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## **ABSTRACT**

This paper documents the rationale and experience of a pilot Australian sustainability education program, 'Living Smart Homes' (LSH) based on a community-based social marketing model. Inspired by the Australian 'Land for Wildlife' scheme, LSH is designed to engage homeowners with sustainable practices through face-to-face workshops, an interactive website with action learning modules, and a recognition scheme, a sign displayed in front of participant's houses to which additions were made as they completed modules on energy, water, waste and transport. Participants were asked to change household behaviours and to discuss the changes and the barriers to participation in the program and to making the behavioural changes.

More than 120 people participated in the program. This paper documents feedback from two surveys (n=103) and four focus groups (n=12). Participants enjoyed and learnt from LSH, praising the household sign as a tangible symbol of their commitment to sustainability and a talking point with visitors. Their evaluation of the LSH program, website and workshops, as well as their identification of barriers and recommendations for improvement and expansion of the program, are discussed.

## **INTRODUCTION**

The great paradox of the twenty-first century is that although the majority of people profess to care about the environment, very few actually lead sustainable lifestyles. For example, although more than half of Australians state they are concerned about environmental problems only 20 percent demonstrate this concern through their actions (Australian Bureau of Statistics, 2004). This is despite the fact that climate change has emerged as a major public issue over the past few years, as demonstrated by the popularity of environmental documentaries such as Al Gore's *An Inconvenient Truth* and the recent 'Live Earth' concerts held across seven continents to raise awareness of sustainability issues and prompt action.

Numerous initiatives and interventions have been designed to encourage sustainable behaviours. Community education programs and workshops are being adopted in many countries to engage residents with sustainability and initiate long-term behaviour change. Programs targeted at households typically encourage people to meet and discuss sustainability issues whilst learning new skills; critically, most programs set specific sustainability targets and measure progress (Hobson 2003). According to a recent international review of community education programs, mainly from the United Kingdom, Australia and New Zealand, energy, water and waste are the predominant topics, although seminars are held on a variety of other topics including travel, gardening, organic food and building (Taylor & Allen 2007).

Within Australia, there are many community education programs. Perhaps the most well-known national program is the Australian Conservation Foundation's GreenHome program, which involves a website with information and tips on how to save energy, save water, reduce waste,

eat green and shop smart, as well as offering workshops (ACF 2008). In addition to participating in national programs, many local councils have chosen to develop local programs to target their community. In Queensland, the Sunshine Coast and Moreton Bay Regional Councils have developed the 'Living Smart Homes' program, discussed here, which aims to engage homeowners with sustainability through face-to-face workshops, an interactive website with action learning modules, and a recognition scheme.

## **THEORIES OF BEHAVIOR CHANGE**

Theorists have developed a number of conceptual frameworks to better understand why people do or do not behave in a sustainable manner (e.g., Barr 2007; McKenzie-Mohr 2000). Some research has demonstrated that programs that go beyond traditional education approaches and combine community interaction, feedback, education/information and incentive/reinforcement approaches are more successful at producing behaviour change than programs that simply convey information (McKenzie-Mohr 2000; Taylor & Allen 2007). The development of LSH was guided by McKenzie-Mohr's (2000) community-based social marketing approach, which advocates understanding and uncovering barriers to sustainable behaviours, designing a program that specifically targets these barriers, piloting the program, evaluating it and adapting the final program to be more successful.

### **'LIVING SMART HOMES' PROGRAM**

A joint initiative of the Sunshine Coast Regional Council, Moreton Bay Regional Council, Queensland Environment Protection Agency, South-East Queensland Catchments and Queensland University of Technology, the Living Smart Homes pilot program was developed and trialled in two regional communities (Noosa and Caboolture) located on Queensland's Sunshine Coast in 2007 and 2008.

