

Enterprise Education at the University of St Andrews

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Module Title: SD1004 – Sustainable Development Goals: Opportunities and Challenges

Discipline: Sustainable Development

Module Descriptor: Building on the introduction and broad overview of Sustainable Development provided in SD1000, SD1004 offers detailed investigation of a selection of core issues in SD and of how these topics are addressed by key players. Utilising the UN's Sustainable Development Goals as a framework, the module is organised around five thematic clusters: Poverty, inequalities & migration; Health, education & wellbeing; Peace, justice & governance; Climate change & energy; and Biodiversity and ecosystems. These themes are explored from various disciplinary perspectives, explaining: (i) how each topic can be understood and what it entails in practice, (ii) who the key stakeholders are and the nature of their involvement, and (iii) how we can critically analyse the evidence in the context of SD and go beyond conventional paradigms and behavioural patterns. The module also highlights recurring, cross-cutting themes such as values, partnership, and diversity as ambitions of SD.

Context and Description:

What was the initiative? What was its purpose?

The purpose of this assignment was for First Year SD (Sustainable Development) students to put theory into practice and develop recommendations for how to reduce food waste. Students considered the immediate and wider structural barriers to reducing food waste and the kinds of choices we can encourage individuals to make that ensure that food is appreciated and not wasted. There were four theories related to understanding the cause of food waste (rational choice theory, attitude-behaviour-context theory, social practice theory, and design theory) that emphasise different strategies to reduce waste.

In exploring the causes and consequences of food waste in locations here at the University of St Andrews, students had an opportunity to collect data and develop recommendations for how to reduce food waste at the University. Many First Year students are catered and in Halls of Residence (129 out of the 220 students in 2017-18) so this is the best SD module to have this assignment, and its data collection component, in order to support Residential Business Services. This assignment was thus embedded within principles of learning for sustainability; it enabled students to be enterprising sustainability consultants; research and collect evidence; gain experience of leadership and team management within a project; critically analyse data; and suggest how ideas could be taken forward.

How did you develop and deliver it? Were there any partners/additional support?

There were two parts to the assignment:

- (1) **Group work to collect data** regarding food waste, which were identified by Residential Business Service as information that is required to change their practices, but this is currently unknown.
 - a. Surveys on student's expectations of hall catering
 - b. Weighing food waste from plate scraping and leftovers
 - c. Calculating the 'cost' of food waste in terms of the ingredients of a meal

- d. (Self-catered option) weighing personal/household food waste and reflecting on causes and ways to reduce food waste
- (2) **Individual 1,500-word reflective essay** critically analysing the data students collected and the implications of their findings in relation to theory and practice.

Students formed groups based on their Hall of Residence, with self-catered students as another group, and determined what data collection activity they wanted to do. Then within these living collectives, students were encouraged to form groups of 6-8 for the data collection part of the assignment.

After conducting data collection, students wrote individual reflective essays (the assessed part of the Assignment) that included a theoretical framework underpinning their strategy to reduce food waste; critical reflection on the social, material, and/or temporal aspects that affect food waste; and explanation of the information they gathered and its relevance to reducing food waste.

Previous iterations of this ‘Behaviour Change Reflective Essay’ Assignment in SD1004 required students to spend the semester trying to reduce their carbon footprint and reflecting on the challenges they faced. This Assignment was re-designed to encourage students to think about wider structural change and how to shift the practices of an institution. Due to the intention to make this a ‘living lab’ project in which students’ research could also be of practical interest to the University, there were numerous partners and additional support was offered. The Deputy Director of Residential Business Services, Senior Chef Manager, Sustainability Manager and Sustainability Intern were all involved in the design and delivery of the data collection component. Furthermore, the Halls’ Chef Managers and catering staff had to supervise and support students with weighing food waste and calculating the ‘cost’ of food waste.

How do students develop their capabilities on this module?

Creativity and innovation

Through problem solving, students are generating ideas, proposals, and arguments for how to reduce food waste in response to their experience of Halls’ catering and the unique data they have collected. This included using an iPad on the way out of meals to enable students to rate their meal, giving caterers an idea about whether it was popular or not; or posters with the monetary value of ingredients ‘wasted’ every week placed in public locations so that a) awareness is raised and b) it provides motivation to slowly reduce that figure each week with behavioural changes (e.g. through less plate scrapings / fewer unserved portions).

Opportunity recognition, creation and evaluation

Flexibility to identify and choose an aspect of the food waste issue that they find most interesting or may perceive to have the best potential to make a difference. For example, many students found calculating the ‘cost’ of food waste to be an important activity arguing for the potential of awareness campaigns and action driven by financial considerations. This assignment presented students with multiple suggestions for how their data collection choice informed a particular intervention strategy, which was in turn underpinned by a different theoretical framework.

Decision making supported by critical analysis and judgement

Students were required to collect data in groups on food waste and this obliged them to take initiative to make things happen; overcome challenges as they arose; and critically analyse the data they collected.

Reflection and action

Students had one month to complete this Assignment: one week to form groups and write a plan for data collection, two weeks to collect data, and one week to write their individual reflective essays. The short time period required students to quickly come together and work as a team, and in many ways, I was surprised how effectively this was completed (90% of the class had formed groups and sent a data collection plan by the 1 week deadline). Students were assessed on their individual reflective essay, but by making the data collection a group activity this presented students the opportunity to practice social and team management skills.

