

**Apply domestic laws internationally:** Nations should ensure that their citizens and corporations conduct themselves and their business operations internationally in compliance with their own domestic laws and requirements or with the laws and requirements of their host nations, whichever is more rigorous/sustainable. Similarly, domestic laws on products made for internal consumption – related to safety, pollution, energy efficiency, etc. – would apply to all products made for export to nations without such laws, i.e. it would not be permissible to produce goods injurious to sustainability goals/standards established for the nation of origin for use in other nations without such goals/standards.

**Best practice leadership:** National governments should take the lead in implementing best practices in all areas related to sustainability acting as a role model, trendsetter and catalyst for sustainable development. Based on the fact that some 20-40% of national GDP is government spending and with a high percentage of the service sector in public ownership, the installation of best practices in energy use and conservation, green/sustainable products, and so forth can provide a massive stimulus to bring best technologies to the forefront, encourage innovation, and thus pull the national economy over obstacles that might inhibit the profit-driven private sector of the economy. Governments can more easily set for themselves goals like 100% green energy, 100% recycling, 90% reductions in energy use and implement the steps to achieve them.

**Tax for sustainability:** Nations should levy taxes on the basis of sustainability considerations, taxing harmful goods or services and using the revenues to stimulate conservation and efficiency and the consumption of beneficial but otherwise more expensive substitutes. Taxation should be used to approach the full-cost pricing of goods and services that reflect and internalize their environmental and social costs and benefits. Taxation should be geared to consumption, not production, and rather than tax labor, tax burdens should be shifted to consumption but in a manner that is progressive and reflects the reality by which different forms of consumption contribute to the advancement of human welfare and support sustainability.

**Manifesto for a sustainable global system**

The following prompt was provided to solicit student prescriptions on global-scale sustainability: While society does not yet know the exact parameters associated with global sustainability, for example exactly how much carbon dioxide could safely be emitted before catastrophic anthropogenic climate change is unavoidable, or exactly how many people the earth could support without decline (which is dependent on many factors not least future technological advancements), etc., it nevertheless is possible, using the concepts at our disposal, especially the notions of strong and weak sustainability, the precautionary principle, the natural step, planetary boundaries and just plain old common sense, to prescribe key requirements/conditions for global sustainability. The following represent a list of key prescriptions that seem critical for indefinite global health and sustainability. Note these are described in a manner that attempts to capture the full global scale, recognizing that they also apply to and will partly or wholly be achieved by specific actions and changes at smaller scales and by specific entities. Some may require new
global institutions and mechanisms to be created. Three of the manifesto prescriptions provided and endorsed by the class in response to this prompt included:

**Global governance:** In order to achieve sustainable development we should establish true, effective global governance with the force of law. If global sustainability is to be achieved, it seems unavoidable that national sovereignty be subordinated to a greater degree to a global governance authority. A body that can make policies and draft laws that apply to all nations and peoples and which have appropriate funding and enforcement mechanisms is required. Global conventions such as CITES, the Montreal Protocol, or the Basel Convention, previously arrived at through painful and protracted, voluntary, ad-hoc mechanisms would be formalized and systematized. Thus we would have a binding, universal Law of the Sea, Law on Global Greenhouse Gases, etc. that would be formulated to address global problems at a holistic, global scale under which all piecemeal, national-level actions could and should be organized.

**Enhance development assistance:** In order to enhance global equity, richer nations should provide development assistance to poorer nations based on their ability to pay and this should be dispersed to nations on their relative needs (on some objective criteria such as the UNDP Human Development Index rankings). Thus some form of means test should be used at both ends – ability to pay and relative need.

**Financing linked to sustainability:** Any form of global financing through a new global governance system or the current organizations such as the IMF, World Bank and so forth must come with sustainability strings attached – a triple bottom line approach must be used in implementing such financing which should meet sustainable development criteria in social equity and environmental integrity areas as well as in terms of economic outcomes. Agreeing to sustainability actions should be a condition of receiving loans and evidence of their implementation and adherence to sustainability principles must be a condition of renewing such financing or financing renegotiation.

