Enabling Sustainability in Management Education

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Abstract

Functional integration of business curricula is difficult, largely because business schools tend to teach their disciplines from departmental silos. Additionally, many business schools struggle to provide meaningful, applied learning experiences that engage increasingly less-experienced MBA students. In this chapter we narrate the history of our integrative course built on the concepts of sustainability, experiential learning and practical fieldwork. ‘Going Green Globally’ (or simply ‘G3’) is a cornerstone, intensive and innovative program that brings sustainability knowledge, global best practices and financial results to local organizations. It is a transformational intervention that inspires our 40+ full-time students each year to shift from solely profit and external motivations toward expressing personal values and intrinsic incentives as they seek solutions to business problems which combine a short-term, bottom-line rationale with long-term sustainable models. We developed a framework, the G3 Sustainability Compass, to guide these considerations. Now, after a decade of continuous reflection and change based on feedback from students, faculty, sustainability experts and business practitioners, we present a program that has been tested and shown positive economic and social results. This curricular action research is offered as an exemplar of how the topic of sustainability can be used as a template for curriculum integration and applied learning that harnesses student passion while creating opportunities for business schools to engage with their external communities in meaningful ways.

Key Words: Business curricula integration; Ethics: values, integrity, professionalism; Global best practices; Natural environment and organizations; Strategic sustainability systems; World without walls

Introduction and Discussion of Problem: Curricula in Need of Change

As the business and academic communities entered the new millennium, surveys and experts identified gaps between what was being taught in business schools and what was actually needed by businesses. Scholars accused business schools of being too out of touch with the ‘real’ world by focusing on empirical research which had little application for business leaders (Bennis & O’Toole, 2005). Many found fault with a perceived lack of integration of functional areas (Mintzberg & Gosling, 2002), overall relevance (Pfeffer & Fong, 2004; Rubin & Dierdorff, 2009), and hands-on learning-by-doing (Mintzberg, 2004; Pfeffer & Fong, 2002). These
observations were echoed in non-academic settings as well. For instance, the Organisation for Economic Co-operation and Development (OECD) and educational organizations focused their criticism on the lack of attention on developing competencies (Ananiadou & Claro, 2009), especially the need to develop leadership behaviors (Dunning, 2000). All called for a more integrated and applied approach to business education. At the same time, accreditation changes required business schools to demonstrate high levels of student learning and accomplishment through learning outcomes assessment.

At the same time, sustainability was becoming part of the business lexicon. Organizations had a long history of compliance-based legal departments but were now exploring sustainability as part of their strategy. Not all approaches were sincere, with the result that ‘greenwashing’ was coined as a term in the late 1990s. By 2002, at the World Summit on Sustainability Development, the Greenwash Academy Awards were created to draw attention to companies that were using false sustainability claims to appear ‘green’ (‘Greenwash 101’, nd).

Business schools have historically reacted to the challenge of sustainability by adding new courses to their existing curricula. Sharma and Hart (2014) refer to this approach as ‘saddle-bag’ since it does not integrate these topics into the core functional areas of business. Indeed, a cursory review of some (but certainly not all) highly-ranked MBA programs suggest four other broad-based approaches to bringing sustainability into their curricula:

1. Elective courses are offered for interested students. A private, elite West coast university that ranks highly in all MBA surveys including the Aspen Institute’s Beyond the Grey Pinstripes offers many electives in topics like clean energy, sustainable energy, sustainable food production and sustainability as a market strategy.

2. A track in sustainability or corporate social responsibility (CSR) is offered to interested students who may specialize in either a traditional business area like finance or in newer options like sustainability. Some programs combine topics like sustainability and entrepreneurship while others focus solely on sustainability. At one private Northeast liberal arts school, MBA students take classes in a variety of topics and may get hands-on experience through summer internships or project-based classes. Another example of this approach comes from an Ivy League graduate school that offers a concentration in global sustainability.
3. Sustainability is covered as a topic within a more traditional class in corporate social responsibility or business ethics. The Website of an Ivy League MBA program states that its ‘Business and Society’ class covers the following topics: ‘climate change, socially responsible investing, the pharmaceutical industry and its pricing policies, microfinance, executive compensation and inequality, for-profit educational institutions, outsourcing and monitoring supply chains, sustainability reporting and triple bottom line issues.’

4. Sustainability is broadly covered as part of programmatic learning goals, with pieces of the topic embedded in a variety of classes over the course of the curriculum. For example, a full-time MBA program from a highly-ranked, business-focused school lists six learning goals, one of which is ‘Social, Environmental and Economic Responsibility.’ Similarly, a well-known European MBA program integrates sustainability concerns in its core courses as well as offers a Masters of Science in Sustainable Development.

When sustainability is offered as an elective or a track, students can opt for more in-depth education on sustainability which might include a hands-on experience, such as seen at an east coast ‘public Ivy’ business school. Often, students with backgrounds in engineering or environmental studies gravitate to these programs so that their skills, readily adaptable to sustainability, permit them to delve deeply into these topics. However, schools may end up with a more technical curriculum than the typical business student finds approachable. Schools also risk educating those students who are already passionate about sustainability rather than ensuring all students appreciate the subject. When sustainability is discussed across the curriculum or as part of a broader CSR class, students see the issue from a variety of vantage points and can connect it to more established disciplines but with the risk that since no one ‘owns’ sustainability it becomes one aspect of one case discussion in one or a few classes.

These approaches neglect the value of sustainability as a bridge into practical experience as well as an academic fulcrum. The former head of the United Nations Global Compact’s Principles for Responsible Management Education (PRME) Secretariat, Manuel Escudero, called for more examples of good experiential learning practices in developing sustainability leadership (Alcaraz & Thiruvattal, 2010). The UN found a growing consensus among CEOs that management education in business schools was an important enabler for sustainability in their organizations (Matthew, 2011). And to support the move of organizations
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... toward sustainability solutions, scholars called for more faculty training and engagement around sustainability (Rusinko, 2010). The June 2015 PRME meeting in New York City again called for more integration and experiential learning. This gathering of hundreds of university presidents and business school deans, professors and students, business school accreditation bodies and regional associations, companies and governments, civil society and corporate sustainability thought leaders identified the role of business and management education in responding to the proposed UN Sustainable Development Goals (see http://www.unprme.org/global-forum/).

We have taken yet another approach to sustainability education. G3 is a required part of our core MBA curriculum that is designed for students from technical and non-technical undergraduate programs, most of whom have limited work experience. Sustainability is discussed in other core MBA classes, and all of our students are then immersed in the topic during G3. Sustainability is not a class (elective or otherwise); rather, it is an intensive experience at the nexus of all other MBA classes that becomes the integration vehicle for our first year curriculum (hence, it is a ‘cornerstone’ rather than a ‘capstone’). G3 is both significant and systemic that cuts across our curriculum, connects our departments and involves our business School with our business community. This chapter reports on the success of the G3 program and offers suggestions to others contemplating greater integration, relevancy and community engagement. We begin with an overview of our context and recent program challenges and changes, followed by what we refer to as the ‘G3 Compass’ as our overarching framework, offer examples of its application to actual companies and then reflect on the results of this initiative. Our Appendices and Figures illustrate our experiences.

The UAlbany^2 G3 Program
In 2005, our MBA program was like most other business schools: students were required to take introductory skills-based classes in accounting, economics, organizational behavior and statistics followed by functional courses in finance, human resources, information technology, marketing and operations. After completing this work, students chose electives, had a ‘field experience’ and finished with a capstone strategy class. However, our student demographic had steadily changed throughout the 1990s and early 2000s. Students were coming to graduate school with less real-world experience and a more of a desire to see how business classes were relevant to
the world around them, but instead found the classes theoretical and isolated from each other. Faculty rarely collaborated in the classroom and the curriculum lacked integration.

