Original Paper – Research Methods

From a Good Idea to a Robust Research Design: A Discussion of Challenges in Designing Early Childhood Research for Beginning Researchers

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Key words: beginning researchers, research, design, mixed methods

Abstract

Designing and carrying out research in the area of early childhood education is one that is attempted by many, including experienced and beginning researchers, postgraduate and undergraduate students as well as by people working in a range of different early childhood services. For all, the principle of a robust design is key to successful data collection and analysis, but creating a strong design that is best suited to answering research questions and the research context can be challenging, particularly given ongoing tensions regarding the nature of appropriate educational research methods. Issues of epistemology, theoretical position, methodology and choice of methods for early childhood research will be explored in this paper, along with some working principles and practices for beginning researchers.

Introduction

In my current role at the university, I am privileged to work with a number of postgraduate students. Each year, students tell me that conceptualising methodology and linking it to a theoretical framework is a challenging aspect of postgraduate study. Working on this assumption, the common challenges and decision making required for postgraduate students, beginning researchers and teachers researching their own classroom are explored. I have written this paper to help to clarify issues and choices and demystify designing research. The paper begins with an overview of the challenges for early childhood research in New Zealand, before outlining and discussing the nature of robust research, the conceptualisation of a robust research design, some issues concerning choice of methodologies, and finally common concerns that beginning researchers encounter.

Early Childhood Research in New Zealand: The Challenges

Cullen (2008) presents a challenge to New Zealand researchers to think about what we know about the effectiveness of early childhood education (ECE) in this country. She argues that there are three major questions which researchers should consider:

1. Do we know? The evidence question.
2. Can we tell? The methodology question.
Cullen argues that there is insufficient evidence currently available to New Zealand teachers on the effectiveness of the approaches to ECE on which they can confidently base teaching and learning. A reason for the lack of evidence is the limited amount and/or nature of the research available or the predominance of certain approaches to research. She notes that an ethical teacher should not use approaches to education that are not based on robust evidence of their effectiveness, as it could potentially cause harm to children.

Her critique of early childhood research in New Zealand includes the following points:

- That there’s a paucity of relevant longitudinal research;
- There are sampling limitations in many NZ ECE studies;
- It is difficult to disentangle the effects of early childhood education from social variables in many studies;
- Many studies simply focus on process variables, without addressing outcomes;
- In many studies, the parenting variables are not explored; and finally
- Many studies only look at intermediate outcomes, rather than providing long term outcome evidence.

Cullen might have added to the list that much of our published research is predominantly small scale – quite often the result of postgraduate research projects and theses – and it deals with small samples and a limited number of contexts, which limits generalisability beyond the original context. It is almost always qualitative, regardless of the epistemological or theoretical perspective adopted. It is often focussed on processes rather than outcomes, while it is outcomes that policymakers are most interested in. This body of research is often only seen by supervisors and examiners; it is often unpublished and hard for practitioners to access. As Siraj-Blatchford, Sammons, Taggart, Sylva and Melhuish (2006) argue, from a similar UK position, the narrow frameworks for research that we have adopted are not assisting us to meet the demands of the multiple audiences that our research needs to be accessible to.

What is Robust Educational Research?

At a very simple level, educational research is the application of scientific inquiry to educational problems and issues. Regardless of the methods used, it is always a ‘disciplined’ inquiry: a systematic process of gathering, interpreting and reporting information (Cohen, Manion & Morrison, 2007). The nature of research in the field of education spans from very large scale, quantitative, evaluation and longitudinal studies to small undergraduate, postgraduate or classroom or early childhood service based projects (Fraenkel & Wallen, 2006). All the various types have their uses if they are done well and fit the purpose. Yates (2004) argues that what constitutes ‘good research’ cannot be narrowly defined, because of the complexities of the education field. She states:

Different participants have different demands on what types of research knowledge about education they need and how this should be delivered. Researchers are engaged in debates both about what is possible and about what is desirable and whose interests are being served. Researchers are also positioned within decisions, processes, structures created by others, decisions that directly and indirectly define good research and consequences for researchers of taking certain research paths rather than others (p. 35).
Yates also argues that it is important to see research as a useful tool for answering questions, to keep an open mind concerning methods, to recognise the context in which the research will be used, to learn to be sceptical, and sometimes critical.

