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CLASSROOM RESEARCH: IMPACT AND LONG TERM EFFECT VERSUS JUSTICE, LIBERATION AND EMPOWERMENT?

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Abstract: This paper considers the coherence between the research goals of making an impact and having a long-term effect with the researcher's concern to contribute towards justice, liberation and empowerment. The fundamental issue of how the researcher can be sure that her or his research will not result in injustice and oppression, and maybe worse, is considered and some criteria are suggested that might be used to guard against harmful effects. These criteria are then used to examine some key issues in classroom research, with illustrations from an example of the author's own classroom research into students goals.

Introduction

I believe it goes without saying that a basic principle of educational research is that it should make an impact. As Stenhouse (1979/1985) remarked: Research may be broadly defined as systematic enquiry made public. (p. 120, my emphasis). And more recently Bassey (1995) has asserted: I believe a definition like this needs to be nailed to the door and printed on the letterhead of everyone who claims to be an educational researcher! Educational research aims critically to inform educational judgements and decisions in order to improve educational action. (p. 39, bold type in original) But my title offers the suggestion of the possibility that making an impact might be contrary to the goal of contributing to justice, liberation and empowerment. The question that I want to address in this paper is: how can we ensure that our research into teaching and learning in classrooms makes a positive contribution to the development of mankind? My concern with the issues of justice, liberation and empowerment were stimulated recently whilst reading an account of the genocide that took place in Rwanda in the 1990s (Rusesabagina, 2006). Rusesabagina traces the interracial conflict in Rwanda back to some rather bad anthropology reported one hundred and fifty years earlier by the British explorer, John Hanning Speke, this is the man who is credited with identifying the source of the river Nile. I was struck by the train of events and injustices that were linked to Speke's journal and I reflected on my own work. How can I be sure that my research activity will not eventually lead to dreadful consequences? How can I ensure that any impact from my research will be for good? The simple answer to this question is that I must ensure that my research attains the highest standards of scientific rigour. In this paper I want to share my thoughts about what 'highest standards of scientific rigour' might mean in the context of classroom research.

Ethical characteristics of educational research

Before considering the scientific standards of classroom research I want to suggest some ethical characteristics of educational research which I believe are essential if any impact or long term effect will also contribute to justice, liberation and empowerment? [Note, I am using the word characteristics rather than 'standards' here because my intention is not to argue a set of ethical standards, this has been attempted elsewhere, (e.g., British Educational Research Association, 2004). My intention is merely to identify some of the things that I can apply to the key issues of classroom research]. These characteristics are, in no particular order: honesty, openness, critical reflection, rationality, impact on informants/participants, and voice. Honesty: in reporting data and evidence; in working with our informants and participants; in recognising the limitations of any claims to knowledge. Openness: in reporting all issues and being prepared to admit error and failure; to criticism and suggestions. Critical reflection: in examining everything done at each stage of the research, to try to expose better ways of doing things, alternative explanations and interpretations, and trying to expose weaknesses and limitations; to ensure awareness of how our own knowledge, experience values, attitudes and emotions shape the research process. Rationality: in identifying the reasons for what we do, in terms of our existing knowledge, existing theory, research questions, data collection, interpretation and style of reporting. Impact on informants/participants: this is normally the main focus of an ethical risk assessment, everything already mentioned is part of an embracing 'ethical framework' but there are other issues that surround the impact upon the well-being our informants/participants. Voice: in making sure that the authentic voice of informants and participants is audible through the reporting of the research.

