# Reflection on a Knowledge Management (KM) Action Research Project in a Fast Moving Consumer Goods Company (FMCG).

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**Abstract:** Action research is a way of bringing rigour and relevance to research in inter alia KM, learning, and business and management studies. Valuable outputs can be realized: practical solutions and theoretical innovations. However, this approach also entails significant challenges that need to be articulated and reflected on to share learning for the benefit of researchers, students and practitioners in KM and other fields where action research may be a suitable approach.

The aim of the paper is to reflect on an action research project that was implemented at doctoral level in a major UK FMCG so that researchers can learn about the a particular case of action research applied in a KM domain. The paper explains measures that were taken prior to implementation to ensure that the approach was rigorous. It then provides an in-depth reflection and analysis of issues that arose during the implementation of the action research. This reflection draws on accounts written during the action research. The issues that are reflected on resonate with those raised by researchers using action research in similar domains (e.g. Baskerville and Wood-Harper, 1996) and other fields (e.g. Reason and Bradbury 2001). These issues include inter alia the rigour and relevance of the research, research ethics, conflicts of interest, unexpected reactions from participants and incoherent communication from different stakeholders in the research. The paper concludes that this is a suitable approach to use in complex projects like KM projects as long as lessons learnt from previous action research projects are applied.

**Keywords:** action research, KM projects, rigour, relevance, research ethics, conflict of interest.

**Contributor Biography:** Peter Sharp is a doctor in Knowledge Management and Information Systems development strategy. He is a Principal Lecturer who, for over 15 years, has done action research projects, run postgraduate work placement modules, trained students and staff in research methods and business skills. He is also a life coach and research supervisor and trainer. He is particularly interested in the professional business practise, learning organisations and methods that improve learning and knowledge sharing.

**Word count:** 5,529.

**Learning Outcomes**
By the end of this case, students should be able to:
- Understand why action research methodology may be suitable for a researcher doing complex KM problem-solving projects;
- Apply learning from this action research project and literature to make sure the research is rigorous and consistent to draw valuable conclusions and outputs from the project;
- Understand the value of continual personal reflection through an action research project for the action researcher and the development of the KM solutions and outputs

**Context, Project Overview and Research Design**
For the last twenty years I have been fascinated with the field of knowledge and learning in organisations. I have always had a curiosity to learn and when I was doing an MSc in Computing Science, I read a paper about KM in law firms (Gottschalk, 2000). This paper fascinated me. I was a qualified lawyer who had taken a career change and I was finishing my MSc and I was wondering what to do for my dissertation project. When I read the Gottschalk paper I saw a 'coming together' of my own personal experience in life with a topic that has not ceased to fascinate me over the last twenty years: how can our knowledge and learning be effectively harnessed by people in organisations? Themes within this broad field still fascinate me and it is valuable to reflect on an action research project in this field and apply lessons today. This is because these lessons can benefit students and practitioners in the field of action research in KM to complete projects to the satisfaction of different stakeholders and themselves. Although my project was conducted a number of years ago, the lessons I learnt are as relevant today as they ever were having been involved in KM and learning projects over the last 15 years, and in some ways, it is easier to reflect on these issues from distance, in light of 15 years of experience in the same field. Also, arguably the lessons from this action research are even more important in light of the complexity of KM and work pressures on students and employees in our society, for example in higher education (Light et al. 2009) and, with social media proliferation, complexities of research (e.g. Peiwei et al. 2018) and the increasing importance of KM issues (e.g. Stewart 2002) the need to apply these lessons are even greater.

I completed my dissertation for my MSc and was offered a scholarship to conduct a PhD in KM. This led me on my path of conducting an action research project for my doctorate in a FMCG company. In this project, I applied my KM ideas to a strategic level of the company.

The overall aim of the research project was to create a method for prioritising knowledge requirements in organisations as part of information systems development strategy. To do this the objectives included the need to apply, develop and validate my KM method that came to be known as MaKE [tm] (Sharp 2006), which stands for 'Manage Knowledge Effectively'. This entailed capturing feedback and applying the feedback to changes in the method to improve it. This would help achieve the aim the aim of the research and validate the MaKE. Also, while I developed the KM method, the project would also address real KM problems in the organisation (Sharp 2006).

Action research was ideal for this research. This was primarily because I could be involved in solving KM problems in the company while applying and developing my KM method which was designed to be practical and help organisations address their KM problems. It is not unusual to take a method and adapt it to particular circumstances (e.g. Fitzgerald, 1997). The definition of action research used for this research was derived from Susman and Evered (1978) and is illustrated in Figure 1 (see overleaf). Components of MaKE were applied and developed using this form of action research in the FMCG.