The cornerstone of our full-time MBA program, ‘Going Green Globally’ (or simply ‘G3’), brings together local public and private organizations, a variety of campus resources and our MBA students to produce tangible financial results, environmental benefits and career opportunities. Broadly defined, sustainability looks to minimize consumption of global resources in a way that allows an organization to accomplish its objectives in a cost-effective manner but with an expressed goal of reducing pressure on (instead of burdening) environmental systems. But the term ‘sustainability’ in G3 is a double entendre that refers to sustainable business strategies and models as well as sustainable development that protects societies, cultures and the environment (Starik, Rands, Marcus, & Clark, 2010). Our program tries to address both of these simultaneously.

The G3 program supports our student and faculty interest in sustainability and cross-discipline integration. It begins when students have finished what might be called the typical MBA functional core of their first year courses. Our rationale for including G3 into our full-time MBA program was based on several factors. We felt that the standard MBA core curriculum was not strongly integrated. As an educational goal, we want our MBAs to be forced out of functional silos and understand the interconnectedness of all business processes: how finance, human resources, leadership, marketing, operations, regulatory policy, short-term objectives and long-term goals must all be factored into a successful strategy in order for the organization to succeed in the global marketplace. We also wanted to create opportunities for relatively inexperienced MBAs to learn from hands-on business placements rather than just text books, cases and lectures. We specifically looked to include opportunities for students to perform under pressure, demonstrate professionalism under fire and meet expectations from multiple stakeholders. Finally, we wanted to engage with business and community partners to bring real-world relevance into our curriculum.

Two years were needed to reshape and implement a more applied curriculum to meet our changing student needs and the growing interest in sustainability. Moreover, as the popularity of sustainability and the field of sustainable management evolved, so did our G3 program. Each year, we study the program process and results through a feedback-rich review,
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regularly tweaking and revising its components and activities. We offer our experience with a program that now has a decade of refinement as action research. It is fundamentally different from the way many MBA programs introduce sustainability in that it is required of all students, intentionally integrates all prior functional courses and skills learned, relies on an extensive partnership between our faculty and practitioners and embeds our students in industry where they work on a sustainability-themed project defined by their client organization.

Previously, our classes and concepts were not formally integrated; students then chose their concentration and dove deeply into a specialization. To address this and the other previously mentioned shortcomings, we created G3 as a large, complex, intensive, extensive and dynamic project that occurs during the last two weeks (including working through the weekends) at the end of the first of two years of our full-time MBA program. All other classes finish at that time to allow students to focus completely on G3. Other than shortening the spring semester’s classes by two weeks, the curriculum remained the same. However, since G3 was positioned as a cornerstone experiential program and the functional courses ended prior to the end of the semester, MBA faculty are expected to participate by providing feedback, mentoring and support to our student teams. Rather than having students break for the semester or move into their summer internships, students at UAlbany dive directly into the integrated and applied learning of developing comprehensive sustainability initiatives and strategies for client organizations. (See Appendix 1 for the most recent syllabus.)

G3 is organized as a consulting engagement, not a class. It is a required component of the first year of the curriculum. The client organization (not the School of Business) provides the focus for the teams’ work, with team members acting as business professionals rather than students. Initially, client organizations came from a network of relationships maintained by the School of Business and its faculty including executive/alumni and members from the School’s Advisory Board. As word of the success of the program spread, we now vet and select clients based on the types of projects they provide for our student teams. In this way, G3 creates partnerships between the School, students, faculty and myriad community partners and stakeholders.

Teams are challenged to find bottom-line cost savings and top-line revenue enhancements through comprehensive recommendations presented to their clients. We
provide a broad taxonomy of ten ‘problem domains’ from which projects come. (See Appendix 2 for our problem domains and examples of past G3 projects.) Two of this chapter’s authors are the ‘Managing Partners’ of the firm who organize all aspects of G3 and manage the program; the third co-author provides expertise on systems thinking which, again, drives curricular integration. Other MBA faculty attend presentations, help with grading and provide support for teams tackling projects from their area of expertise. Our MBA program is relatively small, with a cohort structure of approximately 40+ students in the class. Each year, we have been able to work with five or six client organizations. Teams are given information about the client companies and are allowed to ‘bid’ on which one they would like to work with/for. Teams are, however, determined by the Managing Partners in order to deploy balanced teams for all clients.

Students attend classes with a cadre of experts from a variety of fields related to sustainability and apply knowledge to their clients’ sustainability challenges. ‘Team Coaches and Executive Life Lines’ (or ‘T-CELLs’) make themselves available to the students throughout the two-weeks, ensuring quick turnaround for clients and needed technical, policy and business expertise. Through this program, we developed ways to partner with leading companies, not-for-profits, public authorities and sustainability experts in our geographic area (the Capital Region of New York State). We responded to the questions faced by organizations struggling to focus on the challenges and opportunities of sustainability. And the G3 program helped us respond to the changes in business school accrediting standards (AACSB International Accreditation Standards, nd) and our university’s regional accrediting body standards (Middle States Commission on Higher Education, 2006).

We want our students to learn both the theoretical underpinnings of each business functional area and how to apply this knowledge to real-world situations. We want them to learn how to respond to pressing business problems and appreciate short-term, bottom-line pressures. We want them to understand the global context necessary for solving today’s business problems and how to anticipate those they will face tomorrow. One much-cited article urges current MBA programs to embrace dramatic change and not tinker at the edges of a traditional curriculum: ‘The entire MBA curriculum must be infused with multidisciplinary, practical and ethical questions and analyses reflecting the complex challenges business leaders
face’ (Bennis & O’Toole, 2005). G3 accomplishes this by emphasizing applied learning, working on a project of monumental importance for their clients, situated in a global competitive context and utilizing knowledge and skills drawn from all the functional business disciplines. These requirements are beneficial for our students, our faculty, our MBA curriculum, our School of Business and our university. They also have an impact beyond our local community as the lessons learned are disseminated within client organizations and across their institutional networks. Additionally, G3 shapes our students’ experiences that they later bring to their careers. Moreover, by turning our focus to issues of sustainability (broadly defined) we have found a topic for which faculty, administrators and students share a passion.

We also wanted to develop something with market relevancy. While scholars criticize the MBA degree as being too focused on ‘selling’ career-enhancing outcomes (Pfeffer & Fong, 2004), studies show that advancing their careers is a top priority for MBA students (Danko & Anderson, 2005). If the job market values MBA students schooled in an interdisciplinary, hands-on approach to problem solving which drives project management and team management skills, it would seem to be advantageous for the School of Business to proceed with this new approach. We found early support from key executives in the energy sector as well as from our School’s Advisory Board and began development work in the fall of 2006. We feel we have found both a concept and an implementable program which prepares our students for the ‘next economy’ (McCann, 2006).

We have faced challenges we did not anticipate, revised the program in several significant ways and found both internal and external partners we never imagined. G3 evolved organically rather than having an initial grand vision. (See Appendix 3 for a chronological summary of how G3 adapted to our institutional context.) For example, in its first iteration G3 did not have actual client organizations; rather, student teams were assigned publically-traded companies and, using research and traditional classroom analysis, developed cross-functional and strategy recommendations which were presented to the faculty. Outside partners encouraged us to move to a community engagement model and work with local companies. Moreover, all teams must view their client’s issues from a multifaceted business perspective. To do this, we underpin our program with a strong systems perspective, again bringing this analytical framework to organizations seeking new ways to view intractable problems. Our
MBAs now have the flexibility to look at sustainability through a wide lens while focusing on issues of importance to their client organizations.

