SLEUTH: SUSTAINABLE LIFESTYLES – EDUCATING UNIVERSITIES TOWARDS HAPPINESS

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Abstract
SLEUTH is an initiative born out of the need to bring universities towards more happy and sustainable lifestyles. It is the ‘real life’ application of the resulting conceptual design from the main study of the "Design for Happiness" PhD research project. This aims to identify and propose the design characteristics which compose a product, service or system capable of contributing to our happiness hence promoting sustainable lifestyles as part of mainstream sustainable design.

The paper presents the SLEUTH project; its building process, implementation and results. The building process describes six months work which developed a key team within the university that started out on a ‘collaboration’ journey; they joined forces with the aim of developing and endorsing this initiative. It sets an example of the involvement required by an entire organization. The implementation process describes the actual trials of the SLEUTH project. Here, student involvement is crucial. SLEUTH has at its core the belief in collective action, and therefore it starts from the premise of giving ownership to its participants, allowing them to shape its course. This translates into making the students ‘co-responsible’ for the success of the project. Finally, the data and experiences gathered during the project illustrate the results of such an initiative. These aim to contribute to finding and setting the path for universities to embed sustainability at their core; they begin to answer questions such as how to achieve a transition towards sustainable universities; how to implement, replicate, modify, initiatives such as SLEUTH in the longer term.

Keywords
Sustainability, Lifestyles, Happiness, Universities, Pro-activeness
1. Introduction

Everything around us, from simple artifacts to products, buildings and complex services or systems, is significant in the way we behave and interact with our surroundings. They play a leading role in the way we shape our lifestyles and the consequences to the environment (Shove et al., 2007, Jackson 2008). Sustainable Development has been identified of paramount importance in order for humans to survive on this planet (Michaelson., et al., 2009, Abdallah et al., 2009). This implies that we all have to change the way we live; from the way we behave with ourselves up to how we relate with our surroundings. Ultimately, this means changing our lifestyles into sustainable ones.

The SLEUTH (Sustainable Lifestyles – Educating Universities Towards Happiness) project aimed to address this. It is the outcome of an initiative that intended to trial the conceptual design resulting from the main study of a "Design for Happiness" PhD research project. This research is looking at sustainable products/services/systems and their effect on happiness. Briefly, it aims to identify and propose the design characteristics which compose a product capable of contributing to our happiness hence promoting sustainable lifestyles as part of mainstream sustainable design.

2. Description of the conceptual design behind SLEUTH

From a distance, SLEUTH could be simplified as ‘an initiative that aims to address Energy reduction targets set for the UK through the reduction of energy consumption at a university, specifically within halls of residence’. In reality, SLEUTH is a complex system in which the design concept goes beyond just saving energy by building on Happiness and sustainable lifestyle issues such as communities, pro-active citizenship, skills development, sharing, low material consumption, etc. In practical terms, it approaches the problem through a holistic perspective that engages the students in a competition beyond a ‘mechanistic design of having a product’, and instead embraces two main areas for design: a reward system and a history/storytelling narrative. Ultimately, it aims to contribute in finding a path for universities to embed sustainable lifestyles at their core while allowing its participants to shape its course.

In broad terms, the project included 3 main components:

A. An individual ‘control/reward’ card for each student that accrues points for ‘sustainable behaviours’ (energy savings and volunteering scheme)
   -Ideally this would be an automated system. For the purpose of the trials this was done manually.
B. A ‘social network’ platform to follow (monitor) the halls competition as well as the participants’ interaction and individual behaviours. A key purpose of this platform is also to allow the participants the delivery and ranking of the ‘Best Behaviours portfolio’, and the ‘Best Rewards portfolio’.

C. A knowledge transfer system (within the social network platform), where the project results data are saved (i.e. energy use/savings data, waste and recycling data, happiness data, etc). This is saved as a record of the halls’ progression through the trials. (History)

- The database saves also the ‘social interactions’ of the competition therefore, the vast knowledge of the activities, and skills available at the university are saved too. This represents a bank of the ‘university and community’s resilience’ potential.

Further details regarding the project’s final design plan (i.e. competition rewards and sequence of use) are summarised under section 3.2 ‘Project Development’ and section 4 ‘Implementation Process’.

2.1 Selection of Scenario and Participants sample

Loughborough University, and its students living in Halls of Residence on campus, was selected as the scenario and participants sample to take part in the trials. This was pre-defined by the Design Brief from the main study ‘Design for Happiness Workshop’.

Taking into account the conceptual design requirements, it was necessary to choose a self-catered hall with a mixed group of residents. For this reason, one specific Halls of Residence was chosen for the trial. This has a total of 354 bedrooms divided into 6 blocks which accommodate four types of students: UK undergraduates, Sports elite athletes, overseas students with exchange programmes, and Art Foundation students. They are self-catered halls including facilities such as Laundry, Games Room, University Internet, and En-suite bathrooms.