The program had three components 1) an interactive website offering action learning modules (educational), 2) a sign to be displayed on the house front (incentive/reinforcement/public demonstration) and 3) participant workshops (educational/participatory). Residents interested in registering for the Living Smart Homes program signed up on the website:

[www.livingsmarthomes.net.au](http://www.livingsmarthomes.net.au), which provided the foundation for participation in the program

with a series of activities, calculations, fact sheets, links and checklists under the four key learning modules: energy, water, waste and transport. Participants were awarded points for answering the quiz and checklist questions (e.g. do you have a solar hot water system?) and worked through a variety of online activities for each module (e.g., energy and water use calculators). Once each module was completed (a certain number of points had been achieved), the participants were sent a 'leaf' for that module to include in their 'Living Smart Homes' sign displayed on their house-front (see Figure 1).

*INSERT FIGURE 1 ABOUT HERE*

Use of the house sign was inspired by the successful Land for Wildlife program, a voluntary nature conservation program in Australia that awards a sign to landowners who engage in active conservation management (McDonald 2001). Feedback from the Land for Wildlife program revealed that people who saw the signs were encouraged to participate in the program. The LSH program used the sign 1) as an incentive for participants to make sustainable changes in order to 'complete' the public sign, 2) remind householders about their commitment to sustainability, and 3) demonstrate to others that this household was committed to reducing its environmental impact in hopes of attracting their interest.

About 90 participants attended each of two free workshops; the workshops were widely advertised within the local community and open to all interested residents, although LSH participants were specifically targeted. The first workshop was held at the beginning of program (August 2007) to introduce the program and seek feedback on desired content and expectations (i.e., participants self-identify barriers to behaving sustainably). The second workshop, held seven months later in March 2008, provided more specific information in response to participants' suggestions. In the second workshop, information was provided on environmental products, services and rebates available, as well as reflective discussion about personal experiences, challenges and successes of living more sustainable lives. The two workshops were facilitated by the Living Smart Homes program coordinators from local government, including guest speakers from industry and government as well as discussion sessions among participants.

Rather than being solely 'educational' in a top-down format, the workshops allows participants to share their experiences and learn from the experiences of others through participatory discussion periods. Participation in the workshops was not a compulsory element of LSH; the main focus was people working through and completing the online modules, with the workshops designed to inspire and assist participants with specific sustainable activities.

## **SURVEYS**

More than 120 people participated in the LSH pilot program over a seven month period. An online survey was made available for participants to voluntarily complete at two points periods: Time 1 [T1] when they enrolled in the program prior to any workshop or website participation and Time 2 [T2] after the second workshop. The first survey collected baseline data and the second was used to evaluate the program and identify any changes in behaviour, knowledge or attitudes in participants. The T1 and T2 surveys contained six sections. Section 1 included items covering the Living Smart Homes program (e.g. T1: key motivations to participate, expectations, social connections; T2: post-program evaluation questions including rating aspects of the program, self-reported behaviour changes). Section 2 assessed general sustainable lifestyle choices (e.g. eight dimensions of psychological variables from Barr (2007), including intrinsic motivation, self-efficacy, logistics, environmental threat, citizenship, response efficacy, subjective norms). Section 3 covered knowledge (true/false) and Section 4 measured Environmental Values using the New Ecological Paradigm scale. Section 5 assessed behaviour (e.g. behavioural experience, behavioural context, behavioural intention and actual behaviour). The final section asked about socio-demographics. Sections 2-6 were the same in T1 and T2 in order to compare results across time. Section 1 contained specific pre- and post-program evaluation questions as noted earlier.

Seventy participants completed the T 1 survey (55% response rate) and 33 participants completed the T 2 survey ( 26% response rate). The lower response rate at Time 2 was due to the limited number of participants who had completed on-line modules by this arbitrary time set by the internal research deadline; LSH is an on-going initiative of self-paced activity, with participants working through – at their own pace – the online activities. However, because only 17 participants completed both the Time 1 and Time 2 surveys, there was an insufficient sample

size to calculate extensive behaviour change statistics. Basic frequencies can be reported to describe participants' general attitudes and behaviours at the two time points, supplementing the qualitative focus group data. Notably, less than half of the survey participants reported attending either the August 2007 (30%) or the March 2008 workshop (48%).

