Who we are

- 3rd year students
  - Connecticut and Massachusetts
- Benjamin Bridges
  - Biomedical Engineering with Biology Minor
- Thomas Kim
  - Robotics Engineering and Mechanical Engineering with a concentration in Manufacturing
- Selena Livramento
  - Management Engineering with a concentration in Operations Management
- Dylan Snay
  - Electrical and Computer Engineering
Our Project

- **Focus:**
  - Promote sustainable practices
  - Sustainability through geography
  - Prepare students for GCSEs
- **Target audience:** secondary school students
- **Location:** Hereford, UK
- **Responsibilities:**
  - Opening speaker, workshop facilitators, evaluations
Background
Defining Sustainability

- Wide Scope
- Social impact
- Sustainable development
  - “Simply stated, the principle recognises the importance of ensuring that all people should be able to satisfy their basic needs and enjoy a better quality of life, both now and in the future”

(UK Parliament, 2011)
Sustainability Education

- The NHS Survey
  - 96% care about sustainability efforts
  - 25% think it’s a top priority
- Sustainability in Education
  - Not required
  - Taught by geography teachers
  - GCSE exam on geography
Methods
Objectives & Methodologies

● **Objective 1:** Efficiently connect logistics to the primary objective of the conference to ensure a cohesive event

  ○ **Methods:** brainstorming

● **Objective 2:** Develop an approach for contacting appropriate organizations to facilitate beneficial workshops

  ○ **Methods:** checklists, unstandardized interviews
Objectives & Methodologies

- **Objective 3:** Produce a conference that engages the students and increases their awareness of sustainable practices
  - **Methods:** focus groups, unstandardized interviews

- **Objective 4:** Evaluate the conference’s impact on the attending students and develop suggestions for future events
  - **Methods:** surveys, participant observation, field notes
<table>
<thead>
<tr>
<th>Task</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
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<tbody>
<tr>
<td>Book the Introductory Speaker</td>
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<td>Contact Organizations</td>
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<td>Finalize Workshops</td>
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<td>Contact Participant Schools</td>
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<td>Secure Materials</td>
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<td>Deliver Conference</td>
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<td>Analyze Results</td>
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Results
Formulation of Pre-Conference Materials

- Flyer provided to invited schools
Formulation of Pre-Conference Materials

- Color coded groups

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### Conference Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities</th>
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<tbody>
<tr>
<td>9:00-9:15</td>
<td>Arrival &amp; Registration G37</td>
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<tr>
<td>9:15-9:30</td>
<td>Opening remarks G37</td>
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<td>9:30-10:45</td>
<td>- Food Security F13</td>
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<td>- Sustainable Cities F16</td>
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<td>- Geographical Information Systems F12</td>
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<td>10:45-11:00</td>
<td>Break G37</td>
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<tr>
<td>11:00-12:15</td>
<td>- Geographical Information Systems F12</td>
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<td></td>
<td>- Food Security F13</td>
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<tr>
<td></td>
<td>- Sustainable Cities F16</td>
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<td>12:15-12:45</td>
<td>Lunch G44</td>
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<tr>
<td>12:45-14:00</td>
<td>- Sustainable Cities F16</td>
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<td></td>
<td>- Geographical Information Systems F12</td>
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<tr>
<td></td>
<td>- Food Security F13</td>
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<tr>
<td>14:00-14:30</td>
<td>Closing Activity G44</td>
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</tbody>
</table>

* WooBikes will be occurring in room F11 in the case of rain

* Unlocking the Severn will be in the Auditorium until 11:00 and then in F11 from 11-14:30
Formulation of Pre-Conference Materials
Formulation of Pre-Conference Materials

CASE STUDY: Sustainability in a Newly Emerging Economy – Rio de Janeiro

Background

Rio de Janeiro is a large city on the southern coast of Brazil. It is home to 6.3 million people and is the capital of second wealthiest Brazilian state. The city is a hub for tourism, as it’s the home the the Christ the Redeemer statue and the popular Carnival festival, as well as a recent site of the Olympic Games. Brazil’s economy as a whole is rapidly growing, beating out countries like Canada and Australia in recent years and seeing an average foreign investment of £23 billion per year (Brazilian Government 2005).

The Problem

Rio is not without its problems however, one of the most prominent being favelas, which are a kind of slum. There are about 1,000 favelas in Rio, tightly packed settlements often built on steep hills.

CASE STUDY: WooBikes

Background

The average person elects to travel on foot for trips that are under one mile. For longer journeys, automobiles are by far the most popular mode of transportation. In fact, more than half of car trips are less than 5 miles long. The primary situation in which car trips persist longer than 5 miles is when they involve motorways or other high throughput thoroughfares (Department for Transportation, 2017).

