The development of a collaborative learning framework to support sustainable development

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Abstract

Traditional education has generally not effectively supported local communities. This has resulted in graduates not possessing the relevant skills to allow the development of sustainable community structures. The development of more effective learning approaches, which include collaborative learning, greatly assists the process of sustainable development.

Good decisions come from good information, however determining the quality of information may be difficult. Education aims to provide students with the ability to make good decisions based on available information. Scientific and technical information tends to dominate decision-making, however it often ignores the values, knowledge and expertise of other groups. This limits the range of development options and often results in inappropriate solutions being adapted. The design of an effective collaborative learning and planning process aims to address this difficulty and incorporate different knowledge sources as well as the values and ethics of those the process is designed to help, which is generally the community.

This study identifies the basic elements of collaborative-based learning and decision making through the analysis of a number of case studies. Based on the findings, a novel collaboration based learning framework is developed. This framework is supported through the development of an implementation process, which facilitates sustainable development through social learning and the building of social capital.

Keywords: collaboration, decision-making, sustainable development, social learning, social capital.
1 Introduction

Traditional education aims to allow the integration of students into traditional social and economic structures. The formal paternalistic education model, which is generally used in Western society, is based on experts providing correct and value neutral information which the student is expected to learn and internalise. All education is value based so educators are effectively instilling their own values through the learning process. These practices hinder the development of value systems, which are ecologically rather than technologically orientated. Other models of education, which facilitate internalisation of the principles and values associated with sustainable development, are more democratic and responsive to the needs of the participants. New forms of education such as those that build on the values of the students rather than the educator, can provide the necessary skills for students to deal effectively with the challenges facing society due to unsustainable practices. Without providing these skills at an early stage to future decision-makers, it is unlikely that significant, rapid and sustainable development can take place.

Many educational studies have shown that people judge their most significant learning experiences to come from everyday life rather than from formal learning Henry [1]. Studies of well-being suggest that happy, contented people are those that are actively absorbed in challenges which they can complete successfully, where they get feedback on progress and are supported by a social network to which they feel they belong Haworth [2]. The concept of learning through experience is perhaps a more appropriate model for learning than traditional lectures Kolb [3]. This learning process entails successive rounds of experience, reflection, re-conceptualising and testing which builds skills through learning from experience, rather than from theory.

1.1 Background

1.1.1 Sustainable development
Sustainable Development according to Norton et al involves three economics related issues Norton et al [4]; an economy which is active on a sustainable scale relative to its ecological support system, a fair distribution of resources, among human and other species and the efficient allocation of resources. Over time, as the economy expands, due to population growth and increasing consumer expectations, there is also a corresponding increase in the impact of these economic activities on the environment Arrow et al [5]. Efforts to limit increases in consumption and ensure fair distribution of resources are extremely complicated and difficult to accomplish. Any attempt to understand problems of this scale must address the fundamental issue of personal preference and values.

1.1.2 Education and values
The values and preferences of children are learned and taught so the preferences of future generations are dependant on the preferences of present generations Mainwaring [6], Norton et al [4]. Learned values evolve through a process of
decision-making therefore learned and inherited values and preferences can change provided that these preferences are challenged by making difficult decisions. Attempting to influence society’s values therefore appears to be beneficial and necessary to achieve sustainable development. It has been questioned whether it is ethical to seek to influence preferences and values. Influencing people is not however inconsistent with a functioning democratic society. For a democracy to function effectively, it is necessary for structured decision-making, learning and value change to occur.

2 Method

The methodology on which this study is based is primarily a review of literature relating to collaborative learning and planning processes. Based on the results of this literature review, a theoretical collaborative learning and planning framework was developed. This framework assists in the process of sustainable development through the development of social capital, decision-making ability and self-sufficiency. A creative problem-solving workshop was undertaken to develop a suitable implementation mechanism and a consultation process was undertaken to obtain the views of relevant stakeholders. This consultation was carried out using focus groups and stakeholder semi-structured interviews.

3 Results

3.1 Stakeholder participation and learning

The development of new values systems is a necessary precondition for sustainable development to advance. Developing appropriate values can be achieved if stakeholders are engaged in decision-making regarding issues that affect them. Habermas has suggested that when a collective course of action is taken, individuals can put forth proposals that are critiqued through public discourse Habermas [7]. This discourse enables people to compile information in a coherent manner and examine new ideas, claims, beliefs and values Forester [8]. Through communicative action, this process creates legitimacy by building consensus and mutual understanding and the integration of different beliefs and knowledge types Forester [8]. Without such a dialogue, those in power can make unsupported claims and avoid criticism and debate through sanctions, strategic exclusion or threat, thereby hindering learning and development Forester [8].

