

human ethics guidelines for schools

The human ethics guidelines for schools: Ethical Practice When Doing Research: Guidelines for Students and their Supervising Teachers (2009) are for students and teachers in classrooms in New Zealand who are engaged in school research and other projects that involve people, such as other students, family, and members of the community, as Rosemary De Luca and Bev Cooper, both from University of Waikato, explain:

This article describes the background to the development of these guidelines, the process of development, the composition of the guidelines, and some particular features.

Background to the development

Formal ethics review of school-initiated research that involves animals preceded formal acknowledgement of the need to review research that involves persons. With the introduction of the Animal Welfare Act 1999, advocacy from the Royal Society of New Zealand (RSNZ) and the New Zealand Association of Science Educators (NZASE) resulted in acceptance by the Ministry of Education of the need for a unified Code of Ethical Conduct and an ethics approvals process for all schools using animals for research and teaching.

Initially, schools used a range of committees managed by individual schools, local science teachers' associations or science advisors, or used the ethics committee of other organisations such as a tertiary institutions to gain ethics approval. To ensure consistency and accountability under the Act, RSNZ was contracted in 2003 to develop the Code of Ethical Conduct approved by the National Animal Advisory

Committee of the Ministry of Agriculture and Fisheries (MAF); establish protocols and implement an Approvals Committee; manage compliance on behalf of all schools, teachers and students in New Zealand; and provide them with advice.

Partway through the contract, MAF noted that the RSNZ was not the appropriate organisation to hold such a Code on behalf of schools. The RSNZ continued to administer and support the approvals committee to implement the Code, and NZASE became the Code holder. The development of the Code of Ethical Conduct was completed and approved in December 2004, and is now being successfully promulgated and monitored by the Animal Ethics Committee (AEC), a committee of NZASE funded by the Ministry of Education (MOE).

Schools need to follow a formal approvals process for projects and research involving animals. Entries are not permitted into science fairs unless there is proof that an approval had been given by the AEC. An assumption was made, understandably by teachers in schools, that science fair entries that involved human participants also required ethics approval and this became de facto policy and practice. Because the AEC is not accredited or entitled to deal with ethics approvals relating to humans, the approvals application process for science fair entries involving humans was initially dealt with on a case-by-case basis by one or more of the Ministry of Health's regional Health and Disability Ethics Committees.

While these committees are accredited by the Health Research Council Ethics Committee (HRCEC) to give ethics approval for human research, the nature of their role is particular to health research as defined by the Health

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resources in the learning environment. It is *distributed* across the whole learning network of people and things (think for example about how much easier it is to read an instruction manual when you have the machine to which it refers ready to hand). It is *participatory*: new learning *emerges* in the interactions that unfold. The links to systems thinking should be evident here, and indeed there is a growing body of literature that discusses classrooms and schools as complex systems, and how best to manage them so that all students can learn. One very easy to read example is *Engaging Minds: Changing Teaching in Complex Times* (Davis, Sumara, and Luce-Kapler, 2008).

It is my view that the New Zealand Curriculum should be read in this sociocultural, systems framing if we really do want it to be a curriculum for the twenty-first century. Earlier in this article I gave just one example of how the various parts of the curriculum should be read together, in interaction with teach other. If we read key competencies in a more determinist frame, it is easy to see them as personality traits – something the student brings to school, or not. Then it can't be our fault if they don't learn – can it? But if we read the key competencies in a sociocultural frame, and in interaction with the vision, values, principles and advice about pedagogy sections of the new curriculum, then it's really important to think about the ways in which we provide opportunities for students to learn and grow (Hipkins, 2006). We can't change their genetic inheritance, but we can change the environment in which each

individual expresses their potential!

Working through these ideas takes a lot of reflection.

One challenge of the metaphors on which our language, and hence our thinking, rest is that we use them without knowing we are doing so. We can't all be philosophers, but we do need to keep abreast of contemporary thought if we truly believe our school system needs to be transformed so our students are ready for the uncertain times ahead.

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Research Council Act (1990) not education research. Apart from the various ethics committees operating within each of New Zealand's tertiary education organisations, there are no accredited committees set up to approve human ethics-related research undertaken by school students in an education setting or any legislation that requires this. Therefore, unlike the requirements set down by the Animal Welfare Act, students' school-based research and projects involving human participants are not legally required to follow any formalised approvals process.

However, in 2008 the MOE determined that there was a need to provide schools with Human Ethics Guidelines, suitable for guiding school-based student research that involves human beings as participants in the research. They also recognised that the development of working tools to help student and teacher researchers to plan their investigations with foresight and to alert school management to their responsibilities – and possible issues and risks – was necessary. NZASE was contracted to develop these. It was stressed that these were to be guidelines to schools and not intended to be mandatory requirements.