We next present the framework we developed, which we refer to as the Sustainability Compass. We then provide examples of sustainable business models that add value, the heart of the Compass. We conclude with G3 outcomes and lessons learned.

The Sustainability Compass
We developed what’s come to be called a ‘Sustainability Compass’ to help balance competing environmental pressures on managers and organizations. We believe that these four pressures cover most issues of concern and therefore force managers to consider valid claims that affect sustainability as well as provide analytical tools to make sound decisions. The outcome should be a new value proposition and business model that is better able to respond to and incorporate these claims. In this section, we explain each of the four points the Compass attempts to make. The following section offers specific examples of successful business models that take this approach.

World Without Walls (WWW)
There are several meanings to this first aspect of the Compass. At the global level, it’s obvious that we live in an interdependent world where goods and services produced in one place will impact other parts of our planet. Sometimes, these result in such ‘bads’ as resource depletion, pollution, climate change, poverty and diseases. At the organizational level, companies will require ‘boundaryless’ approaches that foster internal and external collaboration. In addition, information is abundantly available today about approaches others have taken and how their solutions have worked.

To address these, we have the MBA teams submit two white papers that research and report on global best practices on issues of relevance to their client organization. These 5-7 page reports cover issues from what we have identified as sustainability problem domains. Sometimes, organizations focus on immediate problems and neglect long-range threats and opportunities. Therefore, our students try to convince their clients to consider a change in their long-range thinking by showing what other organizations in other parts of the world are doing.
These best practices often come from outside the client’s industry. Using examples and recommendations, the research results should be compelling enough to engender action.

Regardless of issues selected and suggested recommendations, these problems are typically too enormous for any single organization to tackle alone. Hence, we encourage students to consider collaborating with partners from industry, government, non-profits, education and other organizations that might face similar problems. Moreover, solutions must be implemented systemically throughout the organization if they are to succeed. All these ‘boundaryless’ approaches require organizations to tear down their horizontal, vertical and external barriers.

*Natural Environment and Organizations (NEO)*

Are the best things in life free, as some have claimed, or was Nobel Memorial Prize in Economic Sciences recipient Milton Friedman correct when he said there’s no such thing as a free lunch? There are numerous situations where the most important scarcities lie outside the market mechanism and the realm of plausible technological substitution. These externalities are costs of industrial activities that corporations or other beneficiaries do not pay for. Besides the obvious ill effects of polluting the air, water and land is the damage caused by destroying such natural habitats as prairies, wetlands and ecosystem services. These have popularly become referred to as ‘natural capital’ that nature provides but have no cost attached.

Conventional wisdom suggests that ‘More is better’ ... ‘Growth is inevitable’ ... ‘Self-centered egoism leads to community welfare’ ... ‘People make rational, informed choices’ ... ‘Gross national product is synonymous with human welfare’. Clearly, economics alone underprices the value of natural capital which only encourages its depletion. There are alternative measures of welfare, progress and sustainability, such as Full Cost Accounting (FCA), Genuine Progress Indicator (GPI), Green Gross Domestic Product (Green GDP), Happy Planet Index (HPI), Human Development Index (HDI), Index of Sustainable Economic Welfare (ISEW), Living Planet Index (LPI), and Quality-of-Life Index (QLI). Indeed, several international organizations have taken the lead in developing a truer accounting of the value of nature, such as the Global Reporting Initiative (GRI available at [https://www.globalreporting.org/](https://www.globalreporting.org/)) and the International Standards Organization (ISO 14000 available at [http://www.iso.org/iso/home/standards/management-standards/iso14000.htm](http://www.iso.org/iso/home/standards/management-standards/iso14000.htm)).
In *The Portrait of Dorian Gray*, Oscar Wilde observed that ‘people know the price of everything and the value of nothing.’ One classic study that valued the world’s ecosystem services at $33 trillion in 1995 followed up with estimates of $46 trillion in 2007 and $125-145 trillion (depending on how estimated) by 2011 (Costanza, et al., 1997; Costanza, et al., 2014). This represents a significant fraction of the World Bank’s estimate of global domestic national product of, respectively, $205 trillion (16.1 percent of which is attributed to natural capital), $388 trillion (11.9 percent), and $487 trillion (25.7-29.8 percent) for those years. Imagine an economic system where 10-30 percent of total value is not even accounted for, thereby treated as being worthless!

The reality is that ecosystem services contribute to human health, jobs and safety in numerous undervalued ways (United Nations Environment Programme, nd). For instance, *provisioning services* provide those goods or products we simply take for granted such as food, freshwater, wood, fiber, minerals, medicines and construction materials. Less obvious are the *regulating services* that provide natural processes to control climate, disease, water purification, irrigation, wastes and so on. *Cultural services* offer non-material benefits that are still important such as aesthetic, spiritual, educational, recreational and artistic. Finally, *supporting services* maintain all the other services such as nutrient cycling, soil formation, crop pollination and primary production.

**Ethics: Values, Integrity, Professionalism (VIP)**

How ‘green’ are your values? What do managers truly value? There are numerous online footprint calculators (such as carbon, ecological, resource demand) that permit managers to compare their different personal belief systems and behaviors. Certainly, the necessity of integrating them in an organization provides both challenges and opportunities. Professional managers have a duty as institutional custodians to balance stakeholder relationships, with environmental sustainability often the most significant social responsibility facing them today – in a word, managing with integrity. The word ‘integrity’ comes from the Middle English *integrite*, from Latin *integritas* (soundness), from *integer* (whole, complete) and also gave us the word *integral*, meaning forming a whole; *integrate*, to bring together or unify; and *entire*, intact, sound, uncorrupted. According to Teal (1996), someone with integrity communicates clearly
and consistently, is an honest broker, keeps promises, knows oneself and takes personal responsibility.

Having an internal system of moral standards, managers who are ‘VIPs’ have a steadfast adherence to a strict moral or ethical code. Khurana and Nohria (2008) propose managers take the following oath: ‘My purpose is to serve the public’s interest by enhancing the value my enterprise creates for society. Sustainable value is created when the enterprise produces an economic, social and environmental output that is measurably greater than the opportunity cost of all the inputs it consumes.’ We believe that professionalism is about attitude, not aptitude. Being whole or undivided makes managers complete.

**Strategic Sustainability Systems (SSS)**

The open-loop value chain perspective of production shown in Figure 2a draws on neoclassical economic theory that places production capital at the center of developing value and wealth (Solow, 1957) where resources are transformed into output, some of which are considered products (‘goods’) and others are by-products or waste (‘bads’). In a world with infinite resources, unlimited capacity to absorb waste and perfect market information, companies would produce inventory until market demand is satiated. But in the real physical world, the sustainability of production depends on managing scarce resources, reducing waste and working with delayed and imperfect information about customers, suppliers and the environment. Systems thinking helps understand the dynamics of values-driven innovation, organizational transformation and the integration of more sustainable business practices (Nattrass & Altomare, 1999). We illustrate this closed-loop systemic perspective in Figure 2b.

<INSERT FIGURES 2a & 2b ABOUT HERE>

Simply, a system is a collection of interdependent parts (with flows and accumulations) enclosed within a defined boundary. The earth has four major systems: The lithosphere (soil, rock), hydrosphere (water), biosphere (living organisms), and atmosphere (air). Human activity is disrupting these systems in complex ways. To demonstrate this point, we introduce the ‘Tragedy of the Commons’ (Hardin, 1968) at the beginning of G3 through Fishbanks© (Meadows, Sterman, & King, nd). In this exercise, modeled after the behavior of actual fishing grounds, teams compete to maximize their economic returns from a shared resource. Most
teams employ a growth strategy that maximizes profits in the short run but with the collective results depleting the fishing stock, leaving productive assets idle and with teams unable to generate sufficient revenues to cover operating costs. As noted by Hardin (1968), the tragedy is that individual incentives to maximize self-interest can lead to the abuse by and ruin of all. This illustrates also the ‘Commons Conundrum’: While enlightened business leaders know that in the long-run they must preserve resources, in the short term they do not take any action that would reduce profitability if others do not act the same way (Miesing, Krzykowski, & Rich, 2010).