A collaborative dialogue supports learning and understanding in a personal manner that speeches and oral hearings are incapable of accomplishing Daniels and Walker [9]. Opinions are examined, assumptions questioned, and common interests determined through constructive public consideration Reich [10]. An active dialogue that respects the interests of all individuals and groups and provides for their participation in a planning or decision-making process creates an atmosphere conducive to the understanding of each party’s values, interests, and concerns. A free exchange of information facilitates the perception and development of empathy with the various values and interests expressed Moote.
and McClaren [11]. This can lead to the revision of the participant’s own values and interests, which is in the public interest Moote et al [12]. This process in effect stimulates effective group learning and decision-making and the internalisation of knowledge.

In a group decision-making and learning process, the degree of participation of stakeholders depends on a large number of factors including: degree of freedom allowed, commitment to the process, resources available, level of knowledge, benefits accruing etc. The knowledge and skills of the participants however improve over time, through the constant re-evaluation of previous decisions. The level of participation varies from person to person and from process to process however a number of stages of participation are to be expected. As the participants gain knowledge, experience and earn additional freedoms they are able to contribute more fully to decision-making. A model of stakeholder participation, based on the work of the UNDP is represented graphically in Figure 1 [13]. In this diagram, the stakeholders gradually develop from being manipulated to a situation where they can effectively manage and make all relevant decisions. During this learning process, expert support diminishes as skills improve and social capital increases.

Figure 1: United Nations Development Programme [13].

3.2 Collaborative learning

A literature review of participative processes and collaborative learning identified several basic principles, which should be applied to collaborative learning processes. A synthesis of these basic principles, may be summarised as:

- Ensure democratically inclusive processes.
- Careful boundary definition.
- The use of participative methodologies.
- Aim to improve social capital.
- Provide adequate resources.
- Ensure double-loop learning.
3.3 Learning framework

Based on the work of Beierle and Cayford and these principles, a six step collaborative learning framework has been developed which facilitates the building of stakeholder knowledge, skills and expertise Beierle and Cayford [14]. The key steps involved in setting up this process are as follows:

Step 1: Determine the need for Public Participation and Learning

Three kinds of rationale for public participation and learning are useful in determining whether this approach should be used Fiorino [15], Perhac [16]. The acceptance of one or all of these rationales are a necessary first step in the process of designing a collaborative public participation based learning framework. If it is decided that all or some are necessary for success then collaborative processes should be used. These three rationales are as follows:

1. Instrumental rationale argues that public participation facilitates public policy formulation and implementation.
2. Substantive rationale argues that public participation leads to better decisions.
3. Normative rationale argues that public participation is a right of citizens and is a route to a healthy democratic society.

Even if it is decided that one or more of these rationales is appropriate then the local or state agencies must consider whether they are willing to:

1. Agree to flexibility and open-mindedness regarding the design of the process and its outcomes.
2. Accept the legitimacy of public values and recognise that this may lead to the setting of priorities, which the agency believes are wrong.

Step 2 Identify the goals and boundaries

The specific project goals along with the social and learning goals and boundaries must be clearly defined. These goals will dictate many of the design features of the process. Each goal should be examined to identify any critical assumptions. In addition a methodology needs to be developed to verify whether these goals have been met, within the given project limitations.

Step 3 Answer key design questions

There are four key questions, which must be addressed. These are:

1. Who should participate? In answering this question an assessment must be made regarding the number of people who will be affected by the decisions.
2. What degree of public participation is appropriate?
3. How much influence should the participants have? The more influence participants have in the design of the process, the more responsive it will be to their needs. This should result in a more effective decision-making process as one of the few mechanisms for building trust is through increasing public influence in the process Schneider et al [17].
4. What role will the sponsoring agency have? The agency will have to balance responsiveness against control of the process and outcomes. The building of trust will result in the gradual shifting of control towards the other participants and the creation of a more responsive process.

**Step 4 Select and modify a framework, which will develop social capital**

The above design questions can be reformulated into a series of operational questions. These are:

1. Is the scope of inclusion to be narrow or broad?
2. Will representation of stakeholder interests be based on socio-economic or interest group criteria?
3. Will the engagement be information sharing or strategic decision-making?
4. Will the level of public influence be limited or high?
5. Will the role of the sponsoring agency be passive or active?

Each of these operational issues may be answered by selecting an intermediate answer to each one of these issues. The balance of answers when incorporated in a framework, should attempt to increase rather than decrease social capital and learning.

**Step 5 Determine the resource requirements**

Resource limitations hamper the development of any process. The careful assessment of the resource requirements and the availability of resources will determine whether the goals are achievable. More modest goals may have to be set to match available resources, or additional resources may need to be sought.