Classroom Research

I worked for 16 years in secondary schools before moving into higher education. I then worked for a further sixteen years training secondary teachers. My whole professional life has been focused on the activity that takes place in mathematics classrooms. It follows that if I have anything to offer the wider community it will surely be from my experience and knowledge of teaching and learning mathematics in school. Consequently all that I present here is related primarily to mathematics classroom research. I hope that all I discuss is relevant to classroom research in general, irrespective of the subject, but I do accept that the subject matter is a significant focus of classroom research and this will inevitably mean differences in the research carried out. I want to emphasise that I do not believe there is a 'specialism' that might be called 'classroom research', educational research includes classroom research, good classroom research is good research and the principles of classroom research are the same as the principles of any other type of educational research. On the other hand I do think classrooms are very special places in which to do research and they present researchers with great challenges, not least because of the complexity of the classroom. As Ernest (2001) observes: the mathematics classroom is a fiendishly difficult object to study. For the mathematics classroom involves the actualised relationships between a group of students … and a teacher … with a variety of material and semiotic resources in play within a set of temporally and geographically delimited spaces. Furthermore, each student, teacher, classroom, school and country has a life history with antecedent and concurrent events and experiences which impinge on the thin strand chosen for study within all this complexity: periodic mathematics lessons. (p.7) This complexity requires us to be very careful in researching classrooms, it is too easy to make mistakes and draw wrong conclusions, and make an impact that is contrary to the aims of justice, liberation and empowerment. Shulman (1987) summarises one concern: When policymakers have sought "research-based" definitions of good teaching to serve as the basis for teacher tests or systems of classroom observation, the lists of teacher behaviours that had been identified as effective in the empirical research were translated into the desirable competencies for classroom teachers. They became items on tests or on classroom-observation scales. They were accorded legitimacy because they had been "confirmed by research." While the researchers understood the findings to be simplified and incomplete, the policy community accepted them as sufficient for the definitions of standards. (p. 6) I am not sure that we can ever protect our work from misuse; my first concern is that anything that I report is trustworthy. In the consideration of the foundations of trustworthiness, and the ethical characteristics that I have listed I want to address the following issues in relation to classroom research: types of classroom research, paradigm, theory, unit of analysis, methodology, operationalisation, method, disturbance, and concern for informants. In addressing these issues I will make reference to my own ethnographic style case study of a year ten mathematics classroom. Briefly, I joined the class for every mathematics lesson for very nearly one complete year; I had conversations with the students while they were engaged in the tasks given to them by their teacher. My purpose was to expose the "Students' Goals" (Goodchild, 2001) in their classroom activity. I start from the assumption that classroom research can be any inquiry into what happens in classrooms, into teaching and learning, and into teachers' and students' experiences, values, beliefs, attitudes etc. The data collection may take place wholly within classrooms – such as with observation, or wholly outside, as in the completion of questionnaires, or, indeed part in and out as with design research. In my own experience I have engaged in action-research within my own classroom, I have explored teaching and learning through observation, and engaged in curriculum evaluation – using pre and post tests. Currently I am working with teachers in a development-research project.

Paradigm

A researcher needs to be conscious of the paradigm within which he or she is working. It is necessary to be clear within oneself whether, for example one believes in unproblematic cause-effect relationships that can be modelled in generalisable laws as in a scientific/positivist paradigm, or conversely that human behaviour is so complex and dynamically related simultaneously to a range of social, historical, emotional and physical phenomena that such generalisable rules are unknowable, even if they exist. As Lincoln and Guba (1985) summarise: The possibility of causal linkages Positivist version: Every action can be explained as the result (effect) of a real cause that precedes the effect temporally (or is at least simultaneous with it). Naturalist version: All entities are in a state of mutual simultaneous shaping so that it is impossible to distinguish causes from effects. (p. 38, italics in original) It will become apparent that in my research into students goals I was heavily influenced by Lincoln and Guba 's work. One of the weaknesses that I now recognise in my own work was that I was not sufficiently critical of their work and allowed it to exert an undue influence in all that I did. Researchers have a responsibility to understand the philosophical foundation upon which they base their claims for knowledge and to reflect on these and consider the consequences in practice. Researchers need to be clear about the paradigm within which they are working and that of any interlocutor because, the chances are that when one engages in dialogue with a researcher working in a different paradigm the likelihood is that a mutual understanding will be unattainable and any sense of agreement will be illusory. Nevertheless, it is necessary also to act within a given paradigm in a critical fashion. Pring (2000) recognises that different social groups interpret the world differently, (I assert that this difference is a fundamental issue to be considered by classroom researchers) nevertheless, Pring argues that we can only be aware of and understand these differences because of their 'enduring features' which 'enable generalizations to be made' (p. 56). He asserts: The qualitative investigation can clear the ground for the quantitative – and the quantitative be suggestive of differences to be explored in a more interpretive mode. Understanding human beings, and thus researching into what they do and how they behave, calls upon many different methods, each making complex assumptions about what it means to explain behaviours and personal and social activities. (pp. 56-57) I find it reassuring that an eminent educational philosopher argues so clearly for a stance that I feel, from the perspective of research practice, is sensible.