## **FOCUS GROUPS**

Focus group discussions were held with 12 volunteer participants to gain a greater insight into their motivations, behaviours and opinions of the Living Smart Homes Program. People who had completed the survey and indicated a willingness to participate in future research were contacted (via email and phone) and invited to participate in the focus groups; notably, they were at various stages in their participation LSH and module completion. Four small groups of two to five participants per group were each lead by two researchers using a semi-structured approach guided by questions relating to involvement in the LSH program (e.g. why did you take part in the Living Smart Homes program?); suggestions for improvement (e.g. what suggestions would you like to make to improve the program?); behaviour change (e.g. please explain if/how the LSH changed your behaviour); motivations and barriers (e.g. what do you believe are the main barriers to sustainability at home?) and general sustainability issues (e.g. do you believe the relevant importance of sustainability has changed in Australia?).

## **ANALYSIS**

Analyses of the questionnaire were conducted using the Statistical Program for Social Sciences (SPSS), but the small sample size allows only the presentation of basic descriptive statistics. This article focuses on participant's feedback and evaluation of the LSH program, with key themes identified via a thematic analysis of the focus group data and open - ended questions from the questionnaire.

## **PROGRAM EVALUATION**

The T1 survey revealed that many found out about the Living Smart Homes program in the newspaper (39%), at a public event (24%) or through friends/ family members (21%). They were motivated to participate because they wanted to know how to live more sustainably (76%),

to help save the environment (70%), to take action on climate change (71%) and to be a positive influence to others (63%).

## **Key Benefits of the LSH Program**

### **Step-by-step Learning Modules**

Participants felt the key benefits of the program were the practical, step-by-step approach and the motivation it provided to make sustainability a priority; as many noted, LSH “*encourages us to take practical steps to reduce our environmental impact. [It] Breaks the impact of our behaviour into manageable portions i.e., the four modules*”.

### **Role Modelling and Household Sign**

As the mean responses in Figure 2 illustrates, the majority of participants were very supportive of the Living Smart Homes Program and would recommend the program to their friends (mean=4.33), had spoken to other people about their involvement in the program (mean=3.88) and believed it was a good way to engage other household members to be sustainable (mean=3.70). Participants noted that the program made sustainability salient for family and friends, with one stating that “*it made us talk sustainability with friends and family more*”.

*INSERT FIGURE 2 ABOUT HERE*

Focus group participants valued how the program gave them knowledge and tips they could pass on to others. Many described how they were motivated to participate in LSH so as to be a ‘role model to others’, and thus, publicly demonstrating commitment to sustainability was viewed as the most beneficial aspect of the program. Thus, the household sign was seen as a crucial element of the program, representing a visible signal of participants’ commitment to sustainability. Participants liked the symbolism of the sign, which visually emphasised the importance of four key areas for sustainability and enjoyed the process of ‘earning leaves’. There was a feeling that the household sign would create a ripple effect through the community, as more participants publicly display their sign and attract interest from neighbours, visitors, and



friends – already, it was “*a talking point for visitors... they, usually they will ask ‘what is it’, ‘how do you get involved’, if some of them are really interested in it*”. Participants were keen to see Living Smart signs everywhere, so that it became normal and expected to live sustainability and demonstrate your commitment via a Living Smart sign.

### **Interactive Website**

The web- based component of this program was popular with more than half (55%) who said they enjoyed the interactive self-directed nature of the on-line modules. However, it is also notable that nearly a third (30%) of the focus group participants had not yet interacted with the website, either due to time restraints, not being comfortable with using a computer or lack of understanding of what was required (i.e., not realising that if you were already very sustainable, you could pass the modules by recording current behaviours). Most people believed the content of information provided on the website was appropriate, however some thought that it was too simple for those wanting a challenge.

### **BEHAVIOUR CHANGES**

The program greatly influenced participants’ actions, with over half (56%) believing that the information they learnt in the Living Smart Homes program will influence their behaviour forever. In a self-assessment about the impact of the program, approximately half reported making at least some behavioural changes in the areas of Energy (67%), Waste (61%), Water (48%) and Transport (48%). These changes included simple behaviour changes, such as switching off unnecessary lights, reducing car use, re-using water, increasing recycling and altering purchasing behaviour to reduce packaging, as well as large scale changes such as installing rainwater tanks and switching to alternative energy sources.