In terms of the criteria of robust early childhood research, Aubrey, David, Godfrey and Thompson (2000) state that every early childhood research study needs a clear process, which they describe as follows:

- conceptualising the topic or area;
- reviewing the background literature;
- designing the procedures;
- collecting the data;
- analysing data; and
- writing the research report.

In addition good research is generally characterised as ethical, purposeful, well designed, careful and well executed, answers research questions, contextualised, credible, equitable, and identifies further research possibilities (Fraenkel & Wallen, 2006). Meade (2000), in her argument for the use of critical research in early childhood, states that what is needed is greater rigour. Meade draws on the work of Eisner, who proposes that the criteria for assessing any form of educational research should be guided by the features of the work itself. What this means is that regardless of the nature of the research, there should be ways in which the rigour of the research can be evaluated and this means that clarity of decision making is imperative. The following section will explore how traditions of knowledge familiar to early childhood education impact on the clarity of research design.

**Knowledge, Reasoning and Theory**

We do educational research because we need more knowledge about something concerning education. There are many sources of knowledge that are used in education. A common source that is used by many educators is ‘experience’; in fact much traditional knowledge is based on personal and social experiences (Cohen, Manion & Morrison, 2007). Although traditional knowledge is often shared, it also often unquestioned and therefore it can be prone to ‘blind spots’. Traditional knowledge is arguably somewhat limited as a reliable source; personal and social experiences differ. This is a central concern for many scholars of educational research. For instance Whitehurst (cited in Hess, 2008, p.9) argues:

> The world of education, unlike defence, health care of industrial production does not rest on a strong research base. In no other field are personal experience and ideology so frequently relied on to make policy choices, and in no other field is the research base so inadequate and little used.

A second common source of knowledge is ‘authority’ – on this basis we make educational decisions based on customs, traditions and people seen to hold respected or valued knowledge. This might include ancient scholars such as Plato or Aristotle, theorists like Dewey or Vygotsky or local and well known academic ‘giants’ who promote particular approaches to education. Although all have something to contribute, these sources of knowledge can also be limited in that they are often reified – given god like status. Often followers resist questioning or critique, ideas travel a long way from the original research. In New Zealand, Carr’s (2001) learning stories approach to assessment is an example of how reification and distortion of ideas can occur, even though the researcher is open to critique of
the ideas. The ERO report (2007) which identified 25% of all early childhood centres as using learning stories badly is testimony to this phenomenon.

The nature of reasoning is a further aspect of research that distinguishes research practice. Both inductive and deductive reasoning are used in research to define educational knowledge and guide associated research methods. Deductive reasoning stems from the writing of Aristotle, who proposed that deduction can occur when thinking goes from general to specific (Cohen, Manion & Morrison, 2007). This approach to thinking about education requires syllogism: a major premise, a minor premise and a conclusion (e.g. $A + B = C$). This approach is commonly used for building hypotheses, which can be tested. For example, (a) children learn through interaction; and (b) children learn best with their peers; and therefore (c) children will learn best through use of a buddy system in the classroom or centre. In contrast, inductive reasoning derives from the writings of the Elizabethan philosopher Francis Bacon, who argued that we can base our knowledge on the evidence of observation to draw major conclusions (Cohen, Manion & Morrison, 2007).

In early childhood, inductive reasoning has been used extensively as a source of knowledge. In fact it is the only means of assessing children’s learning that is named in the national curriculum document *Te Whāriki* (Ministry of Education, 1996), indicating the power of inductive reasoning in the early childhood field and perhaps resistance to research which uses deductive thinking.

A robust programme of early childhood research moves between the two types of reasoning, if rich and deep understandings are to be achieved (Siraj-Blatchford, et al., 2006). Often within a programme of educational research, a researcher will move inductively from observations to setting hypotheses, then testing the hypotheses and deductively drawing conclusions. This is the foundation on which new theory is built. People in search of knowledge may move back and forth between inductive and deductive reasoning and strength is gained by the contribution of both methods (Fraenkel & Wallen, 2006). In research, this contribution entails the suggestion of hypotheses; the logical development of hypotheses; and the clarification and interpretation of findings and their synthesis into a conceptual framework (Mouly, 1978, in Cohen, Manion & Morrison, 2007, p.6).