Theory

Theory is critical to the production of research knowledge, and to work more generally. (Boaler, 2002, p. 4) I place my own research in a naturalistic paradigm, and I pursued and critically reflected on my work in exploring students' goals within a framework set out by Lincoln and Guba. Ten years on from when I completed that work I am rather more critical of the framework, especially when related to classroom research. For example, Lincoln and Guba (1985) argue for a grounded theory approach asserting: N (the naturalist) prefers to have the guiding substantive theory emerge from (be grounded in) the data because no a priori theory could possibly encompass the multiple realities that are likely to be encountered … (p. 41, emphasis in original) I certainly agree that theory must be grounded in data and tested empirically. Empirical evidence is essential in the verification of theory. However, I am sceptical of research based on 'the discovery of theory from the data' (Glaser & Strauss, 1967/2006, p. 1, my emphasis). I must emphasise that my critique here is focused on the notion of 'discovery' that seems to ignore the existence of informal theory that resides subconsciously in the mind of the researcher. I believe that in classroom research it is fundamentally necessary to start from a priori, guiding, substantive theory. It is impossible to come to classroom research as, in Lave's (1988) description of ethnographers, 'ignorant strangers': Ethnographers are nonmembers of the cultures they study, being observant strangers whose ignorance they themselves take to be a condition for eliciting from informants explicit accounts of the obvious and basic aspects of culture and everyday practice. (p. 185) Apart from the small number of people taught at home or by a private tutor everyone has a range of experiences in the classroom. If we do not come to the classroom with a consciously held and clearly articulated theory then we come with a subconscious theory – theory helps the researcher to 'see' through the filter of her or his own preconceptions. Additionally, as we approach our inquiry into classrooms from a theoretical perspective we can be more sure of making a contribution to the development of scientific knowledge, that is we avoid the creation of producing discrete pieces of information that are not connected to the wider body of knowledge. Theory also helps us to focus on the issues that concern our research and professional community. A good theory should help researchers understand what is going on in the classroom, it is essential for framing the research, it is essential in interpreting the evidence, it is essential in the development of knowledge. Consequently I treat with suspicion research reports that 'excuse' an apparent denial of existing relevant theory by claiming a 'grounded theory' approach. I want reports to be clear – if it is meant that no explicit theory has guided the research then perhaps my time will be better spent elsewhere. If on the other hand it means that the testing and development of theory is grounded within the data then I want to applaud – but I do want that theory to be clearly articulated in the report. This raises questions about what theory is appropriate to classroom research. In my research into students' goals I took three separate theoretical perspectives. I argued that my familiarity with the classroom, and my own personal theory of teaching and learning needed to be enlightened and challenged by trying to view and explain things from different perspectives. I chose to take a social constructivist perspective, an activity theory perspective, and a situated cognition perspective. I acknowledged the inconsistencies between these perspectives and avoided any suggestion of trying to combine them into one 'super theory'. In a way the approach was successful, the different perspectives allowed me to focus on different levels within the classroom, the individual student, the student in socially mediated activity, the student as a member of a community of practice. These different foci led to complementary accounts of what was happening in the classroom. However, ten years on, I believe the approach was naïve and possibly a lazy way of engaging with the complexity of the classroom. I no longer believe that it is necessary to use several theories, no matter how complex the classroom, each theory is sufficient in itself to address the range of individual, social and cultural issues. If I had used just one theory, perhaps my work would have been stronger and made a greater 'scientific impact', nevertheless, I think what I attempted is original and has some merit in that. However, Boaler (2002), in the same article from which the quotation at the head of this section is drawn, argues for the knowledge generating potential of drawing connections between theories – using Andrew Wiles approach to solving Fermat's last theorem as an example. Perhaps my work allows such connections to be made and there is greater value in the use of complementary theories than I have argued.