As Figure 2 illustrates, participation generally changed behaviours positively even among participants who felt they already lived sustainably. Almost two thirds (60%) of participants disagreed with the statement “I already lived sustainably, so participating in this program did not change my behaviour”. Thus, sustainable behaviour change can be attributed to participation in this program.

Calculations from the LSH website modules estimate the annual collective savings of Living Smart participants, if they were to continue their behaviours for a year, to be 224,350 kilograms of greenhouse gases, 3,740 kilolitres of water, 308,963 kilometres of travel, 150,624 kilowatt hours of energy , and 37.48 tonnes of waste not deposited in landfills

## **BARRIERS TO PARTICIPATION IN THE PROGRAM**

Some barriers to full participation identified by participants included:

- Lack of technical know-how to use the online modules. One women in a focus group commented “*I’ve only just found out how to get into it. I am not really clever computer person*”.
- Lack of time to fill in the information needed to make savings calculations. For many, full participation was difficult due to work and family commitments. The process of finding and inputting data from bills (in order to complete the online modules) was time-consuming and a little off-putting for some, who admitted he had not yet prioritised the process.

*Okay I have been on the website. . . this is stuff I do outside of work. . . I would check it at night. So I haven’t been so active on the website. I have done the waste module, because it’s the easiest module for me to do, because it is the one I know I can do. The transport one I started doing, and then I saw, no I am not living sustainably as far as transport is concerned. And the water and the energy one I haven’t tackled as yet. . . purely because when I started actually doing them, I had to try and find my previous bills . . . and then I thought I don’t have time to do that . . .and I haven’t gotten back to it. (FG2)*

- Lack of information on advanced topics for people who were already practicing basic sustainability.
- The need for more hands-on specific information on how to do sustainability projects.
- The need for more contact with the program organizers to remind them to complete the tasks as well as a need to know how other participants are doing.

- The need for interaction with other participants in workshops or online or through emails.

## **EXTERNAL BARRIERS TO BEHAVIOUR CHANGE**

Participants also cited barriers to change that were beyond their individual control such as an inadequate public transport system, difficulty in avoiding excess packaging and the high initial cost of purchasing sustainable infrastructure (i.e., solar panels, sustainable light-bulbs, rainwater tanks etc). These barriers would need to be addressed by citizen action, changes in manufacturing processes, or government incentives. Whilst all participants were passionate about the need for such external change, they believed that sustainability considerations were often relatively low in the decision-making considerations of both government and industry. A few were taking leadership roles in their local communities to advocate for change (e.g., candidates for local political positions, membership of environmental advocacy groups), whilst others viewed leading a sustainable life as their contribution and a way they could set an example for friends and neighbours.

## **OVERCOMING BARRIERS**

- In order to encourage greater use of and interaction with the website focus group participants suggested that community ‘website workshops’ could help participants who were not computer savvy work through the website with others.
- To provide advanced information to participants who had already made basic changes, it was suggested that an ‘advanced section’ be added to the existing modules.
- To provide more hand-on, how-to information, there was support for the notion of ‘themed workshops’ where people could see ‘sustainability in action’, whether that be on ‘how to’ build a worm farm, install a greywater system or make a specific room in their home more sustainable, such as ‘developing a sustainable kitchen’. The possibility of a mobile LSH bus was raised, which as well as transporting participants to specific venues such as sustainable houses, could raise awareness of the program by touring specific neighbourhoods and offering practical lessons in sustainability. In the short-term, participants recommended incorporating these ideas into the website through on-line

video examples of practical sustainable practices (i.e., composting, building a worm farm).

- To improve contact with organizers and other participants. Focus group members suggested increasing the number of workshops, sending more regular emails, and providing more incentives to participate. Participants also felt that email could be used more frequently to engage them with the program, and could offer tips and inspirational stories from other participants.
- To deal with the fact that many participants will be able to spend limited time with the modules, information collection tasks should be kept simple or multiple levels of data entry could be offered.