3. Building Process

The starting point of this process consisted of adapting the conceptual design into a feasible proposal which could be developed and implemented in a real life environment. To this end, different areas of the university which were key to engage with were identified. The criteria applied to do this is summarised in Table 1.
Table 1: Collaboration Team – criteria and potential stakeholders

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Potential Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment /sustainability /sustainable development</td>
<td>Sustainability management, Facilities management, Students’ Union Ethical &amp; Environmental Officer.</td>
</tr>
<tr>
<td>Energy management services</td>
<td>Energy technicians – Facilities management.</td>
</tr>
<tr>
<td>Students’ extracurricular interests and activities</td>
<td>Careers Centre – Employability Award, Student Union (president, RAG officer, Community Action, Societies activities, Athletic Union).</td>
</tr>
<tr>
<td>Students’ accommodation services/halls</td>
<td>IMAGO services, chosen Halls of Residence Warden, sub-wardens, and Committee.</td>
</tr>
<tr>
<td>Social Networking services</td>
<td>Sustainable Design Research Group [SDRG].</td>
</tr>
</tbody>
</table>

Subsequently, the identified areas were approached with the aim of setting up a Collaboration Team that would support the project. This was an intense process that required continuous effort and persistence. The final Collaboration Team was composed of the following stakeholders:

- Sustainability team (Sustainability Manager, Energy Manager, Energy Technician, Environment and Sustainability Coordinator)
- Chosen Halls of Residence Warden and Sub-wardens
- Sustainable Design Research Team (SDRG)

Regular meetings were held with the abovementioned team with the purpose of developing and tightening the project’s design plan.

3.2 Project Development

In view of the time frame and resources available to this research project, it was not possible to plan, develop and implement the conceptual design in its totality. It was therefore necessary to adjust it, and select from the original idea, the most representative requirements. Figure 1 below, illustrates SLEUTH’s project schedule.

<table>
<thead>
<tr>
<th>TIME (months)</th>
<th>ACTIVITY</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>SLEUTH Project</td>
<td></td>
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<tr>
<td>Phase 1. Planning</td>
<td></td>
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<td>Phase 2. Developing</td>
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<tr>
<td>Phase 3. Implementing (Trials)</td>
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<tr>
<td>Phase 4. Results and Findings</td>
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Figure 1: SLEUTH Project Gantt Chart
This process involved developing and setting up the conceptual design prototype to be used during the trials. This included the development and completion of:

- **The SLEUTH social network platform**

  Figure 2 illustrates the SLEUTH ‘home page’.

- **The Best Behaviours portfolio**

  This portfolio included 3 types of activities: ‘Special Events’, ‘Daily Activities’ and ‘I Say, I Do, I make’ activities. Table 2 explains these in detail. It must be noted that:

  - Activities and events emerged, or were inspired, from the conceptual design outcome. They were all related to sustainability issues in one way or another. Energy saving was at the core of them.
  
  - Some of them were planned in advance of the project and others were added as it developed.
  
  - The venue, facilitators and technical facilities needed for their delivery were planned and confirmed in advance too.
Table 2: Best Behaviours Portfolio - Types of Activities

<table>
<thead>
<tr>
<th>Best Behaviours portfolio</th>
<th>Description</th>
</tr>
</thead>
</table>
| ‘Special Events’          | - One-to-one events proposed by SLEUTH team.  
  - Delivered by an expert in the chosen particular area.  
  - Participants to attend to the specific events at a certain time and date. |
| ‘Daily Activities’        | - Activities proposed by SLEUTH Team.  
  - Either virtual or live activities  
  - Participants to do them at a specific date and time (i.e. 1 day at 5pm, 1 week every day, etc). |
| ‘I Say, I Do, I make’     | - Activities proposed by the participants.  
  - Either virtual or live activities  
  - Participants to do them in their own time or at the particular period time ‘they’ specify for their activity. |

The Best Rewards portfolio

The aim of this portfolio was to reward the participating students for their efforts. To this end, it was necessary to seek and secure sponsoring in order to fund the rewards. As part of the university’s ethos to become a demonstrator campus, the collaboration team agreed to sponsor the project. This, in addition to sponsorship from other organisations enabled a robust selection of rewards with a wide array of options including entertainment, sport, outdoor, and home alternatives. The rewards were chosen based on values such as usefulness, novelty, and most importantly, based on their sustainability credentials (i.e. environmental awareness, eco-efficiency, fair-trade, eco-design, ethical living, etc). Examples included eco-designed MP3 players, sport powerballs, fair-trade product hampers, cinema vouchers, outdoor ‘extreme’ experiences.

