

Scats, Bats and Bridges: A community-wide learning approach at Slaty Creek

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Accepted for Publication in the Community Development Journal (2006)

Abstract: *This study explores the role of cultural activity in transferring scientific knowledge via school children to the wider community. Drawing on Abson and Lawrence's (2003) evaluation of a wildlife corridor built into the new Freeway by-pass at Slaty Creek, Macedon, this project drew together a local school, the science team, and local artists to engage the wider community in issues of local wildlife habitat management. As governments and their agencies attempt to engage and communicate we explore a culturally-based approach to building community knowledge and thereby enhancing a community's capacity to act.*

The notion of building community capacity, along with ideas of local empowerment and ownership, are key foci for government agencies concerned with development and implementation of public policy in rural and regional communities. Unlike the more traditional approach of information transfer from expert to layperson, new models of engagement involve assisting communities to better manage their own human, environmental and economic resources through devolution of responsibility to the local community. This transfer of responsibility a crucial prerequisite for finding solutions to a broad range of problems - social, environmental, cultural and economic - and to building community capacity to make them work.

Effective community action requires knowledge and skills as well as trust, cooperation, motivation and community cohesion. Building community capacity requires transferring knowledge and skills between people (both internal and external to the community), and fostering the positive and creative energies of a motivated, trusting and coherent group.

At the heart of building community capacity to act is the ability of individuals to engage others. Researchers, policy makers, governments, and communities seeking to nurture resilient and dynamic communities will fail if they don't engage people in a profound and meaningful way (Spokes, 2003). According to Max-Neef et al (1987, p22) perpetual frustration at not being able to participate, express opinions, be heard and respected has systematically eroded the creative capacity of people, "...leading them slowly from active resentment into apathy and loss of self-esteem". We need to re-ignite these creative energies.

Unsurprisingly, then, the arts are being rediscovered as a means to engage people (Australia Council, 2004). According to Spokes (2003, cited in Rogers and Spokes) "...the arts can reach people, can move them, can inspire and challenge them". Hawkes (2001) argues that it is in the amorphous dimension of art and culture that the vital ingredients of any effort to build community capacity to act reside, that "...the cultural dimension encompasses the world of values, motivations, aspirations, attitudes, creativity; a world where hopes, dreams

and plans engage the heart and soul, not just within the psyches of individuals but between them and among them at the heart of communities themselves” (Hawkes, 2001).

While involving people in creative pursuits is becoming a widely practiced community development tool for building community connections and inspiring people to participate, the focus for the creative works is rarely directly related to strategic planning and the development of local knowledge about relevant and important issues. According to Rogers (2001; 2004), whose recent work has focused on the development of community-based indicators of sustainability, the use of arts practices not only engages people in community, it can help to create the type of environment necessary for the exchange and development of complex concepts, technical language, and the creation of new knowledge. Arts practice, by its very nature, promotes dialogue, communication, and social interaction (Lucy, 1997) thereby having a vital role in achieving the essential element of community development - prolonged and meaningful engagement.

Hyman and Shingler (1999) in their study of consumer participation and knowledge-seeking behaviour found that only a small proportion of people were information seekers, actively engaged in gathering the information necessary for informed decision-making about consumer, political, and other life decisions. They point out that the responsibility for consumer and citizen education alike falls on the family, schools, continuing education, and the consumer education and marketing operations of businesses, and that there is “...widespread failure of these institutions to assure the requirement of a market economic model and democratic society that consumers and citizens understand and can evaluate their choices and make wise decisions” (p. 406).

A European study of different ways of communicating information about the ecological effect of roads on wildlife to local residents (Puky and Vogel, 2003), found the usual methods of mail drops, brochures, media releases and workshops to be of limited value. The efficiency of public relations methods increased with personal involvement; people needed to hear interesting stories and to develop important relationships. The publication of materials alone, “...no matter how brilliant they are in themselves, is not an adequate public relation strategy” (Puky and Vogel, 2003, p.10). Interestingly, they suggest strategies such as the involvement of children in an international competition on the effects of infrastructure on wildlife, as being more effective in engaging the wider community.

