Deakin Research Online

This is the published version:

Darby, Linda and David, Rob 2010, Finding a common story: synthesising findings from two research programs, in Notes from the 2010 Contemporary Approaches to Research in Mathematics, Science, Health and Environmental Education symposium, Deakin University, Melbourne, Vic., pp. 1-5.

Available from Deakin Research Online:

http://hdl.handle.net/10536/DRO/DU:30051986

Reproduced with the kind permission of the copyright owner.

Copyright: 2010, Deakin University, Faculty of Arts & Education
Finding A Common Story: Synthesising Findings From Two Research Programs

Dr Linda Darby, RMIT University
linda.darby@rmit.edu.au

Dr Rob Davis, University of Ballarat
rs.davis@ballarat.edu.au

In this research the authors tackled the issue of synthesising the findings of two independent research programs with common themes into a coherent analysis of teaching and learning across disciplines and school sectors. Through an ongoing dialogue and iterative exploration of emerging themes a synthesis generated new understandings of the use of narrative pedagogies in maths, science and technology, and the aesthetic nature of such learning experiences. This process demonstrates how a comparative lens enables a higher level of analysis of both research programs and generates broader narratives that can be applied to contexts beyond the original research foci.

Introduction

This paper explores a synthesis of two already existing research programs. The paper describes the methodological considerations involved in using a comparative lens while carrying out a meta-level analysis of the findings from both programs. Meta-analyses is usually carried out on quantitative study, and can serve three purposes (Doucouliagos & Ulubasoglu, 2008):

1. summarise and integrate research findings,
2. evaluate, and
3. explain the between study differences between research findings.

As a synthesis of two qualitative studies, the aim of our meta-level is not to more powerfully estimate the true ‘effect size’ and therefore further generalise from combined data sets, but to examine at a meta-level how a narrative framework can provide insights into subject-specific differences and thereby broaden the scope beyond subjects examined by each study. Thus, the synthesis explores similarities between the research findings using narrative both as a fundamental characteristic of each research program, and as the framework for the meta-level analysis.

Because the research synthesis focuses on narrative we want to reflect this narrative approach in this paper. We are particularly interested in how the
methodology and approaches we used when doing the synthesis might be able to shed light on the synthesis of interpretive research, an area which, according to Evans (2002/2003), is in need of further investigation.

**Preparing the ground**

This collaboration started around informal discussions that we had during our time as teaching colleagues at the University of Ballarat. These discussions did not revolve around any intent to form a collaborative research agenda, but merely formed and developed through mutual interests. At some stage in these discussions we noted that two key theories underpinned both of our research programs: narrative and aesthetics in the context of teaching and learning, in particular with respect to mathematics, science and technology. We decided to further explore these similarities to see how they might be melded into a shared understanding of these key theories.

What we hoped for at these initial stages was to develop a new understanding of our own research areas, and to use findings from each research agenda to create a new lens through which to see what we had already found in a fresh light.

**Commitment to synthesis**

Once committed to the idea, we held a series of face-to-face meetings where we shared elements of our research through writing and discussion. Table 1 compiles the various elements of our individual research programs that we felt were relevant to the synthesis.

There were some methodological similarities: both were interpretive studies and used categorical and thematic analyses. The difference in research field had to be taken into account because of pedagogical differences that typify secondary versus primary teaching and learning; however the research field was not the focus of the synthesis.

The theoretical lenses and contexts were pivotal to our synthesis. Both studies explored the role of stories and the aesthetic dimensions of teaching (in Linda’s case) and learning (in Rob’s case). There was, therefore, some *theoretical* overlaps that were worth exploring. We had to come to a common understanding of what we meant by story, both its nature and purpose: this is where the synthesis lay as it was through abutting our interpretations that we noticed the different nature of these stories: inward-looking in Rob’s analysis of technology where students told the stories of their artefacts; and outward-looking in Linda’s analysis of maths and science where story is used to make the subjects meaningful. The aesthetic nature of both of these story types became our main interest as we explored the teachers’ purposes, and the learning experiences, associated with the different stories.

The synthesis required us to apply our ideas into new contexts: Linda, into Technology, and Rob, into science and maths. There was therefore a broadening of the context.

Developing our argument for a conference (ASERA) provided the drive to develop a sound argument, as well as an opportunity to share the developing synthesised narrative. The PowerPoint became our first step in the writing process.
Table 1  
*Elements of each research study*

<table>
<thead>
<tr>
<th></th>
<th>Linda’s Study</th>
<th>Rob’s Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus</strong></td>
<td>Teachers’ experience of subject cultures of science and maths, and how they shape pedagogy</td>
<td>A single researcher and her class coming to terms with a new curriculum area, design technology</td>
</tr>
</tbody>
</table>
| **Relevant Findings** | Use story to make meaning in science and maths  
Aesthetic understanding of teachers | The teacher and her class used narrative to understand the artefacts they created |
| **Theory**     | Aesthetic experience  
Narratives enriching the learning experience | Narratives enriching the learning experience |
| **Contexts (Subject)** | Mathematics and science | Technology |
| **Research Field** | Secondary school  
Multiple classrooms with a focus on the teaching  
Multiple schools | Primary school  
Single classroom with a focus on learning and teaching  
Single school |
| **Methodology** | Interpretive study  
Observations and videos of classrooms, individual reflective interviews with teachers, focus group interviews with | Interpretive study Observations and videos of classrooms, reflective interviews with teachers and students, and the collection of artifacts, |
| **Analysis**   | Categorical and thematic analysis | Categorical and thematic analysis |