During the Fishbanks© debriefing, we introduce a systems thinking perspective that explains how the seemingly rational actions of each team create an unsustainable outcome. The exercise starts with a functioning and sustainable marketplace and some liquid capital for investment. Purchase of additional production capital (fishing boats) increases the rate at which resources (fish) are extracted. If the rate of fish depletion is greater than their ability to reproduce, then the stock of resources is threatened and eventually destroyed if extraction by continued overfishing remains unchecked. While this is a scenario seen over and over again in the real world (Kurlansky, 1997), students are still surprised at the inevitable self-defeating outcome. We complete the debriefing with a discussion of what actions could be taken to create a sustainable fishing program and prevent the destruction of the resource, including fishing quotas, monitoring the state of the fish stock, substituting different types of fish and technology change. Thus, using a computer-based simulation supports the development of complex and realistic decision-making skills and provides our students with yet another opportunity for hands-on, integrated learning. By positioning Fishbanks© just before teams begin their G3 client work, students are allowed to experiment with decision-making in a relatively risk-free environment (Salas, Wildman, & Piccolo, 2009). This scaffolding of learning experiences provides students with opportunities to evaluate their performance in a variety of managerial settings.

Systems thinking provides an important tool for analyzing how changes in business models can make them more strategic and sustainable (both economically and environmentally). For example, reducing the accumulation of waste is a key element of many sustainability programs. When put into a systems context, we see that waste accumulates as a function of resource use, production and post-production activities. Slowing the growth of waste is a good step, but it only delays the effects of accumulation. Relying on suppliers or
consumers to create less detritus shifts the burden of waste management, but often does not have a significant impact on the amount of waste in the system. In addition, unchecked growth of waste increases pressures for its remediation. Organizations can take proactive responsibility for reducing waste or they can permit these pressures to grow and have regulatory action taken against them. These are complex and interdependent challenges requiring strategic thinking and long-range planning which in and of themselves are challenges to organizations facing competitive pressures. Finding time and resources to develop short-term tactics and implementable steps is often beyond the day-to-day time constraints most leaders face. Several counter-intuitive results emanate from this experience:

1. **Law of Unintended Consequences**: Well-meaning policies can backfire, with many current examples found in wide-ranging industries. 
   - Road building programs designed to reduce congestion result in increased congestion as people move to suburbs and commute further distances to city-hubs 
   - Large-scale crackdowns and violent responses to terrorism which create more hatred and actually recruit more terrorists into terror cells 
   - U.S. policy on forest fire suppression results in more dead forest wood which feeds uncontrollable forest fires 
   - Low tar and nicotine cigarettes result in people smoking more cigarettes 
   - Antibiotics have stimulated the evolution of resistant pathogens 
   - Sony Picture’s minor movie ‘The Interview’ goes viral after North Korea threatens to shut it down 
2. **Fallacy of the Infinite Resource**: Misleading market signals (for example, ‘no limits to growth’) increase extraction and exploitation, only furthering resource depletion. 
3. **Productivity Speeds Decline (‘Jevons Paradox’)**: Technological progress that increases the efficiency with which a resource is used tends to increase (rather than decrease) the rate of consumption of that resource. 
4. **Change Occurs Precipitously and Non-Linearly**: Threshold effects upon reaching capacity can be dramatic, resulting in sudden crashes and system shocks (witness, for instance, peak oil and sudden shifts in global weather patterns). 
5. **Erroneous Forecasts**: Long delays for information (such as effects of waste) take time to appear, even when causality is known. 
6. **... but Correct investments in correct places ripple throughout the system**: There are abundant opportunities to reduce resource and energy use, by-products and waste, unnecessary transportation and packaging ... all of which are avoidable costs!

This final point of the Sustainability Compass helps the MBA teams frame and apply these constructs to their client’s challenges. Students have found this framework useful for
organizing their sustainability messages quickly and consistently. We next offer some examples where companies have successfully developed sustainable business models.

**Sustainable Business Models that Enhance the Value Proposition**

Integrating our Sustainability Compass should help an organization steer toward a more meaningful business model that offers a better value proposition to all stakeholders that result in significant business benefits. For instance, according to a recent Ceres study, 53 Fortune 100 companies collectively saved $1.1 billion a year by setting renewable energy and greenhouse gas emissions goals resulting in cost savings from reduced pollution and hazardous waste, reusing or recycling resources and operating with greater energy and operational efficiencies. In addition, revenues can be enhanced by creating differentiation that distinguishes companies from their rivals. Three exemplars explain this. Microsoft and IBM are ranked among the top ten in their environmental responsibilities and climate change disclosure, policy and performance. Microsoft has assets of $172 billion but its reputation is valued at $69 billion, or 40% of its assets. IBM’s reputation has been valued at $50 billion, or 42% of its $118 billion in assets. UPS also scores high for its action towards climate change, and its reputation value of $12.5 billion is 35% of its $35 billion in assets (all data from ‘CR’s 100 Best Corporate Citizens 2015’, nd; *Fortune* ‘Global 500’, nd; ‘The World’s Most Valuable Brands’, nd). These results should not be surprising. A reputation for environmental excellence and making and delivering sustainable products and services not only attracts environmentally-aware customers but also results in better design, higher quality, positive publicity and enhanced reputational capital, and respect from the local community. In this way, organizations can recruit talent and increase employee engagement, productivity, retention and loyalty. Sustainable companies reward their shareholders with higher returns at lower risk because of enhanced image, improved quality and greater customer loyalty, all known to be sustainable competitive advantages.

These are opportunities for all organizations; our MBA teams help their clients explore options they identified for short-term recommendations and long-term research. Sustainable organizations might be able to reconceive or reposition product offerings, create imaginative new products and processes to expand consumer needs or open markets that were previously impenetrable. Sustainable organizations also foster innovation and entrepreneurship by: changing culture; reporting, communicating, even boasting sustainability results both internally
and externally; and in general reconfiguring the value chain and greening the supply chain. All this requires sophisticated strategic planning to help decide where and how to make investments. We now briefly examine how each link in the value chain can contribute to more sustainable business models.

First, organizations decide what to ‘buy’ and these can and should include sustainability considerations. For example, purchases can be made based on quality, reliability, relationships, cost and environmental impact. Procurement decisions can include selecting vendors and suppliers who utilize fair trade and sustainability practices. Picking ‘green’ partners and siting facilities based on environmental criteria are also ways organizations demonstrate their sustainability intentions. Finally, buildings certified by the US Green Building Council’s Leadership in Energy & Environmental Design (or LEED, see http://www.usgbc.org/leed) exemplify the tradeoffs in making major investment decisions to save money (such as from reduced energy usage), demonstrating sustainability leadership and creating a work environment that reduces human stresses while encouraging personal sustainability choices.

Second, organizations integrate sustainability into their ‘make’ decisions by minimizing waste in their production facilities and internal processes. They can develop plans to increase recycling as well as reduce pollution and greenhouse gas emissions. By employing energy-efficient equipment and/or alternative energy sources, operational efficiencies can be gained while also reducing environmental burdens. Dissemination of ‘clean and green’ technologies, such as solar panels, can improve production and installation efficiencies that will reduce costs for subsequent adopters.