It was decided that the participants would earn points depending on the type of event and effort they got involved in. They would be rewarded fortnightly through a stepped rewards system and the amount of prizes handed out was reduced as the competition developed. On the other hand, the prize ‘value’ was increased. At the end of the trials, the students who had accrued the highest amount of points would win the final prize.
4. Implementation Process
As a way to invite students to participate, and in an effort to raise awareness about the project, in the days leading to SLEUTH project’s ‘Launch Event’ posters and leaflets were distributed around the chosen Halls of Residence, the university campus, and the Student Union.

For the purpose of the trials, the competition was open only to students that lived at the chosen Halls of Residence and participation was voluntary. There were two categories of participation: as an Individual, and as a Team (a group of minimum 3 and maximum 6 students who had to share a kitchen and live on the same floor).

The trials ran for 8 weeks, time after which a ‘Closure Event’ was held with the aim of presenting the project’s preliminary results, to recognise everyone’s achievements and handout the prizes to the final winning students.

4.1 SLEUTH Experience
Once the competition was launched, the participating students were able to log-on to the Internet application (SLEUTH website) and create their personal username and profile (as individuals and/or as a team). When their ‘account’ was approved, they had full access to browse the website, which would offer them the opportunity to join different ‘activity groups’, book themselves into the different activities proposed in the ‘Best Behaviours’ Portfolio, and be pro-active about the initiative too (for example, propose their own activities, choose their favourite rewards, discuss topics, write about their own experiences, etc). Participants were able to check the results of the competition (i.e. how many points they have individually and/or as a team) as well.

Participants earned points by attending, joining and/or creating the different activities advertised on the social network. This required full-time monitoring and constant up-dating of the network.

Motivation was sustained through the social network platform and by the ‘project champions’ (Halls of Residence warden and sub-wardens). Special emphasis was placed on encouraging pro-activeness and improving resilience; participants were constantly reminded that SLEUTH ‘belonged’ to them, and therefore, they had complete freedom to shape it.
Gaining points was also used as a ‘motivation’ feature. It was monitored through the social network platform and by the ‘project champions’. The ‘project champions’ assisted in particular, in keeping an attendance record at the different one-to-one events.

Finally, the rewards were used as a ‘motivation’ feature too. Participants were rewarded fortnightly but the ultimate goal was to win the overall competition. Final winners were recognised as the ‘Best SLEUTH Individual’ and ‘Best SLEUTH Team’. It was recognition of meeting the aims of the project in the ‘best’ way:

- Address the Energy Reduction targets set for the UK;
- Build and enhance a sense of community within the students at Loughborough University;
- Raise Sustainability awareness;
- Exceptional Pro-active citizenship;
- Contribute to more Sustainable Lifestyles;
- Contribute to the community’s Happiness and well-being.

5. Results and Findings
The following sections report on the data collected (experiences and deep reactions of the participants) during the eight week trial.

Overall, approximately 50 students showed interest in taking part of the project, out of which 17 signed in. All of them participated under the ‘Individual’ category, and four teams were formed under the ‘Team’ category.

The participants’ level of involvement in the project varied from participant to participant. Through the analysis of their individual interactions, their attendance at one-to-one events, input and exchanges within the social network, etc, their level of activity was categorized into four different trends, or levels. Table 3 summarises this:-
On the subject of the administration of the project, the project demanded constant interaction and management from the Collaboration Team. In particular, the most demanding areas were:

- The social network platform - required full-time involvement (updating, prompting, and interaction)
- The energy data collection, the ‘special events’, and the rewards portfolio (purchase and delivery) - required part-time involvement.

### 5.2 Data Collection and Analysis Techniques - Methodology

SLEUTH was the object of the trial as well as a data collection technique as such; it provided an outstanding ‘real life’ environment to explore, observe and gather the genuine deep reactions of the users sample group; special attention was given to sustainable lifestyles, energy reduction, and happiness triggers. Table 4 presents a review of the methodology applied.