**Step 6 Learning through a process of evaluation**

A well-designed framework is theoretically easy to evaluate, however in practice it is difficult. The goals identified in step two can be converted into evaluation criteria. The evaluation can then consist of the testing of assumptions, which set the design choices of step three. The regular evaluation of the framework and process using summative and formative methods should lead to the gaining of new insight which when applied, should lead to a gradual improvement of the framework and practices.

### 3.4 Integration framework

The structure, which has been developed in order to support the practical implementation of the six-step social learning and planning framework, is based on the output from the creative problem-solving workshop, consisting of individuals from technical and non-technical backgrounds. The structure consists of four main elements, stakeholders, project management team, technical support team and also the output of the process, which consists of policies, programmes and projects. The role of the project management team is to facilitate the process
and ensure that the framework principles are applied. In addition they ensure that the decision-making process is carried out in a rigorous manner. They also ensure that the power relations between all participants are effectively managed and that personal and organisational learning takes place. The role of the technical support team is to ensure that the data and information requirements of the stakeholders are met. This may be achieved by carrying out research, developing models or technical expertise which will assist the stakeholders in making well-informed decisions. A diagrammatic representation of the structure of the collaborative learning and planning framework is shown in Figure 2.

Figure 2: Structure and development of the collaborative learning and planning framework over time.

The three participant groups interact while using a formal decision-making process, through which decisions are made and action is taken. The degree of involvement of the participants varies over time, with stakeholder participation increasing while technical support and project management roles gradually decrease and are transferred to the stakeholders. From an initial start position where the technical support team and project management team effectively control the process, this evolves to a situation where the stakeholders have the necessary expertise to undertake both of these functions independently. At this stage the project management team and technical support team functions have been taken over by the stakeholders and they fully withdraw from the process. As the stakeholder’s expertise grows the number, complexity and size of projects, which they undertake, grows.

3.5 Decision making process

The decision making process is a key element of the process of collaborative decision-making and learning. The development of decision-making skills is a
key component of sustainable development, as is the development of a community’s ability to manage their own affairs in an environmentally responsible manner. By building on the experience gained from previous decision-making the participants can improve the effectiveness of their decision-making.

The stakeholders involved in the planning process are the decision makers. It is their role to ensure that effective policies, programmes and plans are developed to ensure that environmental, social, economic, cultural and political concerns are met. This cyclical process consists of six main steps along with a continuous process of monitoring and evaluating the information and decisions.

3.5.1 Description of the decision making process
The decision making process has been selected from a range of models as it was initially developed to assist in decision-making in contested environments. The steps are:

1. Explore the context of the issues. This involves exploring the needs and wants of the participants and the characteristics of the situation. It also explores and judges the relationships, which exist within a given framework.
2. Formulate problems and opportunities. In order to address the issues identified in stage one, a number of problems and opportunities are identified using a range of techniques such as “Potential Problem Analysis”, “Conventional Brainstorming”, Martin et al [18] and others.
3. Create a model. A model or series of models of the given situation are created in order to determine the likely outcomes of a range of actions or scenarios.
4. Carry out analysis. The results of the models are combined with a wide range of information sources to obtain as accurate a representation of the situation as possible.
5. Interpret results. Based on the insights gained from the modelling and analysis processes, decisions are made regarding the best course of action to take.
6. Take action. Once a decision has been made it is implemented through a range of policies, programmes and projects in order to achieve the required objectives.

4 Discussion

The lack of appropriate learning frameworks hinders the process of sustainable development and also limits the success of decision-making. Environmental problems and opportunities are not single, unique events but are constantly evolving, as society develops. In order to adequately address environmental issues and sustainable development, planning should be seen as a continuous process and not as an output. Sustainable learning strategies therefore should consist of a cyclical decision-making process, which is constantly modifying its planned actions in light of new information, and changing circumstances.
Collaborative learning processes take much more time to carry out than conventional educational programmes and they can be more resource intensive. They can however capitalise on stakeholder resources and have the potential to be more cost effective in the long-term than conventional planning systems, as they help to avoid major conflicts, litigation, project abandonment, and policy reversal.

Collaboration facilitates the sharing of power and expertise among specialists and the public and allows the transfer of knowledge. This greatly assists in the building of trust and allows the integration of local knowledge, values and beliefs into decisions, which will leads to the development of more appropriate solutions for local problems.

Overall the collaborative decision-making and learning framework, which has been developed, is an appropriate solution for the effective planning of sustainable development and for the education of its participants. It incorporates a number of improvements on traditional educational processes, as it is participation based. It adds to the body of knowledge in relation to the role which education can play in the area of development planning and provides a challenging way of thinking about the role of education. It combines community development and the building of social capital, which is a relatively new aspect of learning. It also involves the community in a practical way in all aspects of decision-making, which facilitates the process of sustainable development.

References