Third, organizations should consider their carbon footprint when making ‘sell’ decisions. Making products and services that minimize harmful environmental impacts can enhance reputation, provide additional selling features and otherwise benefit the organization and its customers. Similarly, product packaging, transportation, logistics and disposal decisions made with an eye on sustainability benefit customers which in turn can benefit the organization and the environment. Companies employing ‘Zero to Landfill’ strategies demonstrate sustainability leadership but also bring incentives, innovative designs and new products to market. Further, some organizations introduce customer education programs to reduce consumption of resources and energy and to be more knowledgeable about proper ways to dispose of waste.
Finally, leaders should infuse sustainability throughout their organization’s culture and operations. Employees can be further engaged through conducting life cycle assessments, providing incentives to save energy, encouraging increased recycling and reduced waste and bringing sustainability initiatives into their personal lives.

Beyond the focal organization, external stakeholders also play a role that affects organizational decision making. Regulatory activity and incentives influence how organizations prioritize short-term tactics. Governmental attempts to create or alter markets (like emissions limits and carbon ‘cap-and-trade’ systems) can change long-term organizational strategies. Government regulations, country trading arrangements, demographic and social shifts, scientific and technological breakthroughs and other types of innovations can change industry practices and competition, even encouraging co-opetition and realigning stakeholders. Creating shared value is an example of such a change in an industry cluster (Porter & Kramer, 2011).

Through the Sustainability Compass, we have tried to reconcile the double entendre of ‘green’ (Siegel, 2009). But beyond the financial incentives that await sustainable organizations, there are key risks of not being sustainable. For instance, history has shown that violating the public trust will inevitably result in tighter regulation that is often more onerous and burdensome than what a reasonable voluntary approach would have been. Sometimes the backlash is expensive post-hoc remediation such as GE having to clean up PCBs from the Hudson River regardless of personal negligence or contribution. Even in the absence of punitive public policy, public shame resulting from the embarrassment of negative news exposure can be expensive. Competitors that seize the moral high ground will have greater market appeal and hence reap the rewards of being proactive in this arena. Finally, given the emerging consensus on climate change and its associated risks, does any professional manager today want to be held personally responsible for contributing to global warming and environmental decay?

Clinton and Whisnant (2014) identify five categories of sustainable innovations that serve as instructive role models which are germane to this chapter. One of these is environmental impact. For instance, anything online that moves the physical to the virtual will replace brick and mortar infrastructure with virtual services. Another example is producing on demand: providing a product only when consumer demand has been quantified and confirmed, such as Threadless Ts that are designed by artists and voted on by users to determine which go
into production. Rematerialization is a strategy that develops innovative ways to source materials from recovered waste to create entirely new products, such as TerraCycle’s ‘upcycle’ approach. Yet another category is diverse impact were alternative marketplaces – such as Tesla selling direct to consumers – that circumvent traditional methods of transaction. Or behavior change, such as Patagonia encouraging its customers to consume less of its products, can alter demand and market forces. Reconfiguring a product as a service, such as Interface Carpets that takes ownership for the product life cycle so consumers pay for benefits without being responsible for repair, replacement or disposal is another example. Finally, Uber, Spotify, Zipcar and Airbnb are disrupting traditional markets and show promise for a more sustainable economy by sharing resources to create a new level of engagement between perfect strangers who depend on mutual participation and good behavior.

G3 Outcomes and Lessons Learned: A Decade’s Retrospective
Our G3 teams have been able to find $100 000 for their clients’ bottom-line cost savings and/or top-line revenue enhancements through implementable short-term strategies. (We recently added the option of reducing carbon footprint but the teams preferred more tangible results.) In addition to the practical recommendations provided to organizations, our clients find the intensity and passion from a team of MBA students to be transformative. Many report heightened awareness of and interest in sustainability after partnering with us. And the infused energy from the short yet intensive duration of the program seems to jumpstart other initiatives that semester-long partnerships with academic institutions often cannot provide. For two weeks, everyone ‘lives’ sustainability while working with the team to provide needed data, technical expertise, financial assumptions and so on. At the end, many members from the client organization attend the final presentations that are also videotaped and given to the organization to share with senior-level managers who are unable to attend. It is perhaps counterintuitive to think that such a short burst of activity has long-lasting impact, but our clients repeatedly report that outcome.

As we reflect on G3, it is clear that our organization partners are highly committed to the program. Our ability to attract T-CELLs and guest speakers has, in some instances, outpaced our ability to integrate them into the program. Prominent corporate partners like National Grid and Battelle Memorial Institute have invested resources to support the program. We have also
garnered support from other academic and sustainability partners including faculty from the University at Albany’s College of Arts and Sciences, SUNY Polytechnic Institute (formerly UAlbany’s College of Nanoscale Science and Engineering), New York State Energy Research and Development Authority and New York State’s Department of Environmental Conservation. The program was recognized by the University by being a recipient of an innovative teaching grant and the President’s inaugural Award for Exemplary Community Engagement. G3 has been presented at the American Association for Sustainability in Higher Education and featured at industry and Chambers of Commerce meetings.

G3 has been recognized as an exceptional educational experience and for its ability to promote university-community engagement. Students’s internships and employment opportunities have increased due to their G3 experience. We attribute this to two factors. First, the experience in the renewable energy and sustainability sector has opened doors with our partner organizations where heretofore we had not had much placement success. And the experience of working with clients, managing multiple deliverables, performing under pressure and integrating business functions into a coherent strategy are skills valued by employers regardless of sector.

Client organizations brought many suggestions that reinforced the professional atmosphere that stimulates student engagement and added a boardroom reality. For example, clients suggested that final presentations be videotaped with DVDs provided to their senior leadership; non-disclosure agreements to be signed by students; and clients re-connect with their teams after the completion of G3 which strengthens networks and leads to recommendations and jobs. Sample feedback on our work supports our resounding record of achievement and relevance:

- ‘UAlbany has an MBA with teeth. Through its combination of field projects, real world scenarios and applications as well as the Going Green Globally (G3) consulting project, I have found a new career path which I previously had not even been aware of as an option. In combination with the learning experience, the contacts I made through these various environments allowed me to secure a perfect internship to help me transition from the academic to the professional working world. I couldn’t be more satisfied with
my choice of academic programs than I am with the choice I made with UAlbany.’ Full-Time MBA student working in this sector.

- ‘[We have] been proud to be part of the G3 program. We are very fortunate in that we have had the opportunity to install their great ideas in our new ... hotel. [We] had the opportunity to listen to all of the presentations for a variety of companies and in all cases the teams are hard-working and brilliant.’ President of a G3 Client organization.

- ‘[T]he project provided an incredible opportunity for my team to not only to develop a better understanding of the renewable energy industry but to utilize all of their acquired knowledge in finance, marketing, economics and strategic planning to determine how a factual company can position itself for future growth and create greater market acceptability of its core green technologies.’ A G3 team coach.

- ‘Having worked with and recruited at other top business schools in the country, I have not seen a program that so fully integrates the students’s first year learning, drives their creativity and challenges their problem solving skills to the degree that the UAlbany G3 program does. The real world nature of the situation compels the students to organize a multifaceted team, gather and research relevant business issues, create business scenarios and develop compelling solutions within an urgent time frame. The caliber of the work was top notch.’ A T-CELL executive.

- ‘As the individual who oversees all Corporate Social Responsibility and Environmental Sustainability efforts for [our organization], I have been involved with G3 in various capacities for the past five years. In that time I have witnessed as the program has evolved to become one of the most progressive and challenging sustainable business courses in the country. Working closely with nationally recognized thought leadership across many industries, students are required to develop solutions to real world business problems in a client focused environment that obligates work product excellence while fostering sophisticated communications and strong collaborative effort.’ An Executive Life Line.