<table>
<thead>
<tr>
<th>Data collection techniques</th>
<th>SLEUTH - one-to-one events</th>
<th>SLEUTH - social network platform</th>
<th>Happiness and Sustainable Lifestyles contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant observation approach and the participant-as-observer role</strong></td>
<td>‘Documents’ technique</td>
<td>‘Questionnaires’ technique</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis Techniques</th>
<th>Theme-ing coding technique</th>
<th>Theme-ing coding technique</th>
<th>‘Counting technique’ and ‘Making comparisons’ techniques were used for the analysis of the closed questions. ‘Template approach’ was used for the open ended questions.</th>
</tr>
</thead>
</table>

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Table 3: Participants Level of Activity

<table>
<thead>
<tr>
<th>Level of Activity</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Active</td>
<td>9</td>
</tr>
<tr>
<td>Fairly active</td>
<td>2</td>
</tr>
<tr>
<td>Not very active</td>
<td>5</td>
</tr>
<tr>
<td>Not at all active</td>
<td>1</td>
</tr>
</tbody>
</table>

17 Participants in total
5.3 Special Events

As described in Table 2, the ‘Special Events’ consisted of one-to-one activities. This type of event was delivered by an expert in the particular area, and participants had to attend at a certain time and date. Altogether, 14 one-to-one events were carried out successfully. This was supplemented by the observation and documentation of the social network’s interactions and feedback too (section 5.4 reports this in detail).

When analysing the data gathered during these events, an example shown in Figure 3, key issues stood out. With regards to the achievements of the events as such, the feedback from the participants suggested that the events were interesting, informative and meaningful.

![Image](image.png)

Figure 3: SLEUTH Event – ‘Turning Energy on its Head’

Participants expressed their enjoyment “having to do/make things rather than just listen to someone” (SP-10). Nevertheless, turnout proved to be difficult during almost all the one-to-one events, the average number of attendance being 7-8 participants. This issue reflected on the categories of participation too; ‘Individual participation’ grew with every event while ‘Team participation’ did not. It became evident during the project that participants found it difficult to get all the members of a group to join the same events. Certain days of the week (i.e. Wednesdays, Fridays, holidays) and academic commitments had an impact on attendance too. For this reason teams activity decreased towards the end of it.

“ZZ,...You forgot the competition?! OMG
You really have to prove your loyalty to the Green Rabbit Team! :-/” (SP-10, Social Network Platform comment).
Another important factor was the appeal the events had for different participants; the events in which sustainability issues were not clearly identified as ‘the core theme’ or which used an intriguing ‘fun’ title, attracted more participants, i.e. Quiz nights, International Buffet, Bring and Buy Sale, Turning Energy on its Head. Participation was a recurrent topic all through the SLEUTH project and for this reason it is discussed in detail under section 5.5.

With regards to the project’s contribution to Happiness and more sustainable lifestyles, the evidence confirms that these were significant themes that emerged during the events. Earlier part of the research identified a number of characteristics that contribute to both of them (Escobar-Tello & Bhamra, 2009). These were used in the analysis of SLEUTH; their importance escalated as the project evolved:

At the outset participants did not know each other; this made their attitudes and interactions very timid during the first week of the project. Nevertheless, as the project unfolded it was observed that social interaction increased; week by week, participants voiced their opinions with more confidence, and were more pro-active during the different events (example illustrated in Figure 4).

**Virtuousness skills and ethics** characteristics emerged as well. Participants realised the importance of sustainability, of their role in shaping SLEUTH, and in meeting its aims for the good of the university and the planet. The ‘Waste and Recycling’ event provided outstanding evidence of this. With the aim of shaping the environmental future of the university, the
participating teams were asked to come up with an environmental / sustainability logo and theme to use as a symbol to engage students in this sort of activities. Participants took the task seriously, designed their logos during the workshop and presented their arguments to back them up. A strong debate drove the remainder of the session; debate which included deep and complex issues - such as 'what motivates people to become more sustainable' – which brought them to significant conclusions such as 'fining people and paying people to recycle is not the way forward, it needs to become habit'.

By the third week of the project, it was clear that a sense of community had developed among the participants. Particularly among the ‘very active’ participants it became usual practice to share time, activities, and skills with each other. Friendships developed too. Participants began proposing their own ‘social activities’ – being more pro-active – and meeting up for other reasons besides the SLEUTH project (Figure 5). The increasing interaction observed during the ‘I Say, I do, I make’ activities provided important evidence of this. Through the organisation of one-to-one events by their own initiative, participants began sharing products and services and appreciating the benefits of slow life or ‘slow change’. Some events were ‘just for fun’ (i.e. ‘games night’ and ‘cooking nights’) and others had a clear focus on sustainability issues in mind (i.e. ‘The Big Tech Turn-Off').

The energy savings data provided exceptional evidence on how ‘low material consumption’ was triggered effectively. When comparing the energy consumption in the chosen Halls of Residence during the period that SLEUTH project ran versus the same period in 2009, it is
clear that there were significant energy savings that amount to 7.77%. Figure 6 illustrates this in detail.

