GOAL SETTING, EDUCATION AND SUSTAINABILITY: LIVING SMART IN THE CITY OF FREMANTLE.
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ABSTRACT

By providing community based environmental education programs, regional governments can play an important role in enabling communities and individuals to contribute to sustainability. To be effective these programs must create positive lifestyle and behavioural changes. A new approach to community based environmental education that includes goal setting as a behaviour change technique, is presented here. Goal setting is a concept that is now widely accepted in society and has been proven in many fields as a successful strategy for increasing motivation and sustaining effort. It is proposed that the use of goal setting in environmental education programs will increase the adoption of sustainable behaviours through increased motivation, commitment and direction.

The City of Fremantle used this new approach to develop an innovative community based environmental education program, called ‘Living Smart – for a sustainable community’. Evaluation of the program demonstrated that the Living Smart program was effective not only in increasing participants environmental knowledge but also in creating positive environmental behaviour change. The Living Smart program showcases the challenges and benefits for regional governments in using this environmental education framework, when implementing community based environmental education programs for sustainability.

INTRODUCTION

Local and Regional Governments have an integral role to play in the path to sustainability through urban planning, local regulations and the provision of infrastructure and services (Leigh, 2002). Most environmental problems and solutions have their roots in local activities, therefore the participation and cooperation of local authorities is essential (Agyeman et al., 1996). Many governments are already taking steps towards sustainability through their in-house projects and services. However, with human activity the cause of many local and global environmental problems, the sustainability of an area will largely depend on the choices and actions of its population. For example, if a government’s innovative waste management system is to be effective it requires the support, participation and cooperation of the individuals using that system. Because of their close links to the community, local governments are in a unique position to engage local people in sustainability through community environmental education programs (Duxbury et al., 1988).

Contributing to sustainability will require considerable lifestyle and behavioural changes from both individuals and communities. Creating informed individuals who actively participate in the protection of the environment and the wise use of natural resources involves not only raising awareness and understanding but also creating skills and action (Gayford, 1996). The majority of environmental education programs have focused on providing information (McKenzie-Mohr, 2000). It was assumed that by increasing a person’s
awareness of environmental issues and thereby improving their environmental attitudes, the appropriate course of action in terms of personal behaviour would become obvious and would be followed (Gayford, 1996). It is now widely recognised that this linear model of knowledge, attitude and behaviour does not occur and that a successful environmental education program must do more than simply provide people with information and expect them to change (Dorricott and Dingle, 1999; Finger, 1994; Geller, 1981).

GOAL SETTING: A BEHAVIOUR CHANGE TECHNIQUE THAT WORKS

Goal setting is a cognitive theory of motivation based on the premise that people have specific goals that they want to achieve (Yearta et al., 1995). It makes the assumption that human behaviour is purposeful and that goals direct and sustain an individual’s behaviour towards achieving the goal. Therefore, goals act as an immediate regulator of behaviour (Martin and Manning, 1995). It follows that if goals regulate behaviour then goal setting could be used as a strategy for changing behaviour. In fact the beneficial effects of setting goals for improving performance is one of the most robust and replicable findings in psychological research (Locke et al., 1981). A review of the goal setting literature found that in 90% of studies, well set goals lead to greater performance than ‘do your best’ goals and no goals (Locke et al., 1981). Goal setting has been shown to be successful in a wide range of behaviour change programs. In a program designed to increase dietary fibre consumption, participants who set goals consumed 91% more fibre than participants who did not set goals (Schnoll and Zimmerman, 2001). When goal setting was used for improving the composition of students with learning disabilities, their performance increased significantly and the time they willingly spent on their tasks increased by 170% (Graham et al., 1992). In a review of behavioural interventions to modify dietary fat, fruit and vegetable intake those interventions that included goal setting were found to be significantly effective at achieving outcomes and had positive results more consistently than any other type of intervention (Ammerman et al., 2002).