This gap in information transfer/exchange is revealed in the environmental movement, where knowledge and understanding are necessary for local environmental action. Bringing together environmental science information and the arts is a new field of activity and research. Curtis (2003) for example, is exploring the level of community knowledge enhancement achieved through a) a theatrical performance by school students, b) a presentation by a ‘real’ scientist, and c) a combination of both performance and scientific information. This work is still in progress - however, preliminary findings and the recent work by Rogers and Spokes (2003) in *Small Towns: Big Picture*, suggests that the arts can convey scientific knowledge to communities.

Scats, Bats and Bridges asks whether scientific knowledge can be transferred to the wider community by engaging school children in both scientific and artistic pursuits – subsequently exhibited to the public. If knowledge can be developed in children, in such a way that it is reflected in creative and expressive ways, the information will flow on to parents and maybe the wider community.

The Slaty Creek wildlife freeway underpass, located in the Black Forest near the community of Macedon, was our focus for exploring these ideas for the transfer of scientific knowledge concerning habitat management of the local wildlife.

The Slaty Creek Wildlife Underpass

During 2001 the Calder Freeway was extended to bypass the township of Woodend in Central Victoria. The bypass bisects the Black Forest at Macedon, causing vegetation fragmentation, increased potential for wildlife road deaths, and general disruption to wildlife movements throughout the area. To minimise these impacts the road authority built a state-of-the-art wildlife underpass at Slaty Creek..

To monitor and evaluate the effectiveness of the underpass Lawrence and Abson were commissioned by the road authority to undertake a year long research program using a wide range of wildlife detection methods – made necessary by the nocturnal nature of many Australian fauna.



Figure 1: Slaty Creek Wildlife Underpass

This landmark study in evaluating the effectiveness of a particular type of wildlife underpass also provided a unique opportunity to directly involve scientists in the local school's science and environmental studies curriculum.

1. Active searching: Lifting logs and rocks to find reptiles, amphibians and small mammals.
2. Anabat: An electronic device that can detect and record the echo-location calls of bats.
3. Audio recordings: Recording and identifying bird calls, frog calls, and other mammals.
4. Bird survey: Observations of birds at a set location for a period of 20 minutes.
5. Elliott traps: A small metal box that is triggered when an animal investigates the bait (honey, oats and peanut butter wrapped in muslin).
6. Hair funnels: A half funnel with a sticky wafer that can remove a small sample of hair from the animals that investigate the bait (honey, oats and peanut butter wrapped in muslin).
7. Harp traps: Shaped like a harp with a canvas bag at the base, it is used to trap bats.
8. Incidental observations: Observations of animals or animal signs at any time whilst in the study area.
9. Nest boxes: Wooden boxes with holes designed to be attractive to wildlife.
10. Pitfall traps: Holes dug into the ground with a small fence directing animals to fall into the pit.
11. Roadwalk: Walking along the verge of a road looking for road-killed animals.
12. Sand tray: A length of sand to detect footprints of medium to large animals that walk on it.
13. Scat analysis: Collection and identification of animal scats.
14. Spotlighting: Using a bright red filtered light or a nightscope at night on a walk to detect nocturnal animals.

Figure 2: Range of detection methods used to detect wildlife movements within the underpass

As a legislative requirement the road authority initiated a community engagement process aimed at keeping the community informed about the freeway developments and its impacts. The engagement strategy included establishment of a Community Advisory Group, regular media releases, and a final mail drop to provide information about the effectiveness of the wildlife underpass. The mail drop did not eventuate as the expense outweighed the perceived benefits by the road authority.