![Figure 6: Chosen Halls of Residence Energy Consumption 2009 vs. 2010](image)

It is difficult to say if the energy reductions were only because of SLEUTH, but the data suggests that the project did make a significant difference. Furthermore, the energy comparison of this same period between other university halls which are similar in terms of facilities, showed that the chosen Halls of Residence was the only hall which consistently decreased its energy consumption. Other halls presented an ‘up & down’ pattern. The energy consumption per bed was significantly lower than the other halls. No other halls experienced the same energy reductions. Even, when looking at the halls occupancy comparison between 2009 and 2010, the average is the same. On this basis it may be inferred that the energy savings cannot be attributed to having less occupancy but to the SLEUTH project.

5.4 Social Network Platform

The following results and findings collate the analysis of the ‘Daily Activities’, and the ‘I Say, I Do, I Make’ types of activities posted on the social network platform. It also reports on the ‘special events’ feedback, blogs, forums, photographs, and videos.

Overall, there were 12 ‘Daily Activities’, and 12 ‘I Say, I Do, I Make’ activities carried out successfully. Again, ‘Individual participation’ was more successful than ‘Team participation’.
The participants’ engagement and interaction with the social network platform proved to be comparatively easier than that of the ‘Special Events’. The fact that the platform could be accessed and used at the participants’ own will - in their chosen time and day – made it very convenient. The platform provided a space which gave a sense of intimacy and safety to its participants; encouraging them to reveal deeper insights of their lives, feeling and emotions. An outstanding example of this was the ‘Gratitude Journal’ challenge, which attracted the highest interaction of all ‘virtual events’; 10 participants created their individual Blogs posting a total of 76 entries. This challenge was based on a recognised positive psychology technique for increasing Happiness that consists in keeping a journal in which things for which you are currently grateful are listed. It required the participants’ to create the journal (Blog) and make daily entries of between 3 and 5 things.

“Earth Hour Today…I switched off my lights at 8.30 tonight. And I thought... how bad can it be having a shower in the dark anyway?? ... I couldn't see a thing! I'm beginning to start feeling grateful for my eyesight and for the lights. I couldn't know how much shampoo should I squeeze out; have to feel them every time I squeeze a little out. Then, I just have to keep on feeling for the walls for my towels and clothes. This is the first time I ever played 'blind-man', and it really makes me be grateful for our 5 senses that we are so luckily born with and not missing any either one of them.” (SP-06, Gratitude Journal Blog, Social Network Platform).

With regards to the project’s contribution to more sustainable lifestyles, the positive evidence was strong too. By means of the theme-ing coding technique reviewed in Table 4, it was possible to identify that all the issues relating to a sustainable society and lifestyles were successfully triggered. It must be noted at this point, that the sustainable society characteristics – or themes – are variables that form an interlocking system. Therefore triggering one characteristic will trigger another. Nevertheless, for the purpose of simplicity, the following paragraphs endeavour to examine each one separately:-

As the project unfolded, community and friendships developed, and participants’ social interaction became stronger. A pro-active attitude became the norm, particularly among the ‘very active’ participants; images, videos, and comments were updated and exchanged on a daily basis.
Knowledge and awareness towards sustainability was the strongest theme underlying the social network platform’s interactions. The majority of blogs and forums discussed environmental and social impacts due to human activities. These dialogues aimed to raise awareness but also to suggest positive ways to counteract or minimise these impacts, specifically in regards to **Low material consumption, sharing products and services**, and **‘slow change’** strategies. Figure 7 shows selected examples of these.

![Figure 7: Selected examples of social network platform’s interactions](Image)

Contribution to sustainable lifestyles' characteristics such as **Virtuousness skills and ethics** and **Holistic Health and Education** were successfully met through these discussions too. In contrast, specifically tailored activities to trigger these – i.e. ‘volunteering’, and ‘skills exchange’ - were not very popular. This type of activities required a certain amount of time and dedication; academic commitments and poor interest were found to be key barriers for engagement.

**5.5 Overall Participation**

The issue of ‘participation’ was one of the most complex topics of SLEUTH project results. For this reason it is reported on under the following section.

As discussed in previous sections, although SLEUTH was successful in triggering Happiness and Sustainable Lifestyles effectively, the number of participants was a comparatively small number of students living at the chosen Halls of Residence. The main finding in this respect then, is the confirmation that engagement in sustainable issues and lifestyles is not easy; it requires real change and commitment.

The SLEUTH project offered a wide and interesting portfolio of rewards with the aim of motivating students' participation. However, participants had to play an active role in order to win these and evidence suggested that not all the students were willing to do this. Although
the project aimed to engage widely, according to the participants’ feedback the young students’ priorities – particularly in their first year - are focused towards social recognition, glamour and entertainment. Unfortunately the SLEUTH activities did not always fall under the usual student’s ideas of entertainment (i.e. parties, alcohol, etc). Many of the events implied involvement in activities which were not always perceived as ‘cool’ among peers. As a result, the SLEUTH project attracted (in general) a certain type of student who had already some interest in sustainable issues and/or is interested in international cross-cultural exchanges.