Aubrey et al. (2000) propose that in order to gain full understandings of phenomena in early childhood, a range of ways of thinking and of doing research is necessary. Similarly, Siraj-Blatchford et al. (2006) argue, regarding the large scale Effective Provision of Preschool Education (EPPE) Project that using a range of methods is necessary in order to gather data that is useful to diverse audiences. As they argue (2006, p. 75), the “mixed method approach we adopted has provided the sort of summary evidence required by policymakers as well as the practical illustrative exemplar material required by practitioners and trainers”.

The five common steps in a programme of research are the following: identification of the problem; statement of the problem; formulation of hypotheses; prediction of consequences; and testing of hypotheses. Too often, early childhood research only deals with steps one or two. It is rare to find research which has broached steps three, four or five, which are crucial to building the evidential base needed for a theory.

More than this, we tend to misuse the word ‘theory’; it is either used to reify a particular researcher’s approach to educational practice or to indicate something conceptual. It’s important that when we talk about “theory” we are talking about a set of propositions about children and education, which are based on a range of evidence, and not simply fads or popular press (Siraj-Blatchford et al., 2006).
Miller (2002) proposes a theory is the end result of a programme of research, which starts with new ideas, moves through testing of hypotheses, identifies facts and possibly laws and finally becomes a theory, providing a robust evidential framework for education. According to Miller, a theory is a set of interrelated constructs (concepts), definitions and propositions that presents a systematic view of phenomena by specifying relationships among variables with the purpose of explaining and predicting the phenomena. It involves the following evolution as evidence is built:

- **Assumptions** - axioms/postulates which are accepted without being tested;
- **Hypothetical constructs** – concepts that posit relationships between events, objects, properties or variables – these refer to behaviours that can be observed;
- **Tentative hypotheses** – statements about relationships among events, objects, properties or variables that can be supported by research;
- **Facts** – hypotheses that are supported by research;
- **Laws** – a general statement about the relationships between facts; and
- **Theory** – logically sound, internally consistent, no contradictions, empirically sound, testable, parsimonious, relying on as few constructs and propositions as possible.

A theory should meet certain criteria too. In particular it should: be able to explain the observed facts relating to a particular problem (the principle of parsimony); be consistent with observed facts and with already established bodies of knowledge; provide a means for its own verification (Meade, 2000); and stimulate new discoveries and indicate further areas of investigation (Miller, 2002).

**How Can we Design Robust Early Childhood Research**

Crotty (1998) argues that in order to do research, all researchers must answer the question of what methodologies and methods will be used and how these will be justified. Specifically, Crotty outlines four basic elements of research to consider when designing a study:

- **Methods**: the techniques or procedures used to gather and analyse data related to some research question or hypothesis.
- **Methodology**: the strategy, plan of action, process or design lying behind the choice and use of methods and linking method choice and use to the desired outcome.
- **Theoretical perspective**: the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria.
- **Epistemology**: the theory of knowledge embedded in the theoretical perspective and thereby in the methodology.

Crotty suggests that each researcher starts with deciding upon epistemology and designs from there, as follows:

```
Epistemology
  ↓
Theoretical perspective
  ↓
Methodology
  ↓
Methods
```
We can use a working example from early childhood research, to explain this:

<table>
<thead>
<tr>
<th>Epistemology (e.g. constructivism – that children actively construct knowledge)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical perspective (e.g. social constructivism – that children actively construct knowledge through interaction with others)</td>
</tr>
<tr>
<td>Methodology (e.g. ethnography – the study of people in their environments)</td>
</tr>
<tr>
<td>Methods (e.g. participant observation – a method of being engaged with participants during the observation process which enables questioning of experience)</td>
</tr>
</tbody>
</table>

If we look closer at Crotty’s elements, we have some of the following questions to answer.

1. **Research methods**
   - This involves detailed information about the chosen method.
   - If using interview, what type of interview, what techniques will be used, where will they be done and why?
   - Rather than talk about identifying themes, explain what is meant by themes, how will they be identified and what will be done with them once identified.

2. **Research methodology**
   - This needs not only description but an account of the rationale for the choice of methods and the particular forms in which methods are used.
   - For example, if we plan to use ethnography, the search for meanings will entail accessing perspectives of participants.