The Macedon Community

Macedon (population of approximately 700) is located in the Mount Macedon Ranges Shire, 60 kilometres north of Melbourne, Victoria. In the nineteenth century, Melbourne's wealthiest residents escaped the summer heat at Mt Macedon, where they built impressive mansions and created some of Victoria's finest gardens. The area still attracts people to its cool, moist, forest environment, with a growing number of residents commuting to Melbourne for employment.



Figure 3: The Black Forest, Macedon

Like most non-urban areas, the population of Macedon is increasingly dominated by people over the age of 45. The Macedon community has a slightly higher average income than the rest of regional Victoria, with 7 per cent more people having post secondary education qualifications and 6 per cent more people reporting weekly use of the internet (Australian Bureau of Statistics).

A number of forest conservation-oriented groups were identified as operating within the area - including the Wombat State Forest Community Advisory Group, the Macedon Conservation Society, local Land Care groups, representatives from Trust for Nature and local/state government environment protection agencies.

Preliminary Community Survey

To assess the existing level of knowledge about the Slaty Creek wildlife underpass and the issues surrounding local wildlife habitat management, the Macedon community was surveyed prior to the commencement of the school-based program. 25 respondents were opportunistically identified as they visited the town centre. Each respondent completed a written questionnaire - eliciting information on their:

- general knowledge of the Slaty Creek wildlife underpass;
- knowledge of local wildlife ñ how many they could name; and
- current level of involvement in local habitat conservation activities.

Question type	General response
Knowledge about the Slaty Creek wildlife underpass	17 out of 25 were unaware of its existence
Identification of local wildlife	2 out of 25 people were able to correctly name 14 different ‘native’ fauna. Most others identified feral animals such as foxes and rabbits and native animals in generic terms (eg. birds, lizards, kangaroos, possums)
Level of involvement with a local conservation group	21 out of 25 reported no involvement.

The community was not very familiar with the wildlife underpass, had limited knowledge of local wildlife and was not widely involved in conservation activities.

School Program

The year six class of the Macedon Primary School was chosen by the school Principal to participate in the project, because of the curriculum focus and the interest and expertise of the teacher. Development of the curriculum for 2nd semester was undertaken in collaboration with teacher educators from La Trobe University, and the scientist (Rod Abson) who did the wildlife monitoring work at Slaty Creek. The program directly involved students in the use of the different detection methods used at Slaty Creek (see Figure 5).

In addition to the project methodology, the teacher of the year 6 class incorporated the wildlife underpass and the local inhabitants theme in most of the semester curriculum. The students wrote stories, conducted their own scat analysis projects, and researched the habits of several less known fauna of the local area. The students produced an array of creative posters, books, drawings reflecting their growing knowledge about the implications of freeways for wildlife movement, the scientific methods for detecting wildlife activity, and the habitat management options which can be employed to reduce the impact of road infrastructure.

Scat collection and identification - With rubber gloves and paper bags, students collected scats from within the underpass. In the classroom students identified which animals had been in the underpass using reference scats and other information.

Hair funnels - prior to the program commencement hair funnels were placed around and within the underpass to gather hair samples from animals. Students collected the hair funnels and examined the different types of hair that animals have through microscopes.

Bird call recordings - Students went into the west side of the Black Forest away from the Underpass, and using a directional microphone and note-taker, recorded bird calls.

Active searching - Students lifted rocks and logs in search of frogs and reptiles that live in these places.

Plaster casts from sand tray - Fresh sand spread across the access to the underpass. The students made plaster casts of footprints made by animals as they passed through. In the classroom the students identified the animals from the footprints they had collected.

Nest box checking and nest box construction - With a ladder, students checked the nest boxes which were located along Slaty Creek. The different designs of nest boxes were discussed.

Spotlighting and frog call recording - On a night visit to the underpass, the students searched for nocturnal animals (eg. possums, gliders and kangaroos). Frog calls were also recorded with a directional microphone and note taker.

Anabat recorder - records the echo-location frequency calls of bats and displays them on a laptop screen. This was used to observe the presence of small bats as they moved through the underpass. It highlighted the presence of 10 different types of very small bat.