**Writing**

How do we combine in a methodologically sound way the findings from two different research programs from three discipline areas and two school sectors? The most important resource that we needed was time. This program of writing has been in the making for over two years, a reflection of the geographical separation of the authors, as well as the need to develop an argument that accommodated and furthered both existing research programs. To do this we met face to face whenever possible in the early stages of writing to map out and test arguments that we would use. We would then retreat to our own location to write individually to deadlines and adding ideas to a single document to be sent through email. After a period we decided to use the technology of Google docs and Skype to simultaneously write and converse to develop the paper. This was probably the single most important change to how we operated in that it freed us from having to travel, and allowed more regular meetings to discuss what we were writing about. More importantly it permitted us to stay in the narrative of the argument we were developing, which is difficult to achieve when working alone on a joint publication that requires shared understandings of often subtle differences of meaning and emphasis.
Table 2 is an example from the paper of how the ideas of each study were represented and extended through synthesis. Column 1 and 2 summarise the analytical framework used in Darby’s study. Column 3 provides the synthesised framework. Column 4 and 5 is a re-analysis of the nature of stories from Darby’s and Davis’ studies respectively using the synthesised framework. Put simply, the final product could be described as Yours, Mine, and Ours.

Table 2  
**Dimensions of aesthetic understanding and differing perspectives**

<table>
<thead>
<tr>
<th>Dimensions of Aesthetic Understanding</th>
<th>What it means for the learner</th>
<th>Narrative pedagogies allow for this by:</th>
<th>Outward-looking perspective</th>
<th>Inward-looking perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compelling and dramatic nature of understanding</td>
<td>A learner’s interests and passions provide motivation in learning</td>
<td>Drawing on students’ interest, and acknowledging what motivates them in life and within the learning experience</td>
<td>Appreciating the beauty of disciplinary ideas and modes of inquiry</td>
<td>Capturing the elegance and personal satisfaction involved in solving problems</td>
</tr>
<tr>
<td>Learning that brings unification or coherence to aspects of the world</td>
<td>Knowledge that is intrinsically and extrinsically connected</td>
<td>Making connections between events and ideas within the learning experience; and between school-based learning and students' lifeworld experiences</td>
<td>Connecting subject matter with personal experience, relating content to students’ interests, generating interest and emphasizing utilitarian purposes of the subject</td>
<td>Making explicit tacit connections made through the creative process; broader implications not just focused on technical skills</td>
</tr>
<tr>
<td>Perceived transformation of the person and the world</td>
<td>Identity develops through experience</td>
<td>Storying who they are, and the type of person, learner, and consumer that they are and want to be</td>
<td>Allow for identity construction that recognises that disciplinary knowledge has a place in their lives, allows human experience to enter the learning process, situating the story within the lifeworld of the student</td>
<td>Allow for identity construction that is bound up in the creation of the artefact, situating the learner within the story</td>
</tr>
</tbody>
</table>

**Reflections**

The process of developing a common story involved sharing, collaboration, and generation of new ideas. We became aware that the requirements for such a scholarly pursuit are a serious commitment to extend and be flexible with our own ideas, and to place value in the developing meta-level analysis. One of the problems we encountered was knowing how much of the individual findings were needed in the paper.
We have found that adopting a comparative lens increases the potential for laying bare the different elements of the issue under research by achieving more informed and sophisticated descriptions. A methodological approach that we believe helps to explain how our narrative unfolded is the hermeneutic dialectic process described by Guba and Lincoln (1989). “A hermeneutic methodology,” Guba and Lincoln argue, “involves a continuing dialectic of iteration, analysis, critique, reiteration, reanalysis, and so on, leading to the emergence of a joint (among all the inquirers and respondents, or among etic and emic views) construction of a case” (p.84). Previously, Darby (2004) referred to this dialectical interchange as a co-construction between the researcher and the participants, where, in accordance with Guba and Lincoln’s dialectical interchange, the aim is to distil a “consensus construction” by comparing and contrasting previously held constructions using hermeneutic techniques. These reconstructions are more informed and sophisticated than the constructions of both the participants and the investigator. The dialogue involves iterations of the participants reflecting on and voicing their views, and the researcher feeding back into the dialogue emergent themes and ideas. The generated, interpreted meanings are dynamic, compounded, enriched, and become multi-faceted as the researcher engages with multiple participants.

In the same way, the synthesis described in this paper has involved iterations of the researchers contributing ideas to a discussion, leading to new ideas, which are then reflected on individually, written about, then brought back to the table at the next meeting. We each needed to reach intersubjectivity, or a consensus in how the narrative would unfold and what it should look like. Within the context of the comparative lens, translatability of the emerging perspectives across all of the subject areas (that is, how a perspective might be applied in maths, science, and technology) was sought in order to shed light on inter-subject differences and similarities, but more importantly to reach greater understanding of the nature of story as represented by the two studies.

References