3. **Theoretical perspective**
   - Provide an explanation of philosophical stance and the assumptions that stance brings with it. By explaining our theoretical world view, we can explain our assumptions about the human and social world.
   - For example, if we are basing our ethnography on a constructivist theory of symbolic interactionism, then we will be looking at issues of language, intersubjectivity, communication and community.

4. **Epistemology**
   - The theoretical perspective we use is a way of looking at the world and making sense of it. It involves knowledge and “how we know what we know”.

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There are a range of epistemologies – e.g. constructivism rejects the notion of objective truth waiting to be discovered. Meaning is not discovered, but constructed.

Epistemology is related to ontology (the study of being or “what is”), which sits alongside theoretical worldview. Although there are ontological debates, Crotty (1998) argues they do not often need to be involved in research design.

**Transforming a Good Idea into a Strong Research Design**

In order to answer Crotty’s research challenges, we choose a research paradigm, which is based on our epistemology and theoretical viewpoint. There are some major approaches or paradigms to research (Fraenkel & Wallen, 2006), which include:

- **Positivism/post positivism** – based on the belief that social world can be studied like the natural world;
- **Interpretive/Constructivist** – based on the belief that knowledge is constructed by people actively involved in the research process; and
- **Emancipatory** – research which confronts social oppression and relinquishes power in research process to marginalised groups.

Even within these major approaches there are different types of research: pure, applied and strategic; descriptive, explanatory and evaluative; exploratory, testing out and problem solving; covert, adversarial and collaborative; basic, instrumental and action research.

There are two major traditions: qualitative and quantitative. Some simple definitions:

- **Quantitative** – emphasises numbers, measurements, deductive logic and hypotheses, controls and experiments.
- **Qualitative** – emphasises natural settings, understanding, inductive logic and hypotheses, verbal narratives and flexible designs.

These research traditions can be further defined, as demonstrated in Table 1 (adapted from Fraenkel & Wallen, 2006).

**Table 1: Definitions of Quantitative and Qualitative Research**

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>to study relationships</td>
<td>to understand phenomena</td>
</tr>
<tr>
<td>Design</td>
<td>developed prior to study</td>
<td>usually pre-planned but sometimes evolves during study</td>
</tr>
<tr>
<td>Approach</td>
<td>deductive, tests theory</td>
<td>inductive, generates hypotheses and new theory</td>
</tr>
<tr>
<td>Tools</td>
<td>often uses standardized instruments</td>
<td>often uses face to face interaction</td>
</tr>
<tr>
<td>Sample</td>
<td>often uses large samples (n &gt;30)</td>
<td>often uses small samples (n&lt;30)</td>
</tr>
<tr>
<td>Analysis</td>
<td>descriptive and statistical analysis of numeric data</td>
<td>often uses narrative description and interpretation</td>
</tr>
</tbody>
</table>
Most educational research can be further distinguished as basic, applied, evaluation, action, experimental or non experimental, drawing on both qualitative and quantitative approaches. These are defined in Table 2 (adapted from Fraenkel & Wallen, 2006).

Table 2: Types of Educational Research

<table>
<thead>
<tr>
<th>Type of Research</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>To understand and explain phenomenon, to provide broad generalisations about how phenomena are related and is not necessarily related to practical settings. May be conducted in contrived settings.</td>
</tr>
<tr>
<td>Applied</td>
<td>To test theories and ideas in naturally occurring educational settings, usually to improve the practice of education and to solve practical problems.</td>
</tr>
<tr>
<td>Action</td>
<td>Specific type of applied research, used to solve a specific classroom or school problem and used by practitioners to improve practice in their own context.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Used for making decisions about effectiveness or desirability of a programme.</td>
</tr>
<tr>
<td>Experimental</td>
<td>Investigators have control over one or more factors in a study that may influence behaviour of subjects. By manipulating a factor, researchers can investigate causal relationships to other factors.</td>
</tr>
<tr>
<td>Non-experimental</td>
<td>Factors are not manipulated.</td>
</tr>
</tbody>
</table>

In addition to these major types education research, some educational researchers also draw on research methodologies from the broader social sciences/humanities, such as historical, oral history and discourse analysis, amongst others, which may fit into the broad categories identified in Table 2.