It was observed in general terms, that engagement and involvement on SLEUTH activities was superior when points, or raffles, were offered as incentives. For example, activities which did not offer this sort of incentives - such as voting and rating events, or contributing to events’ feedback discussions – had poor levels of engagement. Participants admitted that the rewards played a main role in making SLEUTH attractive; not all participants felt genuine interest in the core aims of the project, but rather in the competition and rewards as such. Having said this, the participants acknowledged that this perspective - their attitude - changed and evolved as they learned and grew throughout the project.

The ‘How to Make Sustainability Cool’ event, and feedback from the participants and ‘Wardens’ Team’ collected after different events, shed more light on this finding and revealed the following strategies on how to raise participants’ motivation and engagement:

- Invite a role model that is recognised by students (i.e. celebrity, hall chair).
- Add more ‘fun’ and ‘sporty’ events.
- Design a ‘strong’ (recognisable) image of SLEUTH (logo)
- Increase PR campaign (more advertisement, flyers, posters, labels, videos, facts, etc).
- Use ‘shocking campaigns’ and test eco-products with participants as a way to raise awareness about event, issues and the project.
- Have more ‘raffles or instant prizes on the spot’ (at the event).
- Cater events for different types of people (i.e. alcohol or not)
5.6 Happiness and Sustainable Lifestyles Questionnaire

The following sections report on the collated results and findings of the ‘Happiness and Sustainable Lifestyles’ Questionnaire.

The questionnaire questions were tailored to capture allusions of the success of the project as such, but mainly to capture allusions to sustainability (users’ awareness, attitudes and behaviour) and to happiness. They aimed to understand if the participants would keep using their experiences beyond the trials. Also to understand if the identified benefits, changes, new attitudes and behaviours, towards ‘happiness’ and towards ‘sustainability’ would be embraced as part of their lifestyles in a permanent way or not. Considering the questions addressed ‘sensitive’ themes, it was a primary need to use a device that would allow honesty, privacy, and anonymity. As suggested by Robson (2002) research on the topic, a ‘self-administered questionnaire’ was identified as the best way to do this.

With the aforementioned aims in mind, the questionnaire was divided into two stages. Stage one focused on measuring ‘happiness’; it consisted of two closed questions adapted from The World Database of Happiness’s item bank (Veenhoven 2001). Stage two focused on evaluating the users’ feelings or attitudes towards ‘sustainable lifestyles’ and towards the SLEUTH project - success as such. This consisted of five short questions.

As outlined in Table 4, the identification of patterns through the theme-ing coding technique enabled the analysis of its responses. It must be noted again that although the influence – in this case identification – of a sustainable characteristic would inevitably overlap with another (due to their systemic nature), for the purpose of identifying the most recurrent themes highlighted by the users, only the ones which directly refer to the users’ responses were listed. A recurrent theme was considered as ‘significant’ when half or more of the users agreed/mentioned on it.

All in all, eleven questionnaires out of 17 were received back; all from very active participants. However, only ten were complete and used as data. Although the response rate was high, more responses could have been collected. One of the reasons that could explain this is that the participating students were at the end of their academic term – either preparing for exams, or already leaving for their holidays.

Knowledge Collaboration & Learning for Sustainable Innovation
ERSCP-EMSU conference, Delft, The Netherlands, October 25-29, 2010
5.6.1 Measuring Happiness

Stage one of the Questionnaire focused on measuring the users’ happiness before and after SLEUTH. The results indicated that SLEUTH contributed positively to the participant’s happiness. When referring to their present happiness (see Figure 8), ten out of ten participants reported being ‘happy’ or ‘very happy’ by the end of SLEUTH. Four reported an increase in their evaluation of happiness, and six maintained the same measures.

![Figure 8: Measuring Happiness - Present](image)

With regards to the participants’ appreciation of life’s overall happiness (see Figure 9) - this refers to ‘looking back to your life’ - SLEUTH had a positive impact too. Ten out of ten reported being ‘fairly happy’ or ‘very happy’ by the end of SLEUTH. Two reported an increase, seven maintained the same measures, and one reported one point less.

![Figure 9: Measuring Happiness – Overall](image)
5.6.2 Measuring enjoyment of participating in SLEUTH project

The results of the second stage of the questionnaire indicated that all participants enjoyed taking part in the project. Figure 10 shows in detail the participants’ strong ‘agreement’ in this respect.

![Figure 10: Participants’ enjoyment of SLEUTH experience](image)

The participants manifested with strong concurrence that the main topics that contributed in making their experience enjoyable were the events themselves - being interesting and fun -, having an opportunity to socialise and share with others, the recognition that they had raised their environmental awareness, and the appreciation that they had learned from other cultures and global issues. Figure 11 illustrates these results.