Unit of analysis

The discussion of theory naturally leads on to the unit of analysis. A unit of analysis is 'the minimal unit of "evidence" that preserves the properties of the whole' (Davydov & Radzikhovskii, 1985, p. 50) object that is being studied. So if we are considering the properties of 'classrooms', that is, of teaching and learning mathematics in classrooms, it is necessary to have a unit of analysis that makes possible a study of the complexity of relationships between teacher, pupils, resources, history, culture, etc. The complexity of the classroom is a challenge to classroom researchers, and it challenges us in our choice of a suitable unit of analysis. In my work on students' goals I used three units of analysis, one relating to each of the theories I was using. Within the social constructivist theory I used Neisser's perceptual cycle (Neisser, 1976) in this the individual's mental schema directs his or her exploration which samples the object or available information (a mathematical task or problem, say) as a result of these processes the individual modifies his or her schema. Most components of this unit of analysis are hidden from view, in particular the individual's schema and the processes of direction and modification. Those elements concealed from the direct exploration of the researcher have to be inferred by careful and critical examination of the range of evidence relating to the individual's action. Within activity theory I used Engeström's (1987) model of an extended activity system. In this it is the dialectical mediation of tools and signs, community, rules and division of labour that come between the individual and the object of his or her activity that are the focus. From the perspective of situated cognition I used Lave's (1988) model of dialectical relations between students acting, the classroom arena, students in activity and the task setting. Each model characterises the student's activity differently and draws attention to different features of the context of his or her work on a task. Nevertheless it is the same data that is used, transcripts of conversations, student's writing, copies of resources used within the classroom, etc. from these pieces of information a theoretical account of the classroom can be developed, and the theory can be challenged – when events and observations defy explanation. Each unit of analysis is a product of the theoretical perspective, and as with the theories I did not try to combine the units of analysis. It bothers me when I read in a research report, that is taking a single theoretical stance, of a number of different 'units of analysis'. Either the unit of analysis is 'the minimal unit of evidence' or it is not.

Methodology

Methodology is much more than method. Ernest (1994) defines methodology as: A theory of which methods and techniques are appropriate and valid to use to generate and justify knowledge, given the epistemology (of the research). (p. 21) When one engages in research it is necessary to make decisions about what data to collect and how to collect it and analyse it. These decisions will rest on a number of issues including: the paradigm and theoretical framework; the nature of the research question; what research has been done in this area before; our understanding of the nature of the subject – or our research participants or informants; what possible obstacles might exist for collecting trustworthy data in an ethically justifiable manner and so on. I want to credit Leone Burton (2002) for opening my eyes to these issues, she writes: I am asking for researchers to be clear to themselves about the values, beliefs, and attitudes that are driving the study that they propose to do and to make that clarity visible to the reader. … Second, I am making the assumption that research in mathematics education is emancipatory in that its intentions are to empower – pupils, teachers, curriculum designers, policymakers – those who could be users or affected by use of the research. (p. 4) … the choice of which method(s) is best, in order to gather the data necessary to the exploration of a particular question, is always a function of the theoretical stance adopted by the researcher(s) together with, of course, the research context and the related research questions, the informants, and so forth. This, in itself is a product of the attitudes, beliefs, and values underlying that stance. (pp. 7,8)