**Scaling up to full-blown education for sustainability**

Haigh points out in calling for a “curriculum greening” the persistent belief that our present educational structures are less appropriately geared to meeting the needs of the future than reinforcing the destructive characteristics of the current, unsustainable age (Haigh 2010). This echoes Sterling (2001) who stated that for nearly 30 years, education has been identified as the key to addressing environment and development issues and latterly to achieving a more sustainable society but that most education daily reinforces unsustainable values and practices in society through competition and consumption. Scott (2002) suggested four key responsibilities of educators with respect to the pedagogy of sustainability: to demonstrate to our students why sustainability is important to them, to help them gain a diversity of perspective on what sustainability means, to provide learning opportunities through appropriate curricular choices, and to help them understand what they have to do keep their own and others’ options open over time in a changing world.

According to Sterling (2001), realization of a sustainable education paradigm requires vision, image, design and action at all levels and from all who are concerned with achieving healthy societies and ecologically sustainable lifestyles. Rieckmann (2012) writes that given the “development state of the world society”, education should enable individuals to reflect on their own actions by taking into account their current and future social and environmental effects – from a global perspective – and to intervene productively in shaping them in a sustainable manner. As pointed out by Rieckmann (2012), one important component of Education for Sustainable Development is envisioning a better future. Citing the work of Adomssent et al. (2007), Rieckmann states that the purpose of this visioning is to establish a link between long term goals and immediate actions, and motivate people to action by harnessing their deep aspirations (Rieckmann 2012). The learning outcomes from such an effort are that students should acquire the values, knowledge, and skills for sustainable living and participation in
society. Other observers too stress the importance of visioning the future as a core competency for graduates prepared to address sustainability challenges. Hicks (2012) defines Future Studies as teaching and research so as to “discover or invent, examine, evaluate and propose possible, probable and preferable futures (Hicks 2012 p4),” and suggests that geography instruction embrace this field to add to its traditional responsibilities of describing and explaining the way the world currently is. He believes that Future Studies are well aligned with the broader objectives of education for sustainability and lists nine key concepts associated with futures education. In these he includes a component he calls “Visions for the Future” asking “What needs to be left behind and what taken forward? In particular, what visions of a better future are needed to motivate active and responsible citizenship in the present?” and concludes that students therefore need to develop their skills of visioning and use of the creative imagination (Hicks 2012 p8).” Rieckmann (2012) examined the views of 70 experts in education for sustainable development from “northern” nations (the UK and Germany) and “southern” nations (Chile, Ecuador and Mexico) concerning core objectives and core student competencies to be achieved through education for sustainable development. He offers that universities have to create particular learning settings in which students can improve their competencies for understanding complexity and long-term effects of present-day actions as well as for questioning common assumptions. For both groups of experts, the most important objective to achieve was creating and changing student values, attitudes and awareness and the most important competency to promote was the systemic thinking and handling of complexity which is made all the more important by “the complexity, uncertainty, risks and the high velocity of societal (global) change (Rieckmann 2012 p133).” On a similar theme, Wiek et al. (2011) state that sustainability competence is composed of five components: systems-thinking competence, anticipatory competence, normative competence, strategic competence, and interpersonal competence. Anticipatory competence is perhaps the one most aligned with the visioning process that forms the backbone of GEOG 4330 described in this paper. Wiek et al. (2011) state that anticipatory competence involves fostering the capacity to think systematically about the future and future generations and requires, among other things, an understanding of the different types of futures, i.e., possible futures (based on notions of plausibility), probable futures (those determined “likely” to occur), and desirable futures (value-laden; based on sustainability principles).