It is useful to conceptualise a continuum of quantitative and qualitative research on which the various types of research sit, often integrating aspects of both approaches. Yin (2006) considers that there are advantages in what he calls 'mixes' of research methods, in which no one approach is privileged. He states:

> once freed from the quantitative-qualitative dichotomy, the relevance and reality of a broad variety of "mixes" emerges. The broad variety recognizes the true diversity of the research methods used in education (p. 42).

In order to solve the tensions implicit in this approach, some researchers propose the usefulness of 'mixed methods' research, which integrates methods from both paradigms to provide fuller answers to educational research questions.

Punch (2009) argues that mixed method research can be seen as ‘wave 3’ in educational research: wave 1 being quantitative through the middle of the last century; wave 2 from the 1970's to the turn of the century; and wave 3 primarily within this decade. Punch considers that mixed methods research overcomes the stereotyped differences between quantitative
and qualitative data collection methods. Punch further argues that the analysis of variables in quantitative research and analysis of cases in qualitative research are complementary activities, offering insights into the scope, magnitude and relationships involved in a situation as well as the specific details regarding context, meanings and processes. Mixed methods research therefore “combine the methods in a way that achieves complementary strengths and non-overlapping weaknesses” (Johnson & Onwuegbuzie, 2004, p. 18).

Based on pragmatism, drawing from the work of Dewey, James, George Herbert Mead and others, a mixed method design is based on using methods that are determined by the questions being asked. According to Cresswell and Plano Clark (2007), this pragmatic approach to research is successful if researchers consider the following factors:

- **Timing** – what will be the timing of the qualitative and quantitative methods? In which order will the researcher collect and use the data (e.g. same time, sequentially etc.)?
- **Weighting** – what will be the relative importance of each method in answering the research questions?
- **Mixing** – how will the data from the two methods be mixed? Merged, embedded, or connected in some way?

The significant point about mixed methods is that the approach is used to conceptualise a single study as a whole, not as a set of separate parts. Therefore the timing, weighting and mixing of the methods is designed to answer aspects of the research question(s) and to increase triangulation and confidence in results (Yin, 2006). Whichever design chosen, however, there are some common issues for early childhood researchers to consider, which are explored next.

**Some Common Concerns in Educational Research**

Regardless of type of research, all methods aim to be planned, cautious, systematic and reliable ways of finding out or deepening understanding (Yates, 2004). Most research involves design, sampling, data collection, data analysis and report writing and there are excellent guides available. Some common issues for early childhood research are researcher effects, consent, confidentiality in small communities, working out sample size, and response rates, each of which are briefly explored here.

**Researcher Effects**

It’s important to remember that all research involving people is subject to researcher effects – a concept related to Heisenberg’s ‘Uncertainty Principle’ in physics: that the exact position and momentum of a particle can’t be determined. At the atomic level, the instrument of measurement seriously affects the object of measurement. In educational research, this is related to the idea that the researcher affects the researched. We have thus an education uncertainty principle – the researcher influences, disturbs and affects what is being researched in the natural world, regardless of how careful they are (McLachlan, Fleer & Edwards, 2010). As part of the design, each researcher must consider researcher effects: how to minimise them if that is a problem for the design; or maximise them if the intervention of the researcher in the setting is a key part of the design. The key point is that the issue is acknowledged and planned for.
Consent

Some implications of the education uncertainty principle are obviously ethical; it’s important to have informed consent about any potential disturbances or other issues in settings that involve young children. Consent may be formal, if research is done under guidance of a tertiary education institution; or informal, if done in the classroom; but the principle remains the same. Avoidance of harm is obviously crucial, though as Bronfenbrenner (1952, p.453) so compellingly argued, “The only safe way to avoid violating principles of professional ethics is to refrain from doing social research altogether”. Bronfenbrenner made this statement after the Nuremberg War Trials. The Nuremberg Code has been included in most codes of ethics. The first principle is that voluntary consent of the human subject is absolutely essential (National Institutes of Health, 2010).

Considering how to obtain consent from parents and family, and assent or consent from children, is an obvious issue to consider within early childhood research (Cullen, Hedges & Bones, 2005). Consent and anonymity are of paramount importance where children may be involved who cannot give consent on their own behalf. This is not reason to exclude children, but does argue for caution and conscious decision making about methods to be used (Cullen, Hedges & Bone, 2005). The research process can be empowering for children whose voices have not previously been sought – particularly those who have been through difficult times (Gollop, 2000; Gollop, Taylor & Smith, 2000). In addition, children are an important social group with their own specific relationships with adults and power structures. Alanen and Mayall (2001) argue that children influence as well as being influenced in research, as in other contexts.