Operationalisation

By operationalisation I mean the translation of theoretical constructs into phenomena that can be observed and thus used as evidence within the inquiry. Here again, in my research into students' goals I followed Lincoln and Guba (1985) who assert that operationalisation is: not meaningful or satisfying … too shallow – depending on sensations (not) meanings or implications … results in a meaningless splintering of the world (pp. 26, 27) In 'students' goals I provided working definitions of the 'goals' I was seeking evidence of but I did not operationalise these by articulating beforehand how they would emerge in the data I would collect, or later before starting analysis. On the one hand this meant that the account of students' goals was created by my informants (and my interpretation!) rather than constrained by preconception. Additionally the approach avoided Brousseau's topaz effect of which Jaworski (1994) writes: Beware the topaz effect – 'the more explicit you are about what you want, the more likely you are to get that because it's perceived that you want it, not because it is actually the case'. [(Jaworski's) paraphrasing of Brouseau, 1984]. (p. 139) [It should be noted that for Jaworski the point is a didactic issue, that 'getting it turns 'it' into a mechanistic routine, rather than the deeply thoughtful learning process that is desired' (personal communication, October, 26, 2006)]. From my perspective, as researcher the issue is about trustworthiness, if I lead my informants/participants so carefully that they 'give' me what I want then I am only getting my own 'theory' confirmed. However, when I eventually set about analysing the data I do not believe the working definitions were sufficient to overcome my own, mostly subconscious and maybe inconsistent, notions of what might constitute evidence. The working definitions were not sufficient to transform the utterances in the conversations into clearly identifiable evidence of students' goals, the transformation took place largely within my own reflexive activity and it was only after the analysis that I felt able to provide sharp definitions. Thus there is circularity in my interpretation of the data and I fall prey to the same criticism that I level at those who take a strictly grounded theory approach to their research. In research we seek, as far as is possible, trustworthy accounts that balance the objectivity provided by theory with the acknowledged and known subjectivity of the researcher. The key issue is for the researcher is to make his or her subjectivity explicit and avoid subconscious or unconscious application of preconceptions and prejudice. I now believe, in my research into students' goals that my failure to operationalise, explicitly, the constructs I was seeking undermines my claims for the trustworthiness of my interpretation.