The client-system infrastructure constitutes the research environment in which the action research takes place. In this case this was the major UK FMCG manufacturer and distributor. It made and distributed FMCG branded goods. It has several brands within the top 20 selling grocery brands in the UK and holds major UK franchises.
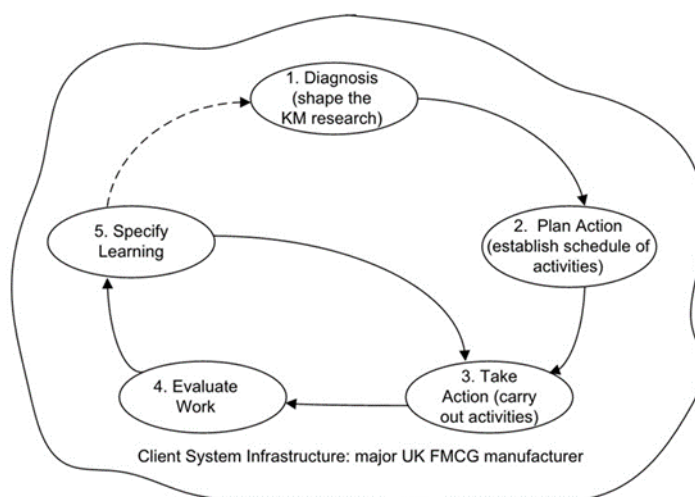
**Figure 1 Adapted Form of Action Research**

There are a number of reasons why this company provided a good context in which to conduct the research. Work related to KM software had been conducted at the company and there was considerable potential for the company to be receptive to the application of the research. The company had a tradition as a manufacturer and there was little if any such reported KM work applied in such a company in the UK. Having applied a KM evaluation scheme to non-manufacturing organisations in previous research (Sharp, 2001, and Sharp, 2002) I decided that it could provide a good comparison. Also, amongst my PhD team of three supervisors, one supervisor worked in the company and could help liaise with the company in setting up the project at a suitable level.

This company was large in its size and scope of operation and it presented certain advantages for the research that would not have been present at smaller companies (e.g. of less than 12 employees). In particular, the representative sample element of the design of MaKE could be applied.

I adapted a form action research from the five stages described by Susman and Evered (1978) (see Figure 1). The main adaptations were that:
i) the criteria for benchmarking the action research project was fixed at the start of the project;
ii) a representative sample of participants in relevant departments of the company were determined at the beginning of the implementation of the project;
iii) stages 3 to 5 of the action research were applied in repeated cycles of the application of components of MaKE with reflection after each cycle and;
iv) a limited number of cycles of action research was determined at the start of the action research.

There were a number of reasons for these adaptations of the Susman and Evered (1978) approach. It was important to have fixed benchmarks for success and a limited number of cycles set at the beginning of the project. This was because if the goalposts for the action research kept changing through the project, there could be a 'never ending' set of cycles. Arguably, this would lead to no resolution of the project for the company nor me as a doctoral student.

One of my three supervisors was an expert in action research. He told me a story about a doctoral student who had not thought these things through when he did his research. As a result of this, the student failed to get his PhD. This was a chastening thing to learn from a professor and I thought I should apply this lesson to my project. Also, I had limited time in the company to conduct my research. I learnt that it is always important to bear in mind the commercial realities of time in a company in which you are conducting your field research.

**Reflection on Research Practicalities and the Method in Action**

The limited time I had in the company to conduct my action research, the literature on the subject, and the advice I received from my 'methodology' supervisor heightened my awareness of the need for rigour in my action research design.

Much literature criticises action research and case study. The criticism is often based on the view that such methods do not conform to positivistic, statistic-based processes that use hypotheses that define causally linked relationships. Therefore, some claim that these research methods are not scientific and rigorous (Yin, 1994; Baskerville and Wood-Harper, 1996). However, if the aim is not to establish a causally related hypothesis, the research design is clearly set out in advance, and the research is in a complex social setting, a different approach is required, and this may be done with justification and rigour.

Action research is as scientifically rigorous as other research methods if it conforms to its disciplined constructs, and can be differentiated from consultancy. Being context-bound does not necessarily make it less likely that the findings of the research cannot be applied elsewhere. Arguably, findings obtained through action research are more relevant because they are based on real-world problem situations, which increase the value of research (Lyytinen, 2003). Also by triangulation of feedback, such findings can be analytically robust (Baskerville and Wood-Harper, 1996).