Communication and strategy skills

Beyond working with their classmates on this Assignment, students had to interact with catering staff (for weighing and calculating the cost of food waste) and their peers (to fill out the survey on expectations of hall catering). This required effective communication, networking, and planning to be successful.

Assessment:

Part 1 (group data collection) underpins many enterprising capabilities (e.g. collaborative problem solving, leadership, action-planning, communication).

Part 2 (individual reflective essay) required students to critically reflect on their experience, analyse data and develop a proposal for action.

Impact:

There were two main impacts of this Assignment: (1) students were presented with an applied learning opportunity, which challenged them to connect theory with observations of causes of food waste and then develop practical recommendations to reduce waste, and (2) provided the Environment Team and Residential Business Services with feedback from students that brought attention and urgency to reduce food waste in Halls of Residence. The impact of this Assignment was measured through informal feedback with students and staff, a survey of students including questions about enterprise ‘capabilities’ gained (36 responses out of a class of 220) and follow up with the Environment team and Residential Business Services to relay findings and discuss next steps.

Applied-learning: team work, problem solving, connecting theory & practice:

In response to the survey, the most commonly identified skills gained from the assignment were learning to critically analyse data (72%), research and collect data (67%), take the initiative to make things happen (58%), team management (56%) and problem solving (39%). At the very least then, the survey results suggest that the assignment raised the profile of enterprising skills for students.

“I liked how it was quite different from other assignments and a topic we can relate to”

“I learned how challenging it can be to collect data and then organize it into a presentable and understandable format which can affect real-world processes”

These students’ survey responses highlight the main impact of this Assignment, which was to put students into an applied learning situation. This required them to generate multiple solutions in response to identified problems and opportunities. The majority of students worked in groups to collect data and while many identified this as a challenge, 58% did enjoy the group work aspect of the assignment. One student commented: “I found that I need to give myself way more time for data collection to account for error. I learned that data collection with the

involvement of many people is difficult. My group encountered many problems”. Whilst uncomfortable and sometimes frustrating, working with others and managing time are important aspects of education for enterprise. Successful enterprises depend upon clear and impactful group communication to foster support. Clear communication and interaction with others, alongside effective planning, was demanded of students considering the short time scale for the Assignment. Contacting and working with Residential Business Services and catering staff was one of the main challenges, yet this was necessary to make the assignment practical and useful to the Senior Chef Manager. Indeed, 80% of students liked that their coursework could have an impact on management of catering and sustainability of the University. Unsurprisingly, catering staff are busy with their normal duties and coordinating data collection with students is extra work, so this interaction was not always timely or easy. However, this is the reality of many projects and was arguably a lesson for students, teaching them to have to be tenacious as well as flexible during data collection.

Arguably, it was also important that there was academic merit to this Assignment and that emphasis of these applied, practical, enterprise skills did not come at the expense of learning about different theories of change and disciplinary perspectives. The tutors marking the Assignment commented on this (even though the students did not in the survey):

“This was a nice assignment to mark, lots of variety and the students had generally got a good structure going with respect to the data collection aspect and then linking findings to theories”

“I found this a very multi-factored subject by the way, and the students seem to have responded with enthusiasm”

Contribution for Enterprise Education

This case study has focused on the impact of the assignment to students, but it is also important to highlight that this was of merit to the Environment Team and Residential Business Services.

“The student surveys into food waste painted a better picture of the situation and pointed to the clear demand from students for a mechanism to feed back to kitchen staff their opinions on the hall catering. The findings were presented to the Residential Business Services executive team as evidence for the need of a meal register app.” (Sustainability Intern)

This Assignment was inspired by the ‘University Living Lab’ approach, which enhances the student experience as students have practical, applied learning opportunities, and provides a tool for operational and professional staff to use the University’s research capabilities to study their own practices in order to improve sustainability (CGC, 2016; Evans *et al.*, 2015)¹. The main contribution to enterprise education then is to highlight how well using the University as a case study for coursework aligns with enterprise capabilities and an opportunity to teach students professional skills.

¹ CGC (2015). The Living Laboratory for Sustainability: Annual Report 2014-15. The Cambridge Green Competition. Available at: https://www.environment.admin.cam.ac.uk/files/living_laboratory_for_sustainability_annual_report_1415.pdf
Evans, J., Jones, R., Karvonen, A., Millard, L., & Wendler, J. (2015). Living labs and co-production: university campuses as platforms for sustainability science. *Current Opinion in Environmental Sustainability*, 16, 1-6.

Future Development

Next year I plan to give students a longer time period to do this assignment so that some of the hiccups and delays in carrying out data collection/group work are not so critical, and data collection can be carried out over a longer time period. Communicating with catering staff next year is also expected to be smoother, because data collection will be based more on monitoring whether different versions of a SmartPhone Meal Register App (developed by IT Services for the Environment Team and Residential Business Services) reduces food waste in halls (e.g. opt in to attending meal; opt out of attending meal; opt into specific main dish; star-ranking of meal; including information about reducing food waste), which will not require students to coordinate with individual Chef Managers. Next year, I would also make feedback on skills a compulsory, not for credit but for completion of the Assignment, as this will encourage students to reflect on the enterprising skills gained as well as enhance the potential to monitor and demonstrate the teaching outcomes of this Assignment.

Tour of Hall Kitchen: Following the Food Waste