The question, then, is how best are the full set of sustainability competencies to be achieved and what role can courses like GEOG 4330 and geography as a discipline play in the process? McManus (2004), identified three different ways for geographers to incorporate sustainable development into their teaching; to address it within an existing environmental course or within a course focused on development or management, to develop a new course wholly focused on sustainable development, or to develop a new program of study that focuses on sustainable development, with the latter often requiring a merger with another program such as environmental studies. At CSUEB, the Geography and Environmental Studies Department adopts all three. According to Hegarty et al. (2011), “stand-alone” courses, such as RMIT’s Sustainability, Society and Environment and CSUEB’s GEOG 4330 add a wide range of value to the sustainability goals of universities. Such courses foster crucial, transferable skill sets such as critical and integrated thinking as they seek to locate knowledge within disciplinary spheres and situate their learning objectives in complex, real-world contexts (Hegarty et al. 2011). For example, the vision statements crafted through student discussion in GEOG 4330 illustrate how empowered students can become to critically assess sustainability challenges and craft proposed solutions. Similarly, Hegarty et al. (2011) indicate that at RMIT, their introductory course offers students a vision of empowerment in the hope that this shapes their sense of possibility about the future of the world and their efficacy in it. They noted, however, that in confronting their values and preconceptions concerning sustainability problems, discomfort was evident amongst participating students. In an earlier work, Sterling had observed that “too much environmental knowledge (particularly relating to the various global crises) can be disempowering, without a
deeper and broader learning process taking place” (Sterling 2001p19). He suggests that full engagement of students involves their critiquing much current thinking and practice, but also visioning and designing a credible and practical alternative. Experience in teaching GEOG 4330 certainly aligns with his observation; the visioning process of creating their own manifesto appears to have empowered students to embrace the notion of change and challenge the status quo not just at the personal level, but at the higher levels of societal organization that they may one day be in a position to influence through their career choices.

**Conclusion: stand alone courses are a foundation for curriculum change**

Can a stand-alone course really make a substantive contribution to education for sustainability and advance sustainability learning outcomes? A qualitative evaluation of the outcomes from GEOG 4330 shows that each new offering of the course produces a different set of class manifestos demonstrating both the ability of a set of students largely new to the subject to quickly grasp and prioritize a sophisticated set of prescriptions for action, and the heterogeneity of student opinion on the subject of sustainable development and what it takes to achieve it across our society. In part, this heterogeneity reflects the considerable diversity of the student body at CSUEB which is ethnically diverse, has a growing proportion of international students, has a majority of female students, and has a wide range of ages from teenage high-school graduates to returning mid-career adults seeking retraining. Everyone’s experiences and values are different and inform their perceptions of what sustainability involves and requires. This is to be expected and of course tracks to the fact that no universal definition of sustainability exists across academia or in society. That said, with respect to the visioning process from the individual scale up through to the global, students appear to find it relatively easy to articulate their ideas concerning sustainability for the micro- and meso-scales of individual lifestyles and corporate practices for sustainability, levels that they are most intimately engaged with. They find it harder to do so as they progress to the global scale and thus exhibit some discomfort and frustration with the challenge. However, that notwithstanding, it is remarkable the degree to which they can still develop interlocking and complimentary actions up through increasing levels of scale. Responses from students suggest that scaling the visioning up from the local to the global strengthens their ability to articulate each new level of prescriptions even though they have little direct experience and only limited knowledge of the systems that operate at the larger scales. By working systematically through the issue of sustainable development by looking at how adversity trends and the forces of unsustainability present themselves at increasingly complex and aggregated scales of human organization, the pieces of the puzzle and the alignment of actions can fall readily into place as recurring obstacles and opportunities become recognizable. Though sustainable development is now an enormous field, as demonstrated by the more than 40 million English-language web pages devoted in some way to it by late 2011, the experience of teaching GEOG 4330 suggests that with an appropriate pedagogic approach, it can nevertheless be readily grasped and understood as a societal challenge in a single “stand-alone” course.