Method

The next question that I want to address concerns whether some research methods are more appropriate to classroom research than others. The simple answer is 'no'! My remarks on methodology form the basis of my assertion that the method adopted will be determined by a range of factors including the theoretical framework, the question to be researched and the nature or characteristics of the informant. Nevertheless my use of Lave's description of an ethnographer suggests to me that classroom 'ethnography' is not a reasonable option – even though I admit Woods (1990) ethnographic account of pupils in secondary school is powerful and informative. I describe my own study of students' goals as 'ethnographic style', and there are other notable research reports in mathematics education that can be similarly characterised, for example Jaworski's Investigating Mathematics Teaching (1994), and Boaler's Experiencing School Mathematics (1997). It is evident that the techniques used in ethnography have the potential to answer the questions we ask about activity in classrooms. We have to admit that we as researchers act as filters and make decisions that will impact upon the nature and quality of the evidence we use – even before we begin to analyse the data and make interpretations. In researching students' goals most of my data arose through conversations I had with students or from discussions between students when I was present. I can only wonder what the discussions between the students would have been like if I were not present. I made a decision to collect data from the students while they were engaged in their tasks because, I argue, if I had collected it outside the classroom it would be 'coloured' by their rationalisations – it seems that I am suggesting that my presence had a smaller impact on the goals I was able to expose than their own reasoning or rationality. In my present work, more of which later, I am using 'naturally occurring data', that is recordings of events that are made in the course of meetings and workshops without the intervention of activity done purely for the research element of the project. But there is a vast amount of data and I am making choices about which pieces to use and how it will be analysed thus my influence is still present. The point I want to make is that, in classroom research it is necessary to consider the position and voice of the teacher and students, and, naturally, the subject content of lessons. Wagner (1997) identifies three types of relationship between researchers and teachers. Data extraction agreements, where the researcher goes into the field, collects data, and returns to her or his office to analyse and interpret. Clinical partnerships, in which teachers share in the research activity in both deciding what will be done and reflecting on the outcomes, but the emphasis is on learning about what happens in classrooms, about teaching and learning – the purpose is for the researcher to inform her or his scientific community and policy makers, and the teacher about practices in the classroom. The third type is a co-learning agreement in which the researcher enters the field alongside the teacher and acknowledges that the joint activity with the teacher has the potential to inform the research about her or his role as much as the teacher about classroom practices. In my research into students' goals my relationship with the teacher was that of a data extraction agreement. I remain deeply grateful to the teacher and students for allowing me such freedom in their classroom but as far as I can recall they showed little interest in what I was doing with the data I was collecting or what I was learning – and I did not try to interest them. The teacher did read the final report and made some comments but I am not aware that it had any impact upon her practice – I don't know! And that is the point. In classroom research the place that, perhaps, the research has the potential to make an impact are the classrooms, and the practices of the teachers, who collaborate in the research. In this I mean a symmetrical relationship in which teacher and researcher come together, each with their own experience and specialised knowledge, each prepared to learn about their own practice in addition to learning about teaching and learning. That is, in a co-learning agreement, anything short of this is making 'use' of another person and their practice, and the researcher ends up taking away or changing the voice of the teacher. A clinical partnership has the potential to empower a teacher in her or his practice, albeit with the teacher and researcher in asymmetrical relationship and the teacher being given the researchers' voice. A co-learning agreement has the potential to empower and the teacher's voice to be heard. As an example, I am currently working with a very experienced and talented primary school teacher. I am learning a great deal about his practice and the way that he manages teaching and learning in his classroom. We have written one paper together and I hope this will be the first of many, in the paper I reflect on what I am learning from this classroom, I describe events that I see and how I interpret these from my perspective as an experienced secondary teacher. However, the teacher I am working with has the opportunity to ensure that his own voice is heard and the balance of reporting fits with his view of his classroom. In fact he is in a powerful position because even though I have done the greatest part of the drafting of the paper he has translated it into Norwegian. I have a basic understanding of Norwegian but it is insufficient to judge the nuances of language that can make so much impact on meaning.

Disturbance

Is inevitable! Almost any form of data collection is likely to disturb the subject. I have remarked that I am now using naturally occurring data, this is available because we record, audio or video, every event that takes place within the project. Within our project we have become so accustomed to the presence of a recorder or camera that we forget it is there – I guess up to the moment that we begin to think very carefully about what we say because we know there will be a recording! Gallagher (1995) writes about an instance in her research when a student asked her for help, she struggled with her role as 'detached observer' and her feelings as person and teacher. She decided to help the student. Following the event she felt that she had violated the tenets of good research and resolved to remain detached in future. Gallagher goes on to regret that decision believing that she might have been able to have a positive impact on the teacher's practice. In researching students' goals it was inevitable that I would disturb the students, given that I was sitting next to them and talking to them during the course of their activity. I also found it very difficult to 'switch off' the teacher within me, so at times my 'research conversation' took the form of a 'teaching conversation' in which I seem as interested to expose to the student the mathematics in which they are engaged as I am to expose for myself the goals they are working towards. Wiske (1995) reports from research in which teachers and researchers worked together in clinical interviews of students and describes how the teacher's view of the interview differed from the researcher. The teacher regarded the clinical interview as an educational experience for the student. She wanted the child to be treated as the teacher would have treated her in class, not allowed to feel stupid or discouraged by a prolonged period of ignorance unlike anything the teacher would willingly sustain in class. (p. 203) My sympathy here is with the teacher. I think it is an abuse of our informants or participants and the trust that they put in us when they agree to take part in our research if our actions lead them to feel 'stupid' or 'discouraged'. While researching students' goals I felt reasonably pleased with myself that the students did not view me as a teacher. I recall, for example, an occasion near the beginning of my field work when the class had a substitute teacher, we were relocated in an unfamiliar and uncomfortable room which unsettled the class and resulted in an unusual degree of poor behaviour. It seemed to make no difference to the students that I was sitting next to the paper aeroplane production and launch site. Later in the year, towards the end of my field work a student asked me if I was intending to become a mathematics teacher. However my feelings of satisfaction were diminished very near to the end of my work. I had analysed 90% of the data and produced my account of students' goals. I then turned to the 10% of data that I had selected randomly for archiving and later testing the theory I built. One of these archived conversations took place in the first lesson in which I started talking to the students. In this conversation I observed a new phenomenon. In all the conversations I had used to build the theoretical account of the classroom I had been able to identify goals towards which students were working. However, in this archived conversation I could find no evidence of any goal, in fact it seemed that the student had no goal, because prior to the conversation the student had been inactive. One conclusion I drew from this was that my presence in the classroom had sharpened the students' awareness to the possibility of me coming to them and asking them about what they were doing and why. I believe, part of the honesty that I assert underpins research that contributes to justice, empowerment and liberation is to admit the possibility that we may have it wrong! Unfortunately this does not go down too well with the policymakers who want definite answers, hard facts and relationships. To admit to the possibility of error weakens our case and undermines the impact that our research might have.