- ‘By the last day, their detailed presentations ... are of a quality and complexity worthy of most corporate boardrooms.’ Another Executive Life Line.
Clients have been very supportive. We have worked with local organizations, global companies and companies whose headquarters and G3 contacts have been outside the local area. So far, we have found it important for clients to have the commitment of their senior-level executives. Our best clients have had long-standing relationships with our School or our faculty and made resources available to our teams. Students develop relationships that yield references, recommendations and referrals. Through G3, we have created the type of leadership talent the job market desperately wants and needs. By partnering with our clients, we have built the G3 program into a series of quality deliverables for which client companies are willing to provide a donation to cover their team’s expenses. This has allowed the School of Business to build the program’s capacity, develop a recognition and reward mechanism for faculty and organization partners, and further integrate G3 into the MBA experience.

This chapter described our unique context and history and how we developed a program to address deficiencies. Having explained our Sustainability Compass and offered examples of its application, we now close our program description with an update. UAlbany has just completed a subsequent revision of our full-time MBA program that will showcase G3 by moving it from part of another course to a completely independent, semester-long course titled ‘Business Sustainability in Global Perspectives’. While the details of the course are still being developed, we intend to retain the intensive two-week consulting engagement at the end of the semester. We consider this move as recognition of the program’s value and as a way for the University to elevate G3’s status by providing its students and faculty with recognition, rewards and legitimacy. As an experimental model, G3 served to establish sustainability constructs in a holistic way. Now that it is firmly established within a relatively small business school, we are able to sustain the management education innovation by moving it into more traditional teaching structures.

**Summary and Conclusions**

Calls for relevancy, applicability and student motivation in MBA programs continue today. Student perceptions of learning relevancy has recently been shown to be necessary for MBA learning transfer (Prince, Burns, Lu, & Winsor, 2015). Curriculum integration remains a challenge for business schools (Liesz & Porter, 2015). Current calls for change suggest that sustainability (among other topics) can be a transformative catalyst (Siqueira, Ramos, Kelly, Mnisri, & Kassouf,
We offer a tested approach to placate critics, engage students, integrate curriculum and faculty and partner with external communities. Our desire is for readers to reflect on our experience and relate it to their curricular challenges in the hope that they will be able to develop a sustainability program that is relevant to their stakeholders.

In 2005, UAlbany’s School of Business identified a problem: Changing demographics within its full-time MBA student body required more applied learning. Student passion demanded relevancy in its curriculum. The business community identified a problem: MBA graduates lacked the ability to apply business concepts outside of business class silos. The academic community identified a problem: MBA curricula lacked integration and focused on theory at the expense of application and skill development. G3 has been tested and revised as an academic program and is now a proven approach that addresses these concerns. We believe that explicating the structure of our innovation at this point is appropriate, as well as its effects. Replicating programs based on the requirements of real-world stakeholders should benefit from understanding what we did.

For the University at Albany, it has been an interesting and rewarding journey. As an academic experience, it challenges our students and integrates our curriculum. It helps the School meet its articulated learning goals and reach new heights in critical areas recognized by accrediting agencies. Through it all, the School of Business has raised its profile both on its own campus and in the external business community. We are beginning to attract students who are choosing our MBA program because of this unique interdisciplinary, experiential, cornerstone project. We are opening new doors for our students (in the way of internships and placement opportunities) and our faculty (in the way of industry contacts and research partners). In the short term, the program is infusing sustainability knowledge, global best practices and passion into client organizations, faculty and MBA students. In the long term, we are providing labor markets much-needed emerging leaders with an appreciation for finding sustainable solutions in a variety of organizational settings and industries.

The journey continues as G3 also challenges our School to improve. We need to find more ways to foster integration between traditional functional classes and faculty so our programs become a holistic system. We need to recognize and reward innovative teaching and pedagogical research. And we need to look at the sustainability of our own business models and
practices. G3 challenges us to change how we, as a leading northeast public business school, respond to the educational and environmental challenges we face.
Appendix 1: G3 Syllabus
Going Green Globally (G3)
First-Year, Full-time MBA Integrative Cornerstone Project
May 1-May 14, 2015

Congratulations, teams! You have been chosen to work intensively on a project of tremendous global importance: Helping organizations develop and implement sustainable strategies and practices to position them to be successful in the constantly and rapidly changing global economy. This requires, among other skills, the ability to systematically integrate diverse areas.

Throughout G3, you will function as a consulting team working for the senior management of your client company. You will be expected to periodically present your findings to them as well as submit written reports for their review. For all deliverables, please assume you are communicating with your client (although your work will also be evaluated and graded by teams of your professors and other faculty).

The Managing Partners of the consulting firm (Profs. Krzykowski and Miesing) are looking forward to working with you. Additionally, other members of the “consulting management team” and “client companies” (many senior level executives, scientists, and functional area specialists) will be sharing their knowledge with you through presentations, lectures, panel discussions, e-mail, phone support, and office hours.

Academic Learning Objectives:
This project is designed to help teams accomplish the following:

1) Apply all that you have learned throughout the first year of the MBA program to a large “real world” organizational opportunity.
2) Integrate the various functional aspects of business. Up until now, most of your learning has taken place in classes. Now it is time to pull it all together and solve real business problems.
3) Look for opportunities, analyze risks, and evaluate business situations in a global context.
4) Prepare professional business deliverables: formal and impromptu presentations, consulting research papers, and thoughtful and intelligent questioning of speakers and other presenters.
5) Work effectively and professionally in a team-based environment.
6) Work under the time constraints and pressures that exist in organizations everywhere today.
Teams:
You are expected to apply all the information from the first year of the full-time MBA program to effectively manage your team, including information on team constitutions and dynamics, conflict resolution, interpersonal differences and leadership styles, giving and receiving feedback, and effective interpersonal communication skills (feedback from prior team experiences is provided to you later in this Handbook).

No team changes will be allowed. If teams have any interpersonal conflicts, it is expected that they will use the tools they learned this year to resolve them. If teams cannot resolve internal issues on their own, they may – with prior consultation and approval from the managing partners – fire a team member. Class time only allows for teams to present their findings; fired individuals may work independently for the duration of the G3 project but only written submissions will be graded by the managing partners. Therefore, a fired individual will be able to earn a grade no higher than C- for the G3 project.

You must attend and actively participate in G3 throughout the program. Teams are responsible for managing themselves and the distribution of work among team members. If an individual cannot attend a class activity or coaching session, s/he should let the managing partners know in advance and work with their team to ensure coverage and obtain missed content.

Team Coaches, Executives, and Life Lines (T-CELLs):
The Managing Partners have secured the services of many experts for you. They will be available throughout the G3 period and will be invited to attend your final presentations on Wednesday, May 14th. Each team will designate its liaison at the first class session, who will be responsible for managing all communications between the team and its T-CELLs. Any unprofessional use of your T-CELLs will result in a grade penalty (see above, “Always use support wisely”). Specific T-CELL members include the following:

1. Science Support – Prof. John Delano, Atmospheric Sciences and Prof. Pradeep Haldar, SUNY Polytechnic Institute
2. Team Business Development Coach – one assigned to each team
4. Executive Life Line – Dr. James Mahoney, CEO of Energy Market Solutions
5. Sustainability Coach – Dr. Steve Ricci, Battelle Institute
6. LEED (building and construction) Coach – Joseph Berman, Golub Corporation
Grading:
The G3 project is worth 35% of your grade in MGT 685: Global Strategic Management. Note that this is an administrative convenience and does not imply that G3 is an extension of Global Strategic Management; rather, G3 integrates all of your MBA courses.

