



Sustainable Enterprise QUARTERLY

Reinventing Today's Business for the Challenges of Tomorrow

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Experiential Learning: Putting the Ability in Sustainability

by Kelly Boone

How do I scale my social enterprise in Ghana without having to rely on grant funding and donations? How might pending CO₂ legislation impact the operations and purchasing decisions for my manufacturing company in the short- and long-term? These are just two examples of sustainability questions that UNC Kenan-Flagler students address through a range of experiential learning programs.

Sustainable Enterprise touches many functional areas of business as well as a variety of advanced disciplines in the applied and social sciences. UNC Kenan-Flagler's Center for Sustainable Enterprise (CSE) has one of the largest and longest tenured Sustainable Enterprise programs in the country as well as access to the UNC network of advanced programs in environmental science, public policy, social work, entrepreneurship, engineering, and law.

For example, CSE worked with Bank of America and UNC's Institute for the Environment in 2006-07 to generate *Measuring Environmental Footprint: A Financial Services Industry Case Study*. The study presented an example of how a firm can assess and measure the environmental impacts of its operations and apply business decision-making tools to identifying initiatives that meet environmental, financial, and corporate strategy considerations.

UNC Kenan-Flagler's experiential learning classes and programs in sustainability have evolved over the last decade to meet the needs of external stakeholders (companies and organizations) as well as internal stakeholders (our world class BSBA and MBA students) who want the opportunity to put into practice some of the theory and skills they are acquiring at UNC Kenan-Flagler. The classes and programs include the [Sustainability Learning Lab](#), [Sustainability Immersion](#), [Launching the Venture \(LTV\)](#), [Student Teams Achieving Results \(STAR\)](#), [Business Accelerator for Sustainable Entrepreneurship \(BASE\)](#), and [CSE Consulting](#). During this time, CSE has undertaken a wide spectrum of sustainable enterprise engagements that provides the best general management educational experience for the greatest number of our students. This approach also meets the resounding and divergent need voiced by both the private and public sector – to help them figure out what

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they should do differently and why given their operating context.

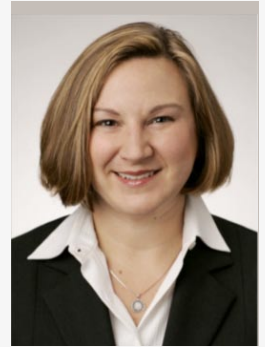
While the programmatic efforts like CSE Consulting and STAR offer a detailed and comprehensive analysis and evaluation of specific company issues, single classes provide less involved interaction with student teams and are more topical. The Launching the Venture and BASE programs are comprehensive, covering critical material for startup success by providing access to significant resources over the course of the entire year.

Programs and classes are often combined to meet the changing needs of organizations over time. For example, in 2007 NC Choices, a local, pasture-based animal production, processing and marketing organization, joined the Business Accelerator for Sustainable Entrepreneurship (BASE) program to access key business development resources and training. In the summer of 2008, NC Choices participated in the CSE Consulting program when a MBA student team uncovered the key drivers for success to create a local sustainable food system. The company then participated in Launching the Venture in 2008/09 to solidify detailed business planning for its long-term success. Tina Prevatte (MBA '09), one of the students who worked on the CSE Consulting project, joined the organization upon graduation and is now director of business development.

UNC Kenan-Flagler continues to innovate creating new experiential learning opportunities through courses like the Sustainability Learning Lab and Sustainability Immersion. These classes and programs provide a range of opportunities for engagement with experts here at UNC and an in-depth opportunity to interact with our world class BSBA and MBA students. The result is that UNC Kenan-Flagler students are better prepared to hit the ground running, to immediately put into practice what they've learned and experience both inside and outside the classroom. According to Sumeth Suwanpusaporn (MBA '10, a CSE Consultant "real-world business projects provided a platform to apply the business knowledge I gained in the classroom and helped me to understand more about the business tools that can be used to address sustainability challenges. I don't think I could have found such experiences at any other program."

Remanufacturing to Increase Profits and Reduce Waste

by Carol A. Seagle



Dr. Carol A. Seagle is Director of Research at the Center for Sustainable Enterprise and Adjunct Professor of Strategy and Entrepreneurship

Reduce – Reuse – Recycle. These “three Rs” represent approaches to reducing environmental impact. Recycling reprocesses waste materials into the production process. Remanufacturing facilitates reuse by disassembling a product, repairing and/or upgrading parts, and bringing the item back to “as good as new” while retaining a significant fraction of the value added during manufacturing. Cross-industry surveys show typical energy savings of 85 percent compared to the manufacture of new products.¹

Xerox was early to implement a remanufacturing strategy in the 1980s with its asset recovery program that resulted in over 2 billion pounds of waste diverted from landfills and the repurposing of over 2.8 million document devices.² From 2003-07, over 4.6 million machines returned to IBM’s Global Asset Recovery Services remanufacturing centers were resold or reused.³ In 2009, IBM’s end-of-life operations processed 41,400 metric tons of end-of-life products and product waste, representing over 60 percent of the new IT equipment manufactured and sold.⁴ Other manufacturers with large remanufacturing programs include GE, Boeing, and Caterpillar.

While some companies have voluntarily implemented remanufacturing programs, as concerns about landfill capacity and the environmental hazards of waste grow, an increasing number of governments have passed legislation that places the financial responsibility for the collection and proper treatment of their products when their useful life ends. Examples include the European Union’s Waste Electrical and Electronic Equipment (WEEE) Directive, Japan’s Specified Home Appliances Recycling Law, the laws of twenty-three U.S. states and New York City that create electronic waste take-back programs.

