

Bath Spa University School of Education/School of Science and the Environment

Application for Research Centre Funding - Children and Environment Research Centre (CERC)

A title for the proposed activity

A Noisy World? Children's Noise Maps and Perceptions of Environmental Quality

A summary of the proposed activity

This is a pilot study which intends to;

1. feed into a larger research funding bid to the Joseph Rowntree Foundation;
2. develop a methodology for conducting scientific research with children;
3. devise a methodology *with* children to construct digital noise maps of their local environment.

The programme of activities is as follows:

Jan-Feb 2009	Desk based research examining and documenting policy and research context
Mar 2009	Secure and agree school collaboration; plan activities; recruit and train BSU student demonstrators
Apr- May 2009	School-based workshop on the science of noise; sustainable development; collection of classroom data
Jun 2009	BSU based workshop to select the work to be mapped followed computer mapping sessions with school children; staff follow up research
July 2009	Interactive Children's Noise Map and Digital Archive published on internet (CERC/BSU hosted)
July-Oct 2009	Write up of two research papers for peer-review and publication: RB to lead on <i>Environmental Education Research</i> , MM to lead on <i>Children's Geographies</i>
Nov-Dec 2009	Preparation and submission of research funding application to JRF

The pilot project will begin to investigate the following key research question:

How do children perceive noise?

Relational question

What sorts of understandings do children hold of environmental quality as defined through noise?

The pilot project will work with one local primary school (Southdown Junior School) to devise a participatory methodology that enables children to capture noise (as distinct from *sounds*, see below) as an integrated part of their KS2 Geography

curriculum. The pilot will focus on those aspects which relate to the National Curriculum, Education for Sustainable Development initiatives. In particular:

- Developing pupils' knowledge and understanding of the concept of sustainable development and the skills to act upon this understanding
- Developing pupils' knowledge and understanding of key concepts of sustainable development, such as interdependence, quality of life and diversity
- Developing pupils' skills of critical enquiry and an ability to handle and interpret information
- Exploring values and attitudes about complex issues, such as resource use and global development.

The pilot additionally involves an opportunity for BSU Geography undergraduates to work alongside Education postgraduate training teachers. The Department of Geography recently hosted (November 2008) the Royal Geographical Society accredited Ambassador Training Scheme, which trains and CRB checks undergraduates who wish to work with children in a schools setting (34 current Geography students have undertaken this training). Together with children as co-researchers the project team will develop an online Noise Map of the wider school community.

A list of the staff involved in the proposed activity and their roles

Robert Barratt, School of Education, CERC (Head)

Mary ffield, School of Education, Programme Leader Primary and Early Years

Pat Black, School of Education, Programme Leader Primary and Early Years

Mark McGuinness, School of Science and the Environment, Head of Geography

Elisabeth Hacking, University of Bath, Centre for Research in Education and the Environment, CREE

Team member	Role
Barratt	Project co-ordination of BSU trainees Desk review of research and report writing/ dissemination Data analysis Publication of paper to <i>Environmental Education Research (EER)</i> University/school workshops
McGuinness	Project co-ordination of BSU undergraduates and use of noise technology / GIS Desk review of research and report writing/ publication and dissemination Data analysis Publication of paper to <i>Children's Geographies</i> University/school workshops
Black	Project management in school with graduates and trainees/ data analysis/ dissemination
ffield	Project management in school with graduates and trainees/ data analysis /dissemination/
Hacking	Project advice on contribution to the sustainable school framework Publication to (EER) (CG); Project evaluation Further bid writing JRF

A detailed rationale for the proposed activity

Measures of environmental quality have become important indices of social exclusion, quality of life and deprivation. These indices have most usually focussed on air, water or soil pollution and/or contamination. Most commonly, factors that are relatively permanent or enduring have been empirically measured. However, some recent research and work in environmental politics (Dobson, 2004) have focused on environmental indicators that have no 'form' and do not necessarily endure, in particular light and noise. Both of these environmental qualities are of particular interest to social scientists for they are malleable and socially specific. Noise is socially defined, usually through reference to magnitude (normal sound amplified beyond acceptable levels) geography (sounds experienced 'out of place') or temporality (unwelcome sounds experienced unexpectedly, such as during the night). The scale of the problem should not be underestimated:

Environmental noise has become a serious societal problem in many industrialised countries. It has been estimated that more than 90 million people in the European Union suffer from unacceptable noise levels and a further 180 million live in so-called 'grey areas' where noise can cause serious annoyance. The main contributor to environmental noise, defined as outdoor human-generated sound that can be heard in domestic environments, is transportation, particularly road traffic (EU Transport Research, 2005)

Increased stress levels, poor sleep and broken concentration derived from constant exposure to unwanted sounds in urban environments are thus implicated in high rates of mortality, family breakdown and community stress. Thus has exposure to noise become a further quite sophisticated index of environmental quality (DEFRA 2008; EU, 1996, 2002; Kluijver & Stoter, 2003; Lee et al 2008, McGuinness, 2009).