Regard for informants and participants

The whole of this paper is, I believe, an ethical statement. But there are a few recognisably ethical considerations that I want to add. First, we take for granted that we must seek permission from our informants before we collect data of any kind and we are careful to explain how the data might be used. I wonder how aware teachers and students are of the risk they are taking when they give permission for research to take place. Teachers in particular: the research might expose parts of their practice that make them feel uncomfortable and perhaps even a loss of confidence; I think this is almost inevitable when we lift the lid on a person's practice and examine carefully what is going on. Some research entails the teacher trying something new; this also puts the teacher at risk because it moves her or him from their established patterns of behaviour. When we seek permission for research from teachers I wonder how careful we are to offer them a risk analysis – and if we did whether they would still participate. One of the realities of our lives as researchers is that our work is often determined by the time frames of short-term funded projects. Within a project we establish a working relationship with teachers, complete our research agenda and then have to walk away because the funds no longer exist to sustain the relationship, we have to turn our attention to the next project. I do not think this is being fair to the teachers and their students, unless we build into the project some mechanism by which any impact of the research may be sustained after the project ends. Cooper and McIntyre (1996) offer three characteristics of the behaviour of researchers towards informants: being willing and able to empathise with informants; unconditional regard for participants, that is liking and being interested in informants as individuals; and congruence, that is the researcher is honest and authentic in his or her relationships with informants. I would like to believe that anyone involved in classroom research will have had experience as a teacher which will ensure empathy. I know that during my 16 years teaching in school I will have demonstrated both good and mediocre practice, things I am proud of and things I am ashamed of. And it is not the case that all the bad came at the beginning and the end was only good. The opportunity to reflect on one's own practice in the past should prevent one being judgemental of another teacher in the present. I think if one does not have a liking and interest in teachers and students then one should not even begin to research classrooms. Being honest and authentic also requires some humility, to be clear about one's own mistakes and weaknesses.