Wildlife habitat features - The habitat protection measures used in the underpass provided information about various ways habitat can be enhanced - eg tree planting, retention of rocks, logs and large old trees, making nest boxes for hollow-dwelling animals, and the construction of poles and ropes to enable gliders and possums to move through the underpass where there is insufficient tree cover.

Figure 4: Activities undertaken by the students during the study

The Role of the Artist

Two artists, a ceramist/rock artist and a photographer, were commissioned to work with the students to produce a range of creative reflections on what they were learning about their local wildlife. The students photographed their activities within the overpass and the classroom. The images were then used in a variety of ways to produce collages and create wildlife characters. The rock artist used local stone in a process where each student created an image of a local animal within a diamond shaped tile. The tiles came together as a 5 metre long snake which was installed in the school gardens (refer Image ?).



Figure 5: Rock creation reflecting the local wildlife

The Final Exhibition

The students' work was publicly exhibited - attracting over 200 people. The Exhibition provided an opportunity for local conservation groups, forest management agencies and the road authority to showcase their activities.

Animals Galore	
Artists:	Lara McArthur-Dowty, Tarryn Fisher, Elisha Dedman, Sienna Ludbey, Emily McArdle
Materials:	C-type photographs, organic matter, paper, glue, paint.
Artistís Statement:	We made these collages of animals from Slaty Creek, using photos that we took at Slaty Creek. We did it to teach people about the Underpass and the animals that live there.
Eagle eye night view	
Artists:	Sam Smith, Red Wooley, Sarah Aitken, Dylan Ellis, Rhys Waldron
Materials:	Foam board, paint, c type photographs, organic matter, fabric, tin foil, thread, cardboard.
Artistís statement:	This night view has been made to show how many species of animals pass through the slaty creek underpass at night. We have helped our animals hide in this landscape. Can you find them?
Four Boxes	
Three constructed boxes with two-dimensional views of different spaces at Slaty Creek and one box filled with sand echoing the footprints of native animals.	
Bridge Box	
Artists:	Mark Cox, Will Monaghan, Josh Nicholson
Environmental Box	
Artists:	Mary Fleming, Ellie Kennett
Habitat Box	
Artists:	Mary Fleming, Ellie Kennett, Mark Cox
Footprints Box	
Artistís Statement:	We looked at all the views we could at Slaty Creek and we came up with these pieces of art.
Kevin	
Artists:	Danielle Koller, Jevan Poulton, Marcus Italia, Rory Henry
Medium:	Digital short film (narrative), made from C type photographs and original sketches.
Artistís statement:	This short film revolves around Kevin, an alien who has crash landed in Slaty Creek. The film uses original sketches and photographs to display Kevin's adventures in Slaty Creek.
Rex and Eddie	
Artists:	Beth Fisher, Amanda Kei, Tamara Dalglish, Tamara Sawyer, Christian Jaros
Materials:	Cane baskets, c-type photographs, organic matter, cardboard, paint.
Artistís Statement:	This is our representation of the echidnas that live in the Slaty Creek Underpass. They were made by using photos which were taken at Slaty Creek.
The Holy Tree	
Artists:	Jack Damrow, Charles Doncaster, Alex Taylor, Chris Harding and Mitchell Thomas
Medium:	C Type Photographs displayed in short movie format with audio.
Artistís statement:	A short movie about five adventurers pushed by an angel to find The Holy Tree. But the challenge is to complete the obstacles first: finding animals poo, making a hair funnel, finding footprints, and finally finding the talking birds to tell them where the tree is.
The Journey Snake	
Artists:	All the year 6 students
Materials:	Clay tiles, local stones
Artistís statement:	Each segment of this depicts an animal found in our local forest. The snake represents our journey in learning about these animals. This 5 metre long snake will live in the school garden for years to come.

Figure 6: Catalogue of Artworks produced by the Macedon Primary School students showcased at the Exhibition.