Noise, however problematically defined, has recently become a significant environmental issue with pressure groups such as Noise Concern, the Noise Abatement Society and UK Noise Association calling for increased action from legislators. Governments have responded, primarily in the form of noise control measures at varying spatial scales. In the UK and Europe, we have seen a suite of legislation that now requires member states to measure – and publicly map – noise.

The 1996 Green Paper on Future Noise Policy prefigured the (2002) European Environmental Noise Directive (2002/49). DEFRA's (2006) Environmental Noise (England) Regulations were the national response and in late 2007 DEFRA's Noise Mapping England website was published (<http://noisemapping.defra.gov.uk>). This website is predictive only; that is, all data are derived from a computer model. No empirical research underpins these maps; the proposed research will contribute to the evidence base on this issue using real world data and develop a methodology for further work with and by children to identify and map noise.

The research team have extensive and recent expertise in working with children to encourage them to make sense of their environments in their own ways, not necessarily in ways that are framed by agendas built at the adult-scale (McGuinness, 2006; 2007; Barratt, 2007; 2008; 2009). There are sound pedagogic reasons for working with children on any issue, but particularly with issues where adult scale

narratives and explanations (new trip generators, rat-running, airport expansion etc) predominate. Children’s experiences and perspectives can generate novel insights on emerging and established problems. They may understand issues in unpredictable, innovative and unique ways (McGuinness, 2007; Tapsell et al, 2001; Tunstall et al, 2004, Valentine, 2000). As noted in much radical educational philosophy (Flutter and Ruddock, 2004) they approach issues with less investment, less ‘trained’ ways; the education system, of course, rationalises and organises their understandings according to agenda agreed in the adult world.

Pursuing a child’s perspective on the extent, impact and issue of environmental noise quality is thus the primary purpose of this pilot. It is firmly embedded in an Education for Sustainable Development (ESD) approach and within the sustainable schools framework (<http://www.teachernet.gov.uk/sustainable-schools/>). It has three interlinked aims:

- i). To work with school children (year 6) to identify what ‘noise’ means to this age group, and - as part of their geography curriculum – work on acoustics and sound transmission; mapping techniques and measuring ‘sustainability’
- ii). To enable and equip children as researchers, digitally collecting ‘noise’ in their own localities and journeys to school and to reflect and comment upon the noises they collect. A suite of digital dictaphones will be required for this part of the research
- iii). To create opportunities for the school and BSU Geography students and trainee teachers to collaborate and support child as co-researchers in placing their noise snapshots into a digital map of their locality which will be loaded onto the world-wide web.

A breakdown of resources required and their cost

Travel to School, 2 staff x4, 10 mile round trip = 80 miles x 0.40ppm	£32.00
Suite of digital Dictaphones x36 Olympus VN-2100, £29.99	£1079.64
Student Demonstrators; 8 BSU students doing workshop plus using MapInfo, 3 hours each (8x3=24 @ £8.82)	£211.68
Decibel meters for staff use, from Noisemeters.co.uk 1 Sound Level Meter with Calibrator, Windshield, Case and Battery	£286.00
1 Sound Level Meter, Windshield, Case and Battery	£149.00
Staff time for administering project, write-up and writing research proposal (2x10 hrs = 20 @ 36.66)	£733.20
Total funding sought	2491.52

A statement of expected outcomes from the activity

As effectively a local pilot study, the outcomes of the project not only summarise the research findings, but reflect and assess on the processes and problems of research adopting this medium and this methodology. These lessons would feed into the larger project for which we intend to bid. The project will have the following outcomes:

1. A research funding proposal for Joseph Rowntree Foundation aimed at enlarging the scale of this research and aiming to enliven and amplify children voices in the noise debate
2. Two collaborative workshops (one school based, one BSU based)
3. A digital sound archive
4. An online interactive digital noise map
5. A paper for *Environmental Education Research*, summarising the findings
6. A paper for *Children's Geographies*, evaluating the methodology

A statement on how the activity will promote future activities of the centre(s) and enhance the reputation of research at the university.

This project proposal is timely. It is multidisciplinary in design and will promote the expertise and research reputation of CERC and BSU. The project also complements a current eco-monitoring project currently active in CRESL. There is significant international interest in the impact of noise on the community. See for example the World Health Organisation (1999) and The European Commission Concerted Action Workplan, Pasher (2000). Recent research by Pinto and Mardones (2008) also confirms the international imperative to engage all stake-holders in developing an understanding of the impact of noise on the community. There is also a significant body of research in education, which highlights the damage that noise can have on learning. See for example Cohen, S. et al (1973).

Given this level of international concern it is highly likely that this pilot project will be of interest to a number of potential funders from both the scientific and education community.

A statement of support from the head of the centre indicating how the bid will contribute to the aims and aspirations of the centre.

This pilot project fulfils CERC's aspiration to engage in multidisciplinary research with the local community. This is exemplified through the development of community participatory action. In particular, CERC welcomes the attention to:

- Researching *with* children
- Developing child-centred research methodologies
- Engaging the local community in participatory research
- Exploring knowledge transfer and curriculum development
- Community focus

A statement of support from the relevant Head of School indicating how the School will also support the activities of the centre(s).

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