Voice

All that I have argued so far needs to be reported with the same care as the research is carried out, thus the report will be characterised in the same way by honesty, openness, critical reflection and 'voice'. I want to say something in particular about giving the teacher and students 'a voice'. Keitel (2004) writes about using my report of Students' Goals with a group of students on an initial teacher training course: I confronted [a] group with some of the excerpts of students' interviews from Goodchild's study and asked them to recall their own experiences in school time and search for similar situations, or make notes about other students' experiences. As they usually are asked to write a biographical essay, they complemented their excerpts with examples of stories about getting stuck, complete lack of understanding, hard debates with other students about getting meaning and significance of a given task and so on. In short, the excerpts encouraged them to look for their own stories and remember their school mates' struggle as well as their own. They were mostly fascinated that a researcher and teacher are giving students a voice and really were interested to listen to them – they argued that this might be an almost necessary condition for becoming a teacher, but almost nobody among them had experienced such a 'listening' mathematics teacher. (p. 276) Naturally I am pleased to see the report being used but I do wonder if I am really 'giving students a voice' as suggested. I think it is more likely that I am using their voice to convey my story. I made selections from my data, using those bits that I thought were interesting and 'useful' for my account. I presented these within the context of my account, with my interpretation alongside. I did the same with the teacher, presenting my account of the classroom using extracts of the teacher's explanations from an extended interview I had with her when I had completed the classroom observations. This has the appearance of giving the teacher and students a voice but in reality I am using their voice to speak my meaning. Perhaps this is more dishonest than giving no voice at all. Sometimes we will be allowed into classrooms and observe a consistency of bad practice that causes us alarm. For example, we might observe students getting a severely impoverished experience of mathematics and a teacher struggling with subject content knowledge, or pedagogical content knowledge. What do we do in these cases? If our relationship with the teacher is of the data extraction type, as it was with students' goals I think there is little that we can do. The teacher did not allow me into her classroom to criticise her practice and it would have been a violation of our agreement if I had. If I went past the teacher and described her poor practice publicly then the chances are I would never be allowed into another classroom. This provides me with one more reason for entering into at least a clinical partnership with a teacher and ideally a co-learning agreement in which both I and the teacher engage in the activity prepared to learn about our own practices.

Conclusion

Returning to the title of this talk: in classroom research I do not believe it is possible to engage in respectable research that will contribute to justice, liberation and empowerment and produce easy recipes for teaching and learning that are likely to appeal to policy makers and thus make a substantial or long term impact. In this respect I can see that impact and long term effect are possibly contrary to the goals of justice, liberation and empowerment. Nevertheless, I do think it is possible to have an impact, immediately and in the long term, not as I did with my research into students' goals but rather by entering into co-learning agreements with teachers and working with them in developmental research as in the Learning Communities in Mathematics Project (LCM) in which I am now engaged. [LCM is supported by the Research Council of Norway (Norges Forskningsråd): Project number 157949/S20] LCM is a development-research project in which the aim is for didacticians to enter co-learning agreements with teachers. The project is established on a notion of 'inquiry as a way of being' (Jaworski, 2004, p. 26). Inquiry is seen to be empowering. At the heart of the development part of the project the aim is for teachers, working in school teams to design tasks. The teachers' role in the design process respects their knowledge. A condition of joining the project was that at least three mathematics teachers in any school should participate; this is part of our attempt to ensure sustainability beyond the end of the project. We aim to facilitate teachers expressing their own voice. One such instance is the joint article I have mentioned earlier, and at the moment we are busy preparing a project book which will include chapters written by school teams as well as didacticians – and some eminent mathematics educators who have made a special contribution to the project. At the beginning of September this year, as we came to the end of the second phase of the project we held a major conference with participants coming from all parts of Norway, teachers and didacticians made contributions. The conference helped to convince the didacticians that the project was having and impact on the professional practice of the teachers. It also gives us hope that the impact might be felt beyond our small project group. We are now entering the third phase and final year of the project. One aim this year is to consolidate the developments that are taking place in schools, but we have been pleased to be given more funds from the Research Council of Norway for a new project which aims to widen the scope in two ways. First there is the possibility of more schools being drawn in, but also the new project is based on a consortium of mathematics educators in university colleges in different regions of Norway who will pursue their own projects within the common theoretical framework of communities of inquiry that has been established within LCM. In these projects I want to assert that it is possible to achieve impact and long term effect alongside the goals of justice, liberation and empowerment.

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