![Figure 11: What did you like about SLEUTH experience? -Topics-](image)
Based on how these topics overlapped with the sustainable society characteristics, it was identified that ‘High Social Interaction’, ‘Virtuousness Skills & Ethics’, ‘Low Material Consumption’ and ‘Holistic Health and Education’ were the most recurrent themes valued by SLEUTH participants’ opinions. These results are illustrated in Figure 12.

![Figure 12: What did you like about SLEUTH experience? -Themes-](image)

5.6.3 Measuring SLEUTH project’s influence on participants’ lifestyle

“I’m more prone to save energy and to care about the world in general. I appreciate the things that I have now and I will make an effort to help people that don’t know about it too much.” (SP-11, Happiness and Sustainable Lifestyles Questionnaire)

When asked about how SLEUTH project affected the participants’ lifestyle in general, the majority agreed that this experience did cause a significant impact. These results are illustrated in Figure 13 below.

![Figure 13: SLEUTH’s influence in participants’ lifestyle](image)
Their detailed responses pointed out to ‘Environmental awareness’ - specifically ‘energy’ related issues-, ‘Global awareness’ and ‘Taking notice’ as the most significant topics that influenced their lifestyles (see Figure 14).

The analysis of how these topics overlapped with the theme-ing coding system enabled the identification of ‘Virtuousness Skills & Ethics’, ‘Low Material Consumption’, ‘Holistic Health and Education’ and ‘Pro-active citizenship’ as the most recurrent themes (see Figure 15).
5.6.4 Measuring SLEUTH project’s benefits & barriers

With the aim of capturing the participants’ attitudes towards the project as such, the participants were asked for their perception regarding SLEUTH benefits and barriers. Above all, these results allowed capturing important allusions to sustainable attitudes and behaviours.

Participants responses, illustrated in Figure 16 below, showed strong consensus in that ‘making new friends’, and being ‘fun’ were the highest benefits of participating in SLEUTH. These were followed very closely by ‘learning about sustainability’, ‘being part of a community’, ‘helping the environment’, ‘sharing and interacting with others’ and the ‘rewards’. These results— in cross-relation to the results illustrated in Figure 15— offered an interesting contrast in opinion. This contrast suggested that although the users appreciated and found value in these benefits (community and social interaction), the activities or stimulus during the project were not strong enough to cause considerable lifestyles changes in these areas. This finding coincides also with the data obtained from the one-to-one events and the social network platform; specifically with ‘team interaction’ which proved to be poor in comparison to ‘individual interaction’.

“It makes you feel proud that you can be part of the green warrior.” (SP-08, Happiness and Sustainable Lifestyles Questionnaire)

![Figure 16: SLEUTH’s Benefits](image)
When looking at the barriers perceived by the SLEUTH participants (illustrated in Figure 1), it was observed that ‘time commitment’ came up in rank 1 without any contest. This was followed by ‘lectures and assignments’. The participants stated that the frequency of the events was high and therefore made it difficult to participate in all of them. Some added that the events were ‘too much hassle’ (i.e. long). Other comments suggested that the low participation numbers themselves, and the lack of high profile motivators (i.e. a role model/celebrity) were barriers too. These results clearly reflect on the users’ academic responsibilities and age-group related interests (i.e. social pressures).

5.6.5 Measuring SLEUTH project’s ‘long-term’ influence

With the aim of identifying and understanding if the identified benefits, lifestyle changes, and the ‘new’ attitudes and behaviours would be embraced as part of their lifestyles in a permanent way or not, users were asked if they would keep their learning beyond the trials. All users’ manifested their agreement and intentions in doing it. The majority manifested a ‘strong agreement’ as illustrated in Figure 18.
The most recurrent examples on ‘how’ they planned to keep and apply their learning experience referred to topics such as ‘Environmental Awareness’, ‘Energy’ and ‘3Rs/waste minimisation’ (Figure 19).

Now, when analysing how these topics overlapped with the sustainable society characteristics, it was identified that ‘Virtuousness Skills & Ethics’, ‘Low Material Consumption’, ‘Holistic Health and Education’, and ‘Communities’ were the most recurrent themes mentioned in the participants’ responses (Figure 20 below). This data suggests that these are the themes in which SLEUTH was most successful in triggering lifestyle changes. These are four out of nine sustainable society characteristics, which presupposes a very positive ‘start’ in building a more sustainable campus and community.
6. Conclusions and Recommendations

Based on the results and findings presented in this paper, it can be concluded that SLEUTH project was a thriving project which achieved its aims successfully. It was a good ‘first step’ in finding and setting the path for bringing university students towards happy sustainable lifestyles, which also contributed to the university’s aim of becoming a demonstrator campus. It set an example of how different areas of a university can work together and collaborate to embed sustainability at their core; it began to answer questions such as how to achieve a transition towards sustainable universities; how to implement, replicate, modify, initiatives such as SLEUTH in the longer term.