The flaw is, of course, that GEOG 4330 and the other handful of courses at CSUEB that focus directly and centrally on the subject of sustainability are currently taken by only a small minority of the student body who elect to follow this as yet non-mainstream avenue of study. The AASHE STARS Sustainability Tracking, Assessment and Rating System recognizes institutions that have formal education programs and courses that address sustainability because they help equip their students to lead society to a sustainable future. Out of the ten rating categories related to curriculum, the lion’s share of points are determined by the abundance of courses meeting criteria that qualifies them as sustainability focused and sustainability related (AASHE 2012). Maximum points go to those institutions with at least 10% of their courses judged to be sustainability focused and an additional 30% or more judged to be sustainability related. A multi-disciplinary campus sustainability committee must have formally established criteria for what qualifies as each. All courses must be judged one or the other, or neither, but not both. Currently,
the majority of higher educational institutions in the United States lack such formal criteria and have much fewer sustainability-focused courses. That said, a benefit of a “stand-alone” sustainability focused course like GEOG 4330 is that although few in number, as sustainability becomes an institution’s objective, they can become springboards for broader inclusion of sustainability across the curriculum as their presence in the classroom and the actions of the faculty who teach them and students who take them permeates campus culture through a variety of mechanisms. As pointed out by Hegarty et al. (2011), “stand-alone” courses can become a point of entry for sustainability studies within an institution. Developments at CSUEB illustrate this quality. In 2011, efforts began to more fully embrace education for sustainability as an explicit part of the university mission beginning with the convocation address of the new President who pledged sustainability as one of the priorities of his tenure. Supported by the new Provost, campus-wide efforts to develop explicit institutional learning outcomes (ILO) for all graduates will be completed by the end of the 2011-12 academic year, the final draft set including a proposed ILO that all graduates be able to “act responsibly and sustainably at local, regional and global scales”. Having joined ASHE in the fall trimester of 2011, the Provost’s office followed this up in the winter trimester of 2012 with the inauguration of CSUEB’s first faculty learning community (FLC) on the subject of “Sustainability & Pedagogy” to begin promoting the development of new sustainability focused courses like GEOG 4330 in other disciplines. The use of FLCs to promote education for sustainability has been adopted at other institutions such as Emory (Eisen and Bartlett, 2006) and Temple (Barnett et al. 2010) universities. The CSUEB FLC seeks to achieve what Ceulemans and De Prins (2010) suggest is the most promising approach for college graduates to integrate sustainable development and its principles in their future professional lives, that of having sustainability intertwined as a concept in regular disciplinary courses all across the different majors offered in the curriculum (Lozano 2010). The new courses developed will place sustainability more centrally and visibly into degree programs at CSUEB compared to its current ad-hoc and piecemeal presence largely invisible within the curriculum. An expanded list of sustainability-focused courses makes feasible the emergence of an interdisciplinary certificate, minor or major program in sustainability studies for interested students as the profile of sustainability is raised on a campus. This is an increasing trend at American universities as identified by Lee (2011) and will be accelerated by such efforts. It is imperative that such efforts succeed and more discipline-based courses like GEOG 4330 be created at higher education institutions. As pointed out by Hegarty et al. (2011), our communities’ futures depend on the active endorsement of sustainability by all professional fields and disciplines and without this, the goals of the UNDESD will likely not be realized. With respect to sustainability and the discipline of geography, according to Lee (2011), sustainability and geography programs benefit each other, and many geographers are well positioned to participate in sustainability degree programs by creating a sustainability concentration in geography or specifying geography as a core area in a sustainability program. As most American universities still do not have sustainability degree programs, Lee believes that geographers in particular should play a key role in developing the programs to increase geography’s participation and leadership (Lee 2011). This key role for geography has been demonstrated at CSUEB where the Geography and Environmental Studies Department have leveraged GEOG 4330 to create a suite of courses that are either sustainability focused or clearly sustainability related (roughly 40% of its courses could be reasonably judged to be sustainability focused or sustainability related based on their content), permitting the development of a certificate in Sustainable Resource Management. This certificate can be added to a student’s degree, not just by geography majors, but also by any major across campus completing a five-course set of elective classes. It provides the nucleus, therefore, for a step up to an option, minor and eventually a major in sustainability. Other disciplines, not least geography, should be encouraged by this example, assured that just a few dedicated courses focused on sustainability can become an effective beachhead in a broader institutional effort to transform the curriculum and thus meet the
aspirations of the UNDESD sooner rather than later, one university and college at a time.

References


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Biographical note

Professor Michael Lee has spent 20 years teaching, researching and consulting in sustainability and related areas. He received his doctorate in geography from the London School of Economics in 1989 where he researched water harvesting systems, then consulted internationally on water conservation and protection. He first taught at the Pan-American School of Agriculture in Honduras where he managed part of a USAID-funded global Sustainable Agriculture and Natural Resources Management program. He joined the Department of Geography and Environmental Studies at California State University East Bay (CSUEB) in 1996 and soon thereafter developed his course on Sustainable Development. He also teaches classes on Sustainable Resource Management, Sustainable Cities, and Global Change among others, and has consulted nationally and internationally on different aspects of sustainability, most recently on sustainable water resources and sustainable food systems. He was appointed CSUEB’s Faculty in Residence for
Sustainability & Pedagogy for 2011-12. He would like to thank all the students who have taken GEOG 4330 Sustainable Development over the years for their creative visioning and for providing the inspiration for this paper.