A NEW FRAMEWORK FOR ENVIRONMENTAL EDUCATION

An environmental education framework which includes goal setting, has been developed and is presented here, see Figure One. By using this framework, the environmental education program provides participants with both goal setting skills and action knowledge. Participants set goals to change their behaviour while continued support and feedback is given to encourage achievement of the goals. The components of this framework are described in detail below.
Action Knowledge

While an increased level of environmental knowledge will not automatically lead to behaviour change, it is necessary that a person has some knowledge before behaviour change can occur (Dorricott and Dingle, 1999). The provision of environmental information is an essential component of any environmental education program and consideration should be given to the type of information provided. Environmental information that solely raises awareness of underlying environmental issues does not teach participants the skills needed for action or provide the motivation to drive it (Sia et al., 1986). In addition, framing environmental problems solely in terms of global or national dimensions can imply that such problems are beyond a person’s sphere of influence (Middlestadt and Greiser, 2001). Rather it is specific environmental information, and information about positive actions that is the most effective in promoting change (Kantola et al., 1984; Stern et al., 1987; Van Houwelingen and Van Raaij, 1989). Any raising of awareness about an issue must include positive messages about how to act, the benefits of the actions and that these actions will make a difference (Kearney and De Young, 1996).

Goal Setting Skills

It is unrealistic to expect environmental practitioners to perpetually intervene to maintain a single behaviour or that there be enough environmental education programs to target all environmental problems (De Young, 2000; Kearney and De Young, 1996; McKenzie-Mohr, 2000). By teaching goal setting as a life skill, participants will have the ability to change their own behaviour. Participants can then continue to change and improve those behaviours targeted in the program, even after the program is complete. They can also transfer these skills to other environmental issues and behaviours that they may be concerned about but were not targeted in the program (Mila and Sanmarti, 1999). Many people use goal setting in areas such as finances and careers, and believe that setting goals can be an effective way of changing their behaviour. However, many people do not know how to set goals effectively. The two most consistent findings concerning goal setting are that specific goals and challenging goals lead to the best performance (Locke, 1968; Locke et al., 1981; Mento et al., 1987; Tubbs, 1986). To increase the chance of goal achievement and behaviour change, it is important that participants are taught to set effective goals that are specific and challenging.
Setting the Goals

Within any environmental education program there will be different levels of knowledge, ability and motivation amongst participants. The adaptability and openness of the goal setting process will encourage each participant to change to the best of their ability by setting individual goals that incorporate changes they are both able and willing to make. The goal setting process includes three essential steps; assessing and evaluating, setting the goal and identifying motivations.

1. **Assessing and evaluating**

Participants consider the information and action strategies they have received and think about how they can apply this to their own lifestyle (i.e. what actions could they take or what existing behaviours could they improve on). This can be done individually or in small group discussion.

2. **Setting the goal**

Participants set their own personal goal by writing an overall goal, with specific sub goals and deadlines. Each participant’s goal will be different depending on what they are already doing, what they are able to do and their home and lifestyle characteristics. It is important that each participant makes a commitment to a goal during the program. By obtaining a commitment to change through a written goal the individual is much more likely to remember and act on that behaviour.

3. **Identifying motivations**

After the goal is decided on and written down, participants should identify and write down their personal motivations or reasons for wanting to achieve the goal. Participants should be encouraged to find as many reasons as they can. The more reasons or motivation they have for doing something, the more effort they will put in.

Feedback & Support

The goals should be measurable so they can provide feedback. Feedback allows people to see how much progress they have made towards their goal and how much further there is to go. Feedback can motivate people to work harder to achieve their goal, can reassure them that they are making effective changes or can persuade them to develop new strategies to achieve their goal (Becker, 1978; Van Houwelingen and Van Raaij, 1989). Support can be given by establishing networks between participants, providing personal mentors, newsletters, information lines, website forums or having ongoing contact with the facilitator. Participants may come across difficulties in achieving their goal. Circumstances may have changed and they may need to set a new goal or modify an existing goal. If participants have a source from which they can gain encouragement, ask questions and get ideas, they will be less likely to abandon their goal and will persist at it for longer.
LIVING SMART, FOR A SUSTAINABLE COMMUNITY

The Living Smart Program is a joint initiative by the City of Fremantle, The Meeting Place Community Centre and Murdoch University. It is a community environmental education project that aims to increase awareness of sustainability issues and to provide the community with the knowledge and skills to take action to improve the sustainability of their homes and their community. The program consisted of a seven week workshop series run at The Meeting Place Community Centre and covered a range of sustainability topics including waste, energy, water, chemicals, gardens, health, taking action and simple living. The Living Smart program used the framework presented in this paper to create an effective program that not only provided information but also required the participant to actively participate in the program through goal setting, see Figure Two.