All team deliverables will be graded on content, professionalism, organization, structure, cohesiveness of arguments, and ability to create and deliver a compelling and convincing project to the management team and the client company. Additionally, projects (both written and oral) will be graded on applying new knowledge gained each day of G3, as well as integrating the functional areas of business and using that information in a global context. Each day, different members of our management team (including T-CELLs and clients) will be involved in G3 and will be providing feedback both to students and to the Managing Partners for on-going evaluations of the project. Additional information about each deliverable will be discussed in class and will be included in your team’s consultant engagement binder as well as various forms and templates.

The following is a summary of project grading:

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Points</th>
</tr>
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<tbody>
<tr>
<td>Presentation # 1</td>
<td>5</td>
</tr>
<tr>
<td>Presentation # 2</td>
<td>15</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>25</td>
</tr>
<tr>
<td>White papers (2 at 15 points each)</td>
<td>30</td>
</tr>
<tr>
<td>Individual speaker analysis and synthesis (2 at 5 points each)</td>
<td>10</td>
</tr>
<tr>
<td>Press Release for Client</td>
<td>5</td>
</tr>
<tr>
<td>Professional conduct</td>
<td>10</td>
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<tr>
<td><strong>TOTAL POINTS</strong></td>
<td><strong>100 POINTS</strong></td>
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</table>

All students will submit peer evaluations of their team members. The Managing Partners reserve the right to use this feedback as well as feedback from clients and coaches to adjust final grades.

Submissions:
Teams should submit hard copies of slides prior to the start of their presentations printed out 3 per page back-to-back to all faculty, invited guests, and participating industry experts. Since expert attendance will vary each day, please print out 6 copies of your slides for each presentation. Teams should double space all papers and submit one hard copy and an electronic copy of all written papers (unless otherwise directed). As is true in the business world, your
Enabling Sustainability in Management Education

ability to convince management of your ideas is predicated on your ability to write well and speak in a compelling way. Poor writing style, grammatical errors, typos, weak presentation skills, etc. undermine your ability to succeed in this task and therefore will undermine your grade on assignments. At the termination of G3, your team must return the binders with all the information gathered during the program and electronically submit all items developed for your clients. We will provide a CD to current clients containing all these materials, and the CD and binders will be available for prospective clients.

Expectations:

- Expect the unexpected – Business situations and conditions change rapidly and this will also be true in G3.
- Feedback from various faculty and guests will be based on their knowledge and experience. As our esteemed colleagues, experts, and faculty all have different backgrounds and perspectives, their feedback will often be varied. Different experts view business problems from unique vantage points and will offer advice and criticism as they deem appropriate. Moreover, members of the audience do not meet in advance to form a unified front. Differences of opinion and conflicting views are common in complex business situations; we highly encourage you to accept all feedback in a professional manner.
- The ability to synthesize and incorporate relevant feedback is the hallmark of the successful executive. Effective teams will sift through the feedback offered and use it to improve and develop their G3 projects throughout the entire process.
- Experts from many disciplines and organizations have volunteered tremendous time and energy to make your G3 experience challenging and realistic. This has been created to teach each and every MBA how to succeed in the high stakes, high challenge, and high stress environments of the business world. Thankfully, not every day will be like this – but some will and we want you to be prepared for them. Our shared purpose is to have you leave UAlbany’s MBA program knowing you can succeed!

Professional Conduct:

Academic and professional integrity in this course means that you, as an individual, will contribute your fair share to team meetings and assignments, and you will perform work individually when assigned by the team to do so. All students will receive and give three types of feedback that is intended to be fair and constructive: (1) Feedback for G3 deliverables from G3 faculty, experts, and guests to your team (see IV) as well as individual evaluations from your client and coach; (2) peer evaluations you provide to us of your team members (see VI); and (3) feedback you provide to us about your entire G3 experience (see Binder tab “Eval/feedback”).
Published works and experts interviewed must be cited where appropriate. A final list of all works used must be submitted at the end of G3 with your final presentation slides. Academic dishonesty of any sort will not be tolerated.

There are some ground rules for successfully completing this portion of your MBA curriculum.

- **Always be prepared.** All team members are expected to be present and ready to discuss all aspects of the project at any time.
- **Always be professional.** Teams will get feedback, give feedback, be asked to act under executive conditions, and are expected to always maintain a professional demeanor. Many senior-level executives are participating in G3. Throughout it all, MBAs must work at the executives’s level and not assume that this is “just a class.”
- **Always embody professionalism** including arriving on time, turning off cell phones in class, staying off e-mail and laptops unless used for class-related activities, being attentive, no background conversations during presentations, etc.
- **Always dress professionally** for every presentation. Business casual is acceptable for other class sessions and guest speakers. Casual attire is not acceptable for any class session or meetings with team coaches or clients.
- **Always use support wisely.** Teams will have T-CELLs as well as faculty support. It is assumed that teams will always have worked extensively on a project or problem before seeking help. That being said, using help wisely is the hallmark of a smart business professional.

The Managing Partners retain the right to penalize any team or individual(s) on any or all project deliverable(s) for flagrant or consistent violations of these ground rules.
### Appendix 2: G3 Problem Domains and Examples of G3 Projects