From a general perspective, the SLEUTH project portrayed the conceptual design effectively, and was developed and implemented during the eight week trials without any major problems. The one-to-one platform and the social network platform complemented each other well by reaching the participants in different ways which attracted and suited them as per their needs (i.e. extraversion vs. privacy). In more detail, the project effectively contributed in ‘greening’ the campus; it addressed energy use by reducing the participants’ energy consumption within their halls of residence and in their daily activities in approximately 8%. This result offers great potential energy savings in future replications of the project. If these results were possible with a relatively small group of participants, the results could be immense if more people are recruited (i.e. extend the competition to other halls of accommodation, the whole university).

In a significant way, the SLEUTH project did go beyond ‘just saving energy’ by having an impact on the participants’ knowledge and awareness of sustainability, and by building on sustainable lifestyle issues. This affected all active users in their ‘Virtuousness Skills & Ethics’, ‘Low Material Consumption’, and ‘Holistic Health and Education’; and in its majority, their ‘Pro-active citizenship’ and ‘High social interaction’. These are key influencers of the sustainable society characteristics, in other words, key building blocks of a happy sustainable society.

Furthermore, the participants showed a strong will in adopting this learning in their lifestyles. In particular, with regards to exercising their acquired environmental and global awareness, reducing their CO2 footprint - specially in their energy and resources consumption (i.e. food)-, and implementing low material lifestyles; mainly by reducing waste, water use, recycling more, and sharing products and activities (i.e. cooking together, buying in bulk, car sharing).
With regards to the benefits and values of the project, it can be concluded that the SLEUTH project triggered effectively a sense of belonging and cohesion, being part of the Halls of Residence community and also part of the university, as well as their levels of self-esteem, satisfaction and gratification with themselves and their actions. Again, these issues are key building blocks of sustainable and happy societies; key motivators in the path of bringing Universities towards sustainable lifestyles.

"Thank you for this Sleuth project. It spices up my stay over here. I will surely miss this when I go back to Malaysia in June."

(SP-07, Happiness and Sustainable Lifestyles Questionnaire)

In terms of the weaknesses of the SLEUTH project, ‘participation’ and ‘time commitment’ were definitely the major barriers. These barriers should definitely be attended in order to improve SLEUTH users’ acquisition of sustainable lifestyles. An important finding in this respect was the need to find successful motivators that increase participants’ numbers and their involvement in activities that enhance community ties, particularly team activities.

Finally, with regards to the SLEUTH project’s contribution to Happiness, it was possible to validate through the questionnaire results that the project resulted in an improvement in happiness. Particularly in regards to the ‘present happiness’ time-frame, which is the one strictly related to the influences of current daily activities on individuals being assessed, in this case the SLEUTH project. In addition, all the conclusions outlined above make an important case to confirm this. All in all, SLEUTH was an enjoyable project. It allowed its users to have fun, meet and make new friends, appreciate other cultures, and as already mentioned: to learn about urgent issues. In a significant way, the participants developed a sense of gratitude for the things they have; they interacted in an active way with each other; became more confident as the project developed; and felt positive about the opportunity to contribute towards a better planet/world. All of these are evidence of triggers of Happiness.

6.1 Recommendations for the Future
The following recommendations are based on the evidence discussed in this paper. These are put forward as strategies to improve SLEUTH and any other similar initiative; they are valid and can be replicated for any other university project with sustainability at their core:-

- Raise the sense of competition (individual and teams) - Implement the project on a larger scale by broadening and including other halls of residence.
• Run the project throughout the whole academic year to reduce the frequency and intensity of events, increase the participants’ opportunities to take part in different events, and the chance to split their ‘free time’ without compromising their academic or social commitments.

• Interlock the project with academic life. This would help to raise the project’s profile and deter some of the barriers. It would also link the initiative to other areas of the university (i.e. Students Union, Employability Award); the more links – the easier it will be = the best results!

• Invest in creative and 'cool' ways in which the project (events and platform) can teach and raise awareness of sustainability without labelling them as sustainable (i.e. bring in role models; promote ‘SLEUTH’ as a brand name; run more fun social events and sports events). This would cater for all types of students.

• Include significant cash returns as part of the portfolio of rewards in order to affect the participants’ immediate interests (i.e. funding for their Christmas Ball, Summer Ball, university living expenses, etc).
References