Figure Two: Adapted framework for Living Smart Program

During the seven weeks, one workshop was devoted to learning effective goal setting skills and the remaining workshops were used to provide action knowledge on the sustainability topics. An information booklet was also provided which contained additional information, activities, further references and space for goal setting. At the end of each topic participants discussed in small groups what they had learnt and what changes they could make. Each person then set a goal to change or improve their behaviour in the topic area. These were compiled and each topic’s goals were made into a wall chart showing the actions committed to by all individuals within the group. This was designed to motivate participants by showing what others were doing and what they were able to achieve together as a group. At the beginning of each week, time was given to discuss progress towards their goals. This enabled participants to provide examples of achieving their goal and experiencing benefits or to discuss any difficulties they were having.

Evaluation Methodology

Questionnaires, feedback forms and control groups were used to quantitatively and qualitatively evaluate the success of the program. Questionnaires were completed before and after the program and included scales used to assess knowledge, attitudes and behaviour. These scales are outlined below in Table One. The pre and post questionnaires were compared to determine if any knowledge, attitude or behavioural
changes had occurred as a result of the program. Participants also completed an extensive evaluation form on participant satisfaction and effectiveness of the program.

<table>
<thead>
<tr>
<th></th>
<th>Number of questions</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Knowledge</strong></td>
<td>10</td>
<td>To assess participants knowledge of environmental issues. Questions were general and covered all topics covered by the course.</td>
</tr>
<tr>
<td><strong>General Environmental Attitudes</strong></td>
<td>9</td>
<td>To assess participants attitudes towards the relationship between nature and humankind. Sourced from, The New Environmental Paradigm (Dunlap and Van Liere, 1978).</td>
</tr>
<tr>
<td><strong>Specific Environmental Attitudes</strong></td>
<td>11</td>
<td>To assess participants attitudes towards the local environment and their impact on it.</td>
</tr>
<tr>
<td><strong>Sustainable Behaviours</strong></td>
<td>33</td>
<td>To assess the number and frequency of sustainable behaviours by participants. The behaviours listed were covered in the course.</td>
</tr>
</tbody>
</table>

Table One: Details of scales used in the pre and post intervention questionnaires.

Two control groups were used to compare whether changes in participants knowledge, attitudes and behaviours were a result of the program and not other internal or external factors. One control group was recruited from an established environmental organisation. The second group was recruited by dropping letters in the local area. Both groups were asked to participate in a Murdoch University Environmental Study and no mention of the Living Smart program was made. The environmental control group (envt group) was simply asked to answer the pre and post intervention questionnaires. The community control group (comm group) answered the pre and post questionnaires and were also sent an information booklet that contained the same environmental information (minus the goal setting) that the Living Smart group received.

**Characteristics of the Living Smart Participants**

While there was considerable variation within the Living Smart group on their scale scores, overall their scores were high particularly for sustainable behaviours, see Table Two. When comparing these scores with the control groups there were some apparent differences. The environmental group had the highest knowledge while the Living Smart group had the most positive behaviour. However, none of the groups were found to be statistically different (using a one-way ANOVA) from each other on any of the scales in the pre-intervention questionnaire. Therefore, it is statistically valid to compare these groups.

<table>
<thead>
<tr>
<th></th>
<th>Minimum Score Possible</th>
<th>Maximum Score Possible</th>
<th>Average score</th>
<th>Minimum scored</th>
<th>Maximum scored</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Knowledge</strong></td>
<td>0</td>
<td>10</td>
<td>7.71</td>
<td>5</td>
<td>10</td>
<td>1.82</td>
</tr>
<tr>
<td><strong>General Environmental Attitudes</strong></td>
<td>-18</td>
<td>+18</td>
<td>9.71</td>
<td>3</td>
<td>18</td>
<td>5.20</td>
</tr>
<tr>
<td><strong>Specific Environmental Attitudes</strong></td>
<td>-22</td>
<td>+22</td>
<td>15.36</td>
<td>10</td>
<td>22</td>
<td>4.18</td>
</tr>
<tr>
<td><strong>Sustainable Behaviours</strong></td>
<td>0</td>
<td>99</td>
<td>70.86</td>
<td>48</td>
<td>85</td>
<td>13.16</td>
</tr>
</tbody>
</table>

Table Two: Living Smart participants scores on questionnaire scales
Participants Behaviour Change

In the feedback form participants were asked to evaluate the changes they had made to their lifestyle as a result of participating in the program. In all topic areas participants believed they had improved their efforts to be environmentally positive after participating in the program, see Figure Three. Participants also believed the program had been effective in helping them make positive changes for all of the topics covered, see Figure Four. Importantly 68% of participants said that the program changed the way they think about lifestyle/ environmental issues.