<table>
<thead>
<tr>
<th>Problem Domain</th>
<th>Possible Areas of Research</th>
<th>Examples of G3 Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Organization Leadership, Culture and Talent Management</td>
<td>Manpower planning (new positions and re-training), employee health and safety, incentive plans and training to change values and behavior, creating a ‘green’ culture, hiring and retention benefits of being ‘green’.</td>
<td>An incentive and training program changed employee behavior around energy use for a not-for-profit human services organization with many residences for adults with disabilities.</td>
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<tr>
<td>2. Metrics and Information</td>
<td>Accounting systems and reports, standard operating procedures and processes, budgeting, financing and investments made in support of sustainability initiatives and ‘green’ projects, impact assessment, cost/benefit analysis.</td>
<td>Aligned sustainability practices against GRI measurement and tracking program for a regional grocery chain.</td>
</tr>
<tr>
<td>4. Corporate Citizenship, Image and Reputation</td>
<td>Top-line growth via new customers (niches and demographics), positioning for long-term growth in new markets, pricing strategies (to push green initiatives/products), ‘greenwashing’ (deceptively promoting being environmentally friendly), public relations, word of mouth and reputation.</td>
<td>The local franchisee of a national hotel chain became a ‘Green Hotel’ on Trip Advisor and estimated revenue growth due to this designation.</td>
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<tr>
<td>5. Energy</td>
<td>Alternative power sources (for example, solar and wind), energy use and reduction plans, ‘smart metering’.</td>
<td>Recommended several automatic solutions to a local manufacture, PC controls, motion signals for lights, fleet routing software.</td>
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<tr>
<td>7. Transportation</td>
<td>Vehicle selection and purchase, fleet routing software, maintenance and upkeep, efficient driver training.</td>
<td>Recommended skirting for a regional grocery store chain’s transportation fleet that reduced wind and friction.</td>
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<td>8. Building and Construction</td>
<td>LEED certification, materials used, insulation and energy efficiency, lighting, air quality, aesthetics, peak and off-peak energy control.</td>
<td>Proposed insulation and lighting changes for a rehabilitation and assisted living facility.</td>
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<td>9. Government Incentives and Regulations</td>
<td>Public policy initiatives, subsidies and incentives, regulatory uncertainty and compliance, freely-available information and tools.</td>
<td>A state agency mandated a marine port no longer use diesel fork lifts so examined changing to CNG.</td>
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<tr>
<td>Problem Domain</td>
<td>Possible Areas of Research</td>
<td>Examples of G3 Projects</td>
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<td>10. Strategy and Business Development</td>
<td>Business models and viability of existing core competences, risk assessment including insurance and redundant capacity required due to natural disasters, sustainability initiatives and their vulnerability to or advantage of disruptive technology, governance, alliances-partnerships-collaboration.</td>
<td>Helped a public utility reduce energy demand to avoid fines and incurring fixed costs that would not be recovered with a cross-functional approach to raise consumer awareness, adopt an energy efficiency program, and information technology solutions.</td>
</tr>
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</table>
Appendix 3: Evolution of G3: Going Green Globally
Since its inception, G3: Going Green Globally has been a work-in-progress with extensive post-action review and restructuring. From its inception, we have held de-briefing sessions with our clients and coaches to improve our approach. Highlights of the changes are summarized below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Curricular change</th>
<th>G3 Innovation</th>
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<tbody>
<tr>
<td>Pre-2006</td>
<td>Traditional MBA classes:</td>
<td>Spring semester core courses taught over 13 weeks rather than 15; all classes end and students take ‘Going Green Globally’</td>
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<tr>
<td></td>
<td>• Fall yr. 1: Skills and pre-requisite classes</td>
<td></td>
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<tr>
<td></td>
<td>• Spring yr. 1: Managerial core classes and global business class</td>
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<tr>
<td></td>
<td>• Year 2: Concentration, field study, electives</td>
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<tr>
<td>2006</td>
<td>New curriculum approved:</td>
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<tr>
<td></td>
<td>• Fall yr. 1: Skills and pre-requisite classes</td>
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<tr>
<td></td>
<td>• Spring yr. 1: Core classes for 13 weeks</td>
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</tr>
<tr>
<td></td>
<td>• Spring yr. 1: G3 last two weeks</td>
<td></td>
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<tr>
<td></td>
<td>• Year 2: Concentrations, field study, electives</td>
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<tr>
<td>2007</td>
<td>New MBA program begins</td>
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<td>Student teams are assigned renewable energy companies and recommend strategies (teams did not work directly with companies. Each team had a seasoned business coach)</td>
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<td>First advisor works with MBA teams; Former energy CEO joins the program as an ‘executive life line’</td>
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<td>2008</td>
<td>Systems thinking added to the two-week integration program</td>
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<td></td>
<td></td>
<td>Named ‘G3: Going Green Globally’</td>
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<td></td>
<td></td>
<td>Students work on Fishbanks® exercise</td>
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<td>Battelle Memorial Institute joins the G3 program</td>
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<td>2009</td>
<td>Coaches and energy CEO feel teams are doing ‘boardroom-ready’ work, encourage UAlbany to begin working with actual organizations and their senior leadership teams</td>
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<td></td>
<td></td>
<td>Faculty ‘Managing Partners’ reach out to local organizations that become ‘clients’ for MBA teams</td>
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<td></td>
<td></td>
<td>Because client projects can be about broad array of sustainability programs, more experts are invited to join the program, making ‘T-CELLS’ (Team Coaches and Executive Life Lines) become a part of the program</td>
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<tr>
<td></td>
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<td>G3 wins an innovative teaching grant from UAlbany</td>
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<td></td>
<td></td>
<td>‘Managing Partners’ attended AACSB ‘Sustainability Conference’</td>
</tr>
<tr>
<td>Date</td>
<td>Curricular change</td>
<td>G3 Innovation</td>
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</table>
| 2010 | As G3 operates more and more like a consulting engagement, costs rise | • Students sign Non-Disclosure Agreements; ‘Consulting Binders’ are created; all information, guest speaker presentations and research are catalogued and given to clients at the end of G3  
• Final presentations are videotaped and DVDs created for clients  
• G3 receives grant from National Grid, a major Northeast energy utility |
| 2012 | Clients suggest having students come on site before the start of G3 | • Students, clients and coaches meet one month prior to the start of G3; site tours take place prior to the start of G3  
• G3 wins UAlbany’s ‘Presidential Award for Community Engagement’  
• New York State’s Department of Conservation (NYS DEC) partners with G3 to offer paid internships for G3 client companies who want to continue working with students in the summer |
| 2013 | Curriculum revisions include creating time and credit to allow faculty (‘Managing Partners’) to meet bi-weekly with students throughout spring semester | • G3 presented at the Association for the Advancement of Sustainability in Higher Education (AASHE)  
• NYS DEC grant is awarded to G3 (and MBA students) to develop a website (http://www.albany.edu/nysgreenbiztoolkit/) for NYS businesses to find information about funding for and completing sustainability projects |
| 2014 | New Center for the Advancement & Understanding of Social Enterprises (CAUSE) is approved with one of G3’s ‘Managing Partners’ as its Founding Director | • Clients contribute to the costs of the program via a donation to fund student activities  
• Sustainability elective for weekend Executive MBA program developed and taught |
| 2015 | | • NYS Library Association publishes article on G3; establishes a competitive grant for one NYS Library to become a G3 client  
• Consulting ‘binders’ become ‘G3 Client Portfolios’ and go digital by moving on-line to Dropbox |
<table>
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<tr>
<th>Date</th>
<th>Curricular change</th>
<th>G3 Innovation</th>
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| 2016 | New curriculum takes effect  
- Fall yr. 1: Skills and pre-requisite classes  
- Fall yr. 2: Core classes during 13 weeks and G3 meets bi-weekly; G3: Going Green Globally consulting engagement last two weeks  
- Year 2: Concentrations (new concentrations added), field study, electives |               |
Figure 1: The G3 Sustainability Compass

- Natural Environment and Organizations (NEO)
- World Without Walls (WWW)
- Ethics: Values, Integrity, Professionalism (VIP)
- Strategic Sustainability Systems (SSS)
Figure 2a: The Open-Loop Value Chain Perspective of Production

INFRASTRUCTURE

BUY RESOURCES (Input)  MAKE/PRODUCTION (Transformation)  SELL PRODUCTS (Output)

BY-PRODUCTS (Output)

Production capital stock

Natural capital stock

Closed-Loop Product Life Cycle

Inventory stock

Waste stock
Figure 2b: The Closed-Loop Systemic Perspective of Production
Notes
1. The University at Albany, State University of New York is a public, research-intensive university of approximately 18,000 students located in New York State’s capital. The School of Business houses more than one-thousand undergraduate and graduate students in various programs. It is AACSB-accredited in both business and accounting. UAlbany is one of almost 300 universities from around the world that are signatories to the Higher Education Sustainability Initiative (https://sustainabledevelopment.un.org/sdaction/hesi). UAlbany has also been recognized for its accomplishments by being in The Princeton Review ‘Guide to 353 Green Colleges’, listed on Sierra Magazine’s Top 100 ‘Coolest Schools’, and is a member of the Association for the Advancement of Sustainability in Higher Education.
3. For a similar concept and framework, see ‘The Ceres Roadmap for Sustainability’ (nd). Ceres’s elements, however, correspond more to what we refer to as our ten problem domains than our four compass points.
4. GE’s then-CEO Jack Welch famously wrote in the 1990 annual report: ‘Our dream for the 1990s is a boundaryless company, a Company where we knock down the walls that separate us from each other on the inside and from our key constituencies on the outside’ (Hirschhorn & Gilmore, 1992).
7. The current popularity of using the systems perspective for studying sustainability is exemplified by the Circular Economy, viz: http://www.ellenmacarthurfoundation.org/publications.
8. Source: ‘Power Forward 2.0’ (nd). Also, see ‘Sustainability Pays: Studies That Prove the Business Case for Sustainability’ (nd).
References