With so many people traveling by car, however, traffic becomes inevitable as the sheer volume of vehicles becomes more than a motorway can handle. The worst instances of traffic occur during the rush hour in the morning and evening when people commute from their homes to their jobs and vice versa. Rush hour traffic is not only a frustrating inconvenience for the working person, but represents a significant waste of gasoline and in turn a sizable source of harmful emissions, as cars continually burn fuel to keep the engine
Focus Group

Activity: Sustainable Cities

- Get into groups of 3-4
- Take a sheet of paper and drawing tools
- You will have a designated amount of time to design your sustainable city
  - Based off the sustainable development goals and your prior knowledge
  - Can get as many of anything as like
- Constraints:
  - Time
  - Paper space
  - Resources
- Once time is up, the best city will be chosen!

Specification:
- Budget: 250,000
- Population: 50,000
- % under the poverty line: 7%
- 2 primary schools
- 2 secondary
- 1 college
- 2 rivers
- 1 lake

- 1 park
- 10 apartment complexes
- 1 local court
- 2 grocery stores
- 4 gas stations
General Overview

- Overall positive feedback
  - Games and activities engaging
  - Efficacious videos and presentations
  - Less interest in lectures
- WooBikes was incredibly successful
  - Two e-bikes available
- Unlocking the Severn
  - Desired data gleaned
Sustainable Cities

Pupils had to design their own sustainable city on a budget while reacting to “News Flashes” such as a flood or overflowing landfill

- **Positives**
  - News Flashes
  - Collaboration

- **Negatives**
  - Desire for more News Flashes
Geographic Information Systems

Pupils were shown practical applications of cartographic knowledge and geographic information systems (GIS)

● **Positives**
  ○ Group work
  ○ Overall very informative

● **Negatives**
  ○ Too much lecturing
  ○ Computers were distracting
  ○ Least popular workshop
Food Security

Pupils were given a brief overview of the definition of food security then participated in a “farming strategy” activity

● **Positives**
  ○ Farming strategy game
  ○ Well-made presentation
  ○ Based on Oxford research

● **Negatives**
  ○ One long activity
Survey Statistics

- 72 pupils in attendance
- 288 surveys given out
- 282 responses
  - 98% response rate
Pupils were asked at the beginning and end of the conference to write what sustainability meant to them.

- **Positives:**
  - Engaged the pupils
  - Reduced downtime
- **Negatives:**
  - Unreliability
  - Definition of sustainability
  - Low response rate
**Idea Tree**

- **Opening**
  - 80% response rate

- **Closing**
  - 90% response rate
  - Lower number because some pupils left early

**Idea Tree Results**

<table>
<thead>
<tr>
<th>Opening Ceremony (57 responses)</th>
<th>Closing Ceremony (46 responses)</th>
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<tbody>
<tr>
<td>1 - pledge</td>
<td>2 - recycling and reusing</td>
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<tr>
<td>2 - looking after the Earth</td>
<td>2 - environment and life</td>
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<tr>
<td>2 - keeping the world clean</td>
<td>2 - &quot;I learned a lot&quot;</td>
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<tr>
<td>2 - save the environment</td>
<td>3 - Energy without pollution</td>
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<tr>
<td>3 - sticking to a goal</td>
<td>3 - Woobikes</td>
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<tr>
<td>3 - environment efficiency</td>
<td>3 - mentioned SDGs</td>
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<tr>
<td>3 - balanced and protected Earth</td>
<td>5 - miscellaneous</td>
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<tr>
<td>6 - miscellaneous</td>
<td>11 - sustainable pledges</td>
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<tr>
<td>7 - question marks</td>
<td>15 - renewed definition of sustainabilty</td>
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<tr>
<td>8 - renewable energy</td>
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<tr>
<td>9 - definition of sustainability</td>
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<tr>
<td>10 - long lasting impact</td>
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</tbody>
</table>
WooBikes and Unlocking the Severn

- 39 WooBikes riders
  - (54% of attendees)

- 35 participants in Unlocking the Severn activity
  - (48% of attendees)
Conclusion

Overall:

- Positive results overall
  - Responses lacked depth
- Popular bonus activities
- Workshop popularity:
  1. Sustainable Cities
  2. Food Security
  3. Geographical Information Systems
**Recommendations**

- Increased instruction on surveys
  - Increased question structure
  - Reverse scale
  - Sentence template

**What was your greatest takeaway from this workshop?**

*(Example template)*

*I learned that ______________ impacts ___________ during the Sustainable Cities workshop*
Recommendations

- Activity-centered workshops
  - Avoidance of lecture-style
  - Multiple shorter activities
  - Audience participation
Recommendations

- Re-confirming logistical information
  - Student roster
  - Room availabilities
  - Retrieving print materials
Recommendations

- Better-suited classrooms
  - Distractions
  - Pre-event setup
Acknowledgements

- United Purpose (Food Security facilitators)
- Ordnance Survey (GIS facilitator)
- University of Worcester Student Teachers (Sustainable Cities facilitators)
- Elena Lengthorn (Sponsor)
- Katy Boom (Opening Speaker)
- Sarah Williams (Hereford Academy contact)
- Dan Webb (Earl Mortimer contact)
- James Hanlan (WPI Advisor)
Questions?