![Environmental Efforts](image1)

**Figure Three**: Effort of participants to be environmentally positive in the topic areas before and after participating in the program (rated on a scale of 1 to 7).

![Effectiveness of program for change](image2)

**Figure Four**: The effectiveness of the program in helping participants make environmentally positive changes in the topic areas (rated on a scale of 1 to 7).

The scales, in the pre and post intervention questionnaires were compared to see if there were any changes, see Figures Five and Six. It was found that the participants in the Living Smart program significantly increased both their environmental knowledge score and their sustainable behaviour score. The community group, who received a booklet on sustainable living, significantly increased their environmental knowledge score but did not significantly increase their sustainable behaviour score. These changes were found to be statistically significant at the 0.05 level using a paired sample t-test. The environment group, who did not receive any information, did not change on any of the scales.
The Goal Setting Process

Overall participants were satisfied with the goal setting process and thought it was effective in helping them change their behaviour, see Figure Seven. Participants comments indicated that the goal setting was effective as it increased motivation, was reinforcing and made them more likely to act. For 63% of participants it was very important that they reach their goal, for 32% it was somewhat important and not important for 5%. Participants ability to set goals increased from 4.5 to 5.8 (on a scale of 1 to 7) after participating in the program, see Figure Seven. Over two-thirds (68%) of participants revisited their goals after setting them in the workshop and 55% of the participants felt that learning goal setting skills had impacted on other areas of their life.

DISCUSSION

Most environmental education programs to date have been ineffective as they do not consider how a person will change their behaviour. It is just assumed that the desired behaviour change will occur (McKenzie-Mohr, 2002). The framework presented in this paper actually facilitates behaviour change through goal setting. Goal setting has been proven as a successful technique for changing behaviour in
areas such as sport, health and finances. The results from the Living Smart program indicates that it can also be used as an effective technique for changing behaviour in environmental education programs.

Firstly, the program was found to be effective at increasing participants environmental knowledge. In the pre-intervention questionnaire their average score was 7.7 from a possible score of ten and this increased significantly to an average score of 9. The community control group who received the same environmental information as the Living Smart group (minus the goal setting) also significantly increased their knowledge score from an average of 7.8 to 8.8. The environmental control group, who had the highest environmental score to start of with (8.2) but did not receive any environmental information, did not increase their knowledge. This indicates that the environmental information, which included positive messages about how to act, the benefits of the actions and that these actions will make a difference, was effective at improving participants environmental knowledge.

It was also found that the program was effective in increasing the number and frequency of participants sustainable behaviours. The Living Smart group who scored 71 on the sustainable behaviour scale in the pre-intervention questionnaire significantly increased their score to 75, out of a possible 99. This increase in sustainable behaviours was not found in either of the control groups, despite one control group being provided with the same environmental information as the Living Smart group. This indicates that while the environmental information provided increased participants knowledge, it was not sufficient for creating behaviour change. The Living Smart group who participated in the goal setting process was the only group to change their behaviour, despite already having the highest sustainable behaviour score.

This increase in the sustainable behaviour score is further qualified by participants own evaluation of their changed behaviour. Firstly, participants believed that they had increased their efforts to be environmentally positive in all of the topic areas covered. Secondly, participants said that the program was effective in helping them make positive changes in all the topic areas. In addition, two-thirds of participants said that the program changed the way they think about lifestyle and environmental issues. Below is what some participants cited as positive changes they had made as a result of the program.