A recent study by UNC Kenan-Flagler scholars Eda Kemahlioglu-Ziya and Jayashankar M. Swaminathan with Gokce Esenduran of Ohio State’s Fisher School examines the effect of take-back legislation on the level of remanufacturing. Under certain conditions, take-back legislation might induce the opposite of the intended effect and lead to a decrease in the level of remanufacturing. “The Impact of Take-Back Legislation on Remanufacturing” describes a novel analytical model that provides insight into the factors that may cause a decrease in remanufacturing. The implications of this research provide guidance concerning how to design effective take-back legislation.

According to the analysis of Esenduran, Kemahlioglu-Ziya, and Swaminathan, whether take-back legislation promotes remanufacturing depends upon whether the product is remanufactured by the original equipment manufacturer (OEM) or by a third party and how expensive the product is to manufacture relative to how expensive it is to remanufacture.

- If the remanufacturing is done by the OEM, the level of remanufacturing is generally expected to be higher than that achieved by a third-party remanufacturer; however, there are exceptions.
- When the cost of remanufacturing is low, competition from a third-party remanufacturer might indeed increase the level of remanufacturing. Under these conditions, an OEM is likely to preemptively collect used products and sell some to a third party at a very high price.
- When the remanufacturing cost is moderate, the OEM charges a lower price for the used products but still can make additional profit by selling the cores to a third-party at a price that covers the collection cost. Since the cores are priced lower, the remanufacturer might still purchase and remanufacture more items than a monopolist OEM would.
- In contrast, when the cost of remanufacturing is high and take-back legislation is imposed, the level of remanufacturing achieved by an OEM is higher than that achieved by a third party because the OEM sells the cores to the third-party only to save on the disposal cost and to comply with the legislation.

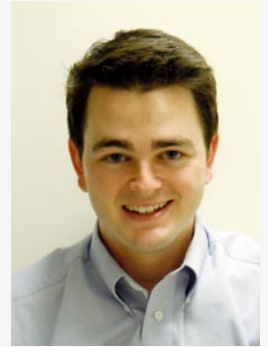
With or without take-back legislation in place remanufacturing remains an effective strategy for many companies to increase profits and reduce waste. Find out more at the [Remanufacturing Institute](#) and [National Center for Remanufacturing and Resource Recovery](#).

- 1 “Remanufacturing: The next great opportunity for boosting US productivity” by Ron Gluntini and Kevin Gaudette in *Business Horizons*. Nov-Dec. 2003.
- 2 Xerox. 2009. *Environmental solutions that work*. http://www.xerox.com/downloads/us/en/Environmental_Overview.pdf
- 3 “IBM recognized for its green recycling and remanufacturing practices” *Remanufacturing News*. July 2008. <http://www.remanufacturing.org.uk/centrenews-detail.lasso?report=181>
- 4 IBM. 2009. *IBM and the Environment—Annual Report 2009*. http://www.ibm.com/ibm/environment/annual/IBMEEnvReport_2009.pdf

Student Spotlight Steven Byrd

BSBA '11

by Justin Sabrsula (MBA '11), CSE Fellow



Steven Byrd is a senior in the BSBA Program and is pursuing a minor in sustainability

For Steven Byrd (BSBA '11) sustainability has taken him on an energy-focused tour of Cambridge, UK, and sparked an interest in urban planning and energy use. Steven's interest in sustainable enterprise started in his sophomore year while taking an honors seminar on de-carbonizing society from Professor Greg Gangi. "That's what got me really interested in urban planning and energy use in cities, and I've mostly gone from there. I don't really have much interest in geology or environmental science, but that really sparked my interest in sustainability."

Since joining the BSBA Program, Steven has brought his passion for sustainability to bear on business problems. "We learned a lot about the differences between conducting a regular business sustainably versus running a sustainable business, and learning about the triple bottom line – people, planet and profit."

But Steven sees problems with traditional methods of promoting sustainability. "I feel that sustainability would be a lot more widely accepted if we looked at the environmental and sustainability movements as a way of saving ourselves and our way of life by operating sustainable businesses [instead of the view of "saving the planet"]. You have to look at all three areas of sustainability and take each one into account equally. If you do it right, business practices should be good for the bottom line, people, and the environment."

To put his views into practice, Steven secured a summer internship with Cambridge University Professor Michael Kelly and Douglas Crawford-Brown (former director of the UNC Institute for the Environment) on an energy retrofitting project for the entire city of Cambridge in the UK as part of the [Climate Change Risk Mitigation Project](#). Steven received the Hogan Fellowship (as part of the Johnston Scholars program) to

look at changes that could be made to the energy envelope of to reduce heating needs. He looked at loft insulation, cavity wall insulation and double-window glazing, and created a cost assessment for almost 42,000 houses.

Steven found that energy efficiency progress isn't just as easy as modeling changes in building materials. "Changing the windows alone in each of these houses would reduce total energy consumption in Cambridge by 16 percent; but with a 30-year payback, it just isn't cost effective yet, and it is difficult to figure out the compound effects of multiple changes to buildings. The interesting thing is all of the roadblocks there are for building retrofits – my professor had to get permission to put a flowerpot outside of his house in Cambridge, so you can imagine the challenges of changing the skin of a building".

As Steven pursues a full-time career in energy, he believes strongly that "any business belongs to the people it effects and is a part of the environment it operates in, so why not treat those areas with respect while

making a profit? The social well-being of all stakeholders will affect the success of the business. The success of a business will be based on their profits, but any negative effects they have on the environment and

their employees will negatively affect the business too. It seems to me that it's only been a positive for businesses that have done positive things socially and environmentally.

After graduating, Steven would "like to work in a more finance-oriented area of an energy company. Energy is my main passion as far as sustainability goes; and I feel like for most businesses, sustainability won't be a specialty any more, it will just be how businesses are run." With students like Steven leading the way, that prediction might just come true.

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