## **INCORPORATING CHANGES**

The local councils administrating LSH are currently in the process of incorporating these changes into the program, particularly the feedback about holding specific sessions to work through each module online. Their immediate focus has been to integrate a one stop sustainable living directory of green businesses and service providers (Living Smart Solutions) with the program, providing a searchable database of local sustainable products and services. LSH remains a stand-alone online sustainability program anyone can access and complete, with plans to link specific workshops to the program over time. Refinements, such as simpler activities and an 'advanced LSH' are currently being investigated.

## **REACHING A WIDER AUDIENCE**

The pilot program did appeal first to those with an interest in the issue; many participants felt that the LSH program was 'preaching to the converted', with one person noting "*I'm afraid I'm a disappointment to your program, being very committed to sustainable practices all my life*". However, many of these participants were enthusiastic about the program and eager to help improve and broaden it. These early adopters might be put to good use in attracting additional participants.

In terms of encouraging participation by a broader audience, public recognition and financial incentives were seen as key. Participants suggested an annual awards or LSH graduation ceremony, as well as publishing names and inspirational success stories in the local paper. Monetary incentives, such as a discount on local council rates, were seen as a critical way to widen the target market and motivate those who were considering making sustainable changes to their lifestyle to take the first step. Participants also suggested incorporating greater information about products, services and rebates. Finally, there was a feeling that the LSH program should be considered in schools, workplaces and community associations (i.e., 'Living Smart Workplace, 'Living Smart Schools'').

There was significant discussion in the focus groups about the need for societal change towards sustainability, with many feeling that there was a growing movement towards living sustainable and more 'simple' lives. Many talked about the need for radical societal changes away from conspicuous consumption towards voluntary simplicity. They pointed out that living more sustainably was on a par with major lifestyle changes in health and safety such as wearing seatbelts, avoiding drunk driving, not littering and not smoking that have been accomplished through a combination of widespread social marketing campaigns, changes in societal norms and values, and, in some cases, legislation. Of course, in developing a plan to reach a wider audience, however, it would be necessary to interview people who did not respond to the initial outreach as to what messages and media they might find attractive.

## **CONCLUSION**

This paper has outlined the rationale and experience of a pilot Australian sustainability education program, 'Living Smart Homes' trialled by the Sunshine Coast Regional Council and Moreton Bay Regional Council in South-East Queensland. This program used an engaging format, including an interactive website with learning modules in four key areas (water, energy, waste and transport), supported by a sustainability sign to be displayed on the house and supplemented with participatory workshops where participants could learn more about sustainable practices and share their experiences with others. Overall, the program was viewed positively by

participants as a practical way to encourage and motivate people to lead more sustainable lives. However, the majority of participants initially attracted to the program already considered themselves to be sustainable, with a typical comment being “*I was already doing many of the things that it suggested, which I guess is a good thing*”.

Suggestions were made to attract new ‘less sustainable’ participants to the program, including mailings to all households, advertisements in neighbourhood watch publications, promoting the program through sports or community clubs and offering financial incentives to participate. In addition, the household sign was considered a vital element of the program with the belief it could create a normative, ripple effect through the community, as more participants publicly display their sign and attract interest from neighbours, visitors, and friends. It is important to ensure face-to-face workshops are conducted in conjunction with the interactive website to allow people to share their experiences, motivate each other and work through any technical issues with using the website.

In summary, the following key learnings from this study will help inform the development and implementation of other sustainability education programs:

- Newspaper advertising and articles attract participants
- Initial participants are likely to be already committed to sustainability and motivated by the idea of being a role model for others. They are motivated by the public display of their commitment (the sign) and need more advanced modules and interaction. Use these initial participants to help broaden the program.
- Provide an interactive website with information sheets, activities and checklists
- Break up information into key learning modules
- Cover a range of sustainability starting points (e.g. simple steps for new adopters and more advanced steps to challenge those ‘already sustainable’)
- Provide an attractive household sign to act as reminder, incentive and public display of commitment
- Incorporate participatory workshops to provide information, particularly on how to interact with the website, and facilitate participant connections and discussions about sustainability

- Send frequent emails to participants to keep in contact and solicit interaction.

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