*I have reduced water and energy consumption and manage waste better. Heightened awareness of chemicals in my world, more diligent about products.*

*Using freos many eco, organic products and services. Not using the garden tap at all for last five weeks.*

*Cycle and train to work five days a week. Energy saving Globes on high use lights. Use of greywater on garden.*

*Rethinking my lifestyle. Buying more organic produce. Decreasing my cleaning products and buying safer products.
Become more physically active. Telling more people about recycling and lifestyle changes.*

The framework does not just tell people to set a goal nor does it set the goal for them. Instead it uses a participative goal setting process to increase the likelihood of goal achievement and behaviour change.
Unless participants are setting the goal willingly and the goal is of their own choosing, the goal will not be effective (Latham and Locke, 1991). The goal setting process had three steps; assessing and evaluating, setting the goal and identifying motivations. Participants were highly satisfied with the goal setting process and thought that it was effective at helping them change their behaviour, refer to Figure Sixteen. Participants felt that it was either important or very important for them to reach their goals and most participants revisited their goals after the workshop. This process was effective because it encouraged active participation, created relevance for participants and required participants to make a commitment to change.

Active participant involvement in environmental education programs is positively related to improving environmental behaviour (Zelezny, 1999). Many environmental education programs whether in the written or oral form have only a one-way flow of information, from the organiser to the participant (Ester and Winett, 1982). This does not allow the participant to actively participate in the program (Myers and Macnaghten, 1998). This new framework provided opportunities for participants to discuss the information they have received and share their experiences and knowledge amongst the group. This draws participants into the program and communication becomes a dynamic flow amongst the participants and facilitator. Feedback from the Living Smart program found that participants highly valued being able to share their experiences and knowledge with other participants.

The fact that we were all encouraged to participate made it far more enjoyable and informative.

In the time given to talk to others in the group I learnt some effective ways to improve that I hadn’t thought of.

The most positive thing about the program was group dynamics, positive people and exchange of ideas.

In many environmental education programs, participants are often bombarded with large volumes of information in a short space of time, and then sent away with the expectation that they will change. This is despite the fact that once at home participants will be confronted by other priorities, time constraints and possibly a lack of support by family members. Behaviours in the home that impact on the environment are often unconscious habits. These include, washing clothes, heating the house and using appliances. Habits can be difficult to break and will often require a conscious decision to change and continued effort. This framework and the goal setting process allows reflection, discussion and strategy development within the program. This way when participants leave the program they have already considered how the information and actions they have learnt can be incorporated into their lifestyle. They know exactly what actions to take when they get home and they have committed to these actions in their goal.

The program motivated me to take action. I was aware of things I could do but didn’t do anything. Action is the key and every little bit helps. The goal setting gave me the direction/means to take action, thus the action became attainable.

I love to see things written down so I can be reminded of my goal, which is too easily forgotten with my many daily chores and responsibilities.
During the program thirteen topics were covered and participants set a goal for each of the topics. Often these goals were long term and required continued effort. Some were short term and more easily accomplished. Importantly though, all participants improved their goal setting skills after participating in the program and the majority believed that goal setting was an important tool for making positive environmental changes. Participants now have the skills to achieve the goals they set in the program, to set new goals and to continue improving their environmental behaviour even though the program is finished. Over half of the participants felt that learning goal setting skills had impacted on other areas of their life. Thus, the goal setting is not only important for changing their environmental behaviour but they have also learnt a valuable skill which they can use to make desired changes in all aspects of their life (Locke and Latham, 1990).

CONCLUSION

The framework presented here and used in the Living Smart Program demonstrates how easily goal setting can be used to design a successful environmental education program. It simply requires additional information on goal setting and time for going through the goal setting process. Goal setting has already been proven as a successful technique for changing behaviour but had not been used within community environmental education programs. The framework presented here used a goal setting process that included three easy steps; assessing and evaluating, setting the goals and identifying motivations. When the framework and goal setting process was used in the Living Smart program it enabled participants to actively participate, to develop a goal which was specific to their life and make a commitment to change. The Living Smart program not only achieved the objective of increasing knowledge and awareness but also achieved the much harder objective of changing people’s behaviour. The Living Smart program is an excellent example of how a local government can use the framework presented here to develop a community environmental education program that enables communities and individuals to contribute to sustainability. For local governments who are serious about achieving sustainability, it is imperative that they develop links with the community so that communities, individuals and governments can make progress together.
BIBLIOGRAPHY