Development of the guidelines

NZASE contracted a group to develop the guidelines including: an experienced teacher who also was a member of the AEC; a university senior lecturer who had experience in both the health sector ethics arena and chairing human research ethics committees in university settings, and an experienced science educator who had been involved with the AEC, and was an executive member of NZASE.

The group met to set the parameters for the development and it was decided that the guidelines should be readable and accessible to students as well as teachers and provide examples of scenarios that highlighted appropriate ethical practice. Templates would then be developed to assist students and teachers.

For expediency it was resolved that the experienced ethicist would draft the guidelines and the science educator would provide appropriate scenarios based on common school practices. At each stage the experienced teacher would be asked for feedback. It was also decided to involve at the initial stages of drafting, two other people who had a background in regional or national ethics work as a reference group. Before being sent to the MOE, the guidelines would also be critiqued by several experienced heads of school science departments who were also asked to get feedback from students. It was also resolved that once the guidelines were made available to schools they would be reviewed periodically and feedback would be sought from schools to inform the review.

The draft guidelines were critiqued by the MOE and posted on the NZASE website in May 2009.

Composition of the guidelines

The guidelines have four sections: section one explains the scope and purpose, some special terms, ethical practice criteria, and the responsibilities of both students and teachers; section two includes examples of research scenarios; section three has templates for informing and getting permission from people who are going to be involved in the research/project; and section four includes the titles of two Ministry of Education publications about research involving people and also animals.

These guidelines recommend that: teachers explain these guidelines to students and monitor students as they design and engage in research and other projects; students follow these guidelines and liaise regularly with their teachers.

Particular features

1. Using scenarios within a guidelines document

A feature of these ethical practice guidelines is the

inclusion of classroom-initiated research scenarios that illustrate ethical practice in a narrative and applied way. These scenarios situate the guidelines pedagogically within a teaching and learning context familiar to students. An example of how each scenario is presented in the guidelines, and how ethical issues are highlighted to teachers and their students is shown below.

Scenario Three. This experiment is about effectiveness of short-term memory. The question is whether there are differences in recall based on short-term memory across different age groups. Sky and Nick are Year 9 students. They are interested in finding out how many items 7–9 year olds, 13–16 year olds, 35–50 year olds and 60+ year olds (ten in each group) can recall after the same time period has elapsed. They put twenty items on a tray and give each person one minute to memorise them. They then give them one minute to recall as many items as possible. They record and date results in their log books.

The 7–9 year olds are from a primary school class in another school, the teenagers are from their own school, and the adults are from their families and friends. Sky and Nick prepare and use written information and written consent forms for all three groups. They keep these in a file.

A number of ethical issues arise from this scenario. A major point to consider is how Sky and Nick will get informed consent from those they wish to involve in their project. They need to focus on two things in particular at this point. First, they need to understand that people they involve in their project should participate voluntarily and on the basis of knowing what their involvement will mean. Second, they need to understand that there is more to 'getting informed consent' than applying a standard process. They will have to devise a process that both meets the requirements spelled out in the guidelines and also fits with the individuals they wish to involve.

They have four categories of participant: 7–9 year olds, 13–16 year olds, 35–50 year olds and 60+ year olds. Age is a factor to be considered. Also, their relationship with participants varies, so degree of formality is a factor. The youngest participants are pupils at a primary school, the next group are students at Sky and Nick's own school and mostly older than them, and the third and fourth groups are people they know outside of school, some of whom may be family members. They will have to devise an approach and develop a way to explain information about their project to suit each group. They also need to be aware that there will be individual variation within each category of people. Culture is a factor they will have to consider, both in terms of ethnicity of potential participants and the culture of each setting. For example, within a school the practice is to approach school authorities and the classroom teacher. Within families and with family friends there are also established and expected ways of doing things.

Sky and Nick will need to be clear about their roles and the responsibilities associated with these. For the project they are student researchers conducting an experiment. They need to take the task seriously, complete the task properly following all instructions with care, and take full notes, keep a formal record and report honestly. Outside of their own school they will need to conduct themselves as ambassadors of their school. As well, they will need to manage their classmate and family/friend roles within the exercise of the more serious student researcher role. As students they are obliged to liaise with their teacher, keep him or her fully informed of progress, and follow instructions and advice.