Community Perceptions and Understandings

At the close of the exhibition, people were asked to complete a questionnaire. This second survey sought to identify who had attended (ie. was it just parents?), and what impact the children's work had on their thoughts and feelings about local wildlife their management.

As indicated by the initial survey, the community's knowledge of the Slaty Creek wildlife underpass was very limited, with 60% of respondents being unaware of its existence. Even fewer appreciated its significance for local wildlife and the field of freeway infrastructure developments - of those who knew it was there, few knew anything more about it. The initial survey also showed a low level of knowledge about the variety and habitat needs of wildlife found in the Black Forest.

A key finding of study was the dramatic increase in both the children's and community members' ability to correctly identify and name local wildlife. The students were now able to describe animals down to species level (ie. White-striped Freetail Bat) and discuss the habits of over 60 local fauna.

A significant majority of those who attended the exhibition said they were now more aware of local habitat needs (94%) and of the impact of feral animals on local wildlife (87%). 58% said they would alter the way they managed their domestic animals as a result of the exhibition. All respondents reported an increased appreciation of the contribution of the underpass to the maintenance of local wildlife habitat.

More interesting was the relationship between adults and students during the exhibition where the young people became the teachers and presenters. From past experience adults have seemed very reluctant to engage with scientific language and information when it is being presented by 'experts'. In this instance, the adults were conversing with the students about their work, using the scientific terms as presented, and asking probing questions which went beyond a sense of courtesy. The student's work was clearly informative and inspiring – leading the adults to want to know more.

The attendees reported being inspired by the children's work, saying it had engaged their emotions about the way we manage our wildlife. Some said it had opened their eyes to the significance of the underpass and other wildlife management issues.

A further observation from the exhibition was the level of discussion stimulated by the children's work. People who were not familiar with each other were engaged in conversation about the issues presented and how their community was responding, and how it could improve. The students were seen as a source of information, and their teachers were keen to continue the work begun. The approach taken in this study had clearly stimulated new dialogue and created a fertile environment for the exchange of knowledge and understanding.

Discussion

Essentially this study explored the role of the arts in making information accessible to community. The exhibition facilitated communication of complex ideas and terminology to adults - by children. Often adults resist using terminology perceive to be technical or

scientific in the fear of being incorrect. This common experience of science anxiety was observably reduced as adults and children engaged in relaxed communication using scientific terminology - such as scats (rather than poo). The more confident people become with specialised language and terminology, the more able they are to confront the barriers often erected by such language - and they feel good about knowing and using such terminology.

Emotional and intellectual engagement are at the very heart of a community's capacity to act - which requires not only knowledge and skills, but trust, cooperation, motivation and a level of community cohesion. Consequently, the notion of building community capacity relies the effective transfer of knowledge and skills between people, fostering the positive and creative energies that typify a motivated, trusting and coherent group. As Lucy (1997) asserted, arts practice promotes dialogue, communication and social interaction - essential ingredients of achieving prolonged, meaningful community engagement.

Given that the more traditional methods of community engagement, and the exchange of knowledge, generally involve the use of technical language in both the written and spoken form via brochures, news items, and workshops, it is not surprising that much of this information never reaches the community - as demonstrated by the lack of knowledge about the very existence of the Slaty Creek Underpass even though information had been provided by the road authority. The Macedon community, being one of the higher socio-economic groups in the regional / rural context, would arguably have a greater capacity to seek out and utilise information than a community of lower socio-economic status. In the community development and capacity building field, this has significant implications for the way in which information is conveyed. Given that knowledge is power - and an essential ingredient to a community's ability to effectively respond to both internal and external impacts and change, current methods of information dissemination aren't the most effective.

The desire to build local knowledge and capacity to ensure the long-term viability of people and their environment has become a key part of government policy on rural and regional community development in Australia. This study demonstrates a sound model of community knowledge development which is grounded in the concepts of community ownership, community empowerment, and community engagement through the engagement of people in creative pursuits.

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