Confidentiality in a Small Community

One of the perennial challenges faced by researchers in a small country is achieving anonymity, as it is hard to disguise the location or nature of your sample. For some studies, it would be impossible and so gaining consent to name the participants is imperative. In some of the Centre of Innovation research anonymity would be impossible and in breach of contract with the Ministry of Education, who were paying for research to highlight best practices in specific contexts. For each study, the issue of anonymity needs to be addressed and methods for either identifying or disguising participants arrived at.

Sample Size

Recently, I found a really helpful rubric for working out sample size, which is something that continually plagues researchers. Onwuegbuzie and Collins (2007, pp. 288-289) in their analysis of sampling designs for mixed methods research state that there are some minimal sample sizes for most common quantitative and qualitative research designs and they cite the research evidence to support their claims. Table 3 reports a simplified summary of Onwuegbuzie and Collin’s rubric for selecting a sample size.

Although obviously any researcher would need to read in depth about each design as part of planning the study, it’s useful to have a ballpark figure of how many participants need to be in the sample for each research method.
Table 3: Sample Size for Common Research Designs

<table>
<thead>
<tr>
<th>Research design</th>
<th>Minimal sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlational</td>
<td>64 participants for one tailed hypotheses; 82 for two tailed.</td>
</tr>
<tr>
<td>Causal-comparative</td>
<td>51 participants for one tailed hypotheses; 64 for two tailed.</td>
</tr>
<tr>
<td>Experimental</td>
<td>21 participants per group for one tailed hypotheses</td>
</tr>
<tr>
<td>Case study</td>
<td>3-5 participants</td>
</tr>
<tr>
<td>Phenomenological</td>
<td>≤ 10 interviews or ≥ 6</td>
</tr>
<tr>
<td>Grounded theory</td>
<td>15-20 or 20-30</td>
</tr>
<tr>
<td>Ethnography</td>
<td>1 cultural group; 30-50 interviews</td>
</tr>
<tr>
<td>Ethological</td>
<td>100-200 units of observation</td>
</tr>
<tr>
<td>Interview</td>
<td>12 participants</td>
</tr>
<tr>
<td>Focus group</td>
<td>From 6-12 participants and 3-6 focus groups.</td>
</tr>
</tbody>
</table>

Response Rates

This one is a perennial worry for education researchers, who worry that their response rates to surveys may not be sufficient. Although for education research a low response rate is typically considered to be a threat to the usefulness of the survey, there is research evidence that there is little substantive difference in results from surveys which gain 60-70% response rates to those that gain 20-40% response rates (Fraenkel & Wallen, 2006), which is more typical of the response to education surveys. They propose that the nature of the survey in itself will determine how interested people will be in responding, which should be factored in expected response rate, rather than negating the usefulness of data collected.

Conclusion

The sections in this article are presented with research design in mind. Each provides a beginning researcher with a set of factors to consider in planning and implementing a research project. A good design is one that clearly provides answers to research questions and is logically consistent with theory. Keep an open mind about how to gather research evidence, as it is important to use the right methods to answer questions, rather than simply repeating what others have done. Consider trying new methodologies or mixing your methods. Seek advice and support to use new methodologies; use both experts and buddies to identify things that you have misunderstood or underestimated.

Some final points for successfully designing a strong research project include:

- Strong research design is important, regardless of the scale of the study. It needs to be fully and clearly explained in any reporting.
- Aim for logical relationships between methods, methodologies, theoretical and epistemological positioning.
• Trial any research methods before you use them, so that you can anticipate any potential problems.
• Remember that technology is always governed by Murphy’s Law and what can happen, will! Be prepared for the unexpected and have plans A, B and C in place for data collection!

Finally remember that the aim of any research, regardless of scale, is that it provides answers to research questions and provides further evidence on which to base the approaches to education that we use with children. Our challenge is to work together as early childhood researchers to build up the amount and types of evidence that supports our approaches to the education and care of young children.

References
Cullen, J. (2008, November). Outcomes of Early Childhood Education: Do we know, can we tell, and does it matter? Herbison Lecture, NZARE conference, Massey University, Palmerston North.


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