Privacy is an important aspect of this project. Participants may be sensitive about their capacity to remember, so particularly in this experiment an individual's results should

not be disclosed to others. Results will be reported in aggregated form so concealing identity of individuals will be straightforward, but it would be easy for Sky and Nick to openly tease a family member about a memory lapse, for example, and they need to know that this would be unethical behaviour. Telling individuals their results and the outcome of the project overall and saying thank you are both important aspects of demonstrating respect for people.

There are five scenarios in the guidelines. Topics include choosing healthy foods; change in chemical properties; effectiveness of short-term memory; effectiveness of energy drinks; and conservation. The scenarios illustrate a range of research methods: experimentation in a controlled situation and experimentation in the field involving 'human subjects'; observation; face-to-face interview; survey and questionnaire. Although the scenarios appear simple, in each case generic ethical research practice applies including: valid design of the project; safety of the participants; participant privacy; systematic recruitment and selection of participants; informed consent; accurate recording and filing of results; complete and honest reporting on the project; and reporting back to and thanking participants. There is an overall good inherent in the educational value of the projects, but no specific benefit is attributable to individual participants, so any potential risk to participants should be very low and preferably non-existent. There should be no known risk (see Tolich, 2008, for discussion about no benefit/no risk).

Each scenario also has specific ethical issues. Two scenarios emphasise safety aspects. In scenario one, for example, Year 9 student Che experiments with food colouring and food appeal so he checks with his parents that his four-year-old brother is not allergic to food colouring. Another scenario involves testing saliva, and safety and hygiene issues are highlighted. Ethical implications of gathering data through the use of email are explored in scenario five. This scenario also introduces caution in making approaches to persons unknown to the students; being honest about results when survey returns are low in number; and placing thank-you notes in the mail boxes where questionnaires had been left earlier.

2. Specifying teacher and student responsibilities

Another feature of these guidelines that makes them particularly school-focused is the specification of teacher responsibilities and student responsibilities. There is a strong sense of duty in the articulation of student responsibilities. The teacher is there to supervise and guide so is responsible, but the student also has a defined role as researcher with associated tasks to carry out.

Students are to get teacher approval before they

commence their project; they need to negotiate a time frame for reporting to their teacher at regular intervals; in preparing written information for their research participants they must use the templates provided in section three of the guidelines; they are required to seek guidance from their teacher if they are unsure about whether to get consent from the parents/caregivers of older school aged participants as well as from the students themselves; they must consult with their teacher before they make a change to their project; and they must advise their teacher immediately if a problem arises. How to report verbatim what a participant has said needs to be talked through with the teacher, as does any proposed use of photographic images.

As well as being available for the day-to-day planning, execution and reporting associated with student research in a pedagogical sense, teachers have wider responsibilities to their discipline and to the research enterprise generally, and also professionally through compliance with Ministry of Education requirements, for example, those outlined in *Safety and science: A guidance manual for New Zealand schools* (2000). Teachers also need to make sure students are aware of any implications of the Privacy Act 1993 for what they are proposing to do.

Where to from here?

Working tools and templates within these guidelines have been developed to assist teachers and their students to explore and describe ethical issues associated with their projects. The guidelines have been made available on the NZASE website: (<http://www.nzase.org.nz/ethics-human.html>). As a normal part of document design practice, review of the guidelines will be carried out after they have been tested by teachers and students. Feedback will be sought from schools at the end of 2009 through the NZASE website, local science teacher associations and science fair committees. Students' views will be an important component of this process. The guidelines will be informed by this feedback and reviewed and modified where necessary.

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ask-a-scientist created by Dr. John Campbell

What causes the Northern/Southern Lights?

Natasha James, St Peter's College, Palmerston North.

Dick Dowden, an upper atmospheric physicist retired from Otago University, responded:

This bright but diffuse glow in the night sky, seen when looking towards the Earth's poles on dark nights, is also called aurora. The Sun, as well as pouring out a vast amount of light, ejects enormous numbers of nuclear particles such as electrons and protons. These take about four days to reach Earth.

As they approach the outer reaches of the Earth's atmosphere, at an altitude of about 200km, these very fast electrons and protons start hitting atoms of nitrogen and oxygen in the rarefied air. Naturally the rate of these

collisions increases as the fast electrons and protons get to lower and lower altitudes where the gas molecules are closer and closer together. Eventually, at about 100km altitude, the electrons and protons are 'spent'—they have lost all their energy from hitting atoms so they can't go any further.

The atoms hit by the fast electrons and protons ring like bells. Atoms are too small to ring at sound frequencies, so they 'ring' at light frequencies and emit red and green light characteristic of nitrogen and oxygen atoms and molecules. (In much the same way as neon atoms emit their characteristic red light when excited by the electrical discharge in a red neon advertising sign.)

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