It is arguable to what degree rigour is required in social problem situations. Feyerabend (1991), for example, argues that rigid scientific methods are often not as productive in the creation of knowledge as other means that are less structured and more anarchic. However, I decided to adopt a very rigorous approach. This would make it more likely that the implementation phase would deliver valuable feedback in relation to the research aim. I agree with Checkland (1991) and believe that the rigour of a method helps justify the findings. Rigour in application of the action research can be assessed on two levels: consistent application and the implementation that conformed to published advice (Baskerville and Wood-Harper, 1996).

I applied the action research design with consistency. This was the case from a number of angles. The participants had not seen the initial design before it was implemented so they did not know its format before application and feedback was obtained. The criteria for their assessment remained the same throughout. Also, anonymity (subject to being identifiable within the company from the feedback itself) was guaranteed. I implemented procedures to make sure of this with regard to tapes and feedback, and there was a consistent plan for application of the different parts of the KM method (e.g. use of a checklist ticked off during each interview) (Sharp 2003).

Each of the elements of a rigorous action research strategy identified by Baskerville and Wood-Harper (1996) was conformed to in action research (Sharp 2003). I also consciously sought to adopt professional practices as part of his research strategy. I kept all participants informed by e-mail, telephone and attendance notes. Decisions in meetings were noted and circulated. I followed up action points with each relevant person. These tasks were essential to complete the work in the time allocated and helped in the reflective process.

The practice of reflecting in and on action is considered to be a professional approach that engenders learning and is applicable to researchers (Schon, 1983). It entails conscious engagement in critical assessment of the contribution, limitations, future areas of work and personal experience throughout the research. Part of this process involved making notes each week in a reflective account and notes after each cycle of the implementation.

I agreed with Schon (1983) that reflection engenders learning and is applicable to researchers. In this context, I reflect on action research to identify what can be learnt about this methodology in KM research. I am doing this in this paper by reflecting on attendance notes, e-mail print outs and his reflective log written during the implementation of the research to identify broad trends relevant to his experience of the action research methodology. Such accounts can be corroborated with other

accounts for the benefit of postgraduates, doctoral and post-doctoral researchers (Phillips and Pugh, 1994) and resonate with my reflections over the last 15 years on similar projects.

I noted a pattern to my log entries which to some extent reflects the way I think and the particular circumstances I experienced. I regularly noted in my reflective log what I had done well, what I had not done well and what I needed to do better. Through this process I evaluated my skills and my learning experience. Another recurrent theme was the need to manage administrative issues well. In particular, I found it important to make efficient use of time, so I could go to conferences, obtain resources, organise meetings and move the research forward during the action research. Another feature of the log was that it records the feelings I experienced and the way they correlated with what I achieved. I also noted in detail how the KM method could be enhanced and I noted issues relevant to my morale, the skill of implementing the KM method and success in meeting the success criteria for the research. I also noted surprising events that happened.

I came into doctoral research as a mature student. Prior to postgraduate research I undertook legal training and worked in commercial practice for a number of years. I found this experience useful, because these skills could be used in my action research. In particular, they helped me organise and chair meetings, conduct interviews, record and manage the research to timetable, present work in written and oral form, and record and manage sensitive data. These skills were honed during my action research and I noted things to help me improve the use of these skills during my action research.

I had three supervisors, two within my university and one at an external university. This team comprised a principal supervisor experienced in the field of strategic use of IT, a supervisor who worked in a bridging capacity with industry, and an external supervisor with expertise in action research. I regularly kept them informed with my reflections on each cycle as planned. Also, I kept the project manager at the FMCG updated regularly. There were advantages and disadvantages in having three supervisors using an action research methodology. I found it difficult to co-ordinate meetings, to keep them informed, and to move the research forward during the action research.

The mixture of views helped me shape the research and come to mature conclusions but different views and interests in the research could also prove problematic. In some cases it led to conflicting advice. Prior to the implementation of the action research the working relationship with my supervisors was established. One feature we agreed was my prerogative to direct the research and make decisions. This was very important because this meant I was able to move the research forward when I received different or difficult advice.

This was particularly important during the action research. For example midway through the implementation of it I had received positive feedback from FMCG participants and my supervisors. However, I returned from a brief holiday to receive a very critical report in an e-mail from my supervisors which seemed to be a reaction to some feedback from within the company. The effect of this on my morale was noted in my reflection. To highlight the contrast in my morale before and after receiving this e-mail, I provide two extracts from my reflective account. Before receiving the e-mail my reflective account said:

- "[supervisor 1] said that I was doing very well and should just keep going. [S]he agreed that my work was going in the right direction and [s]he was very happy with my progress. That boosted my morale!"

After receiving the e-mail my reflective account said:

- "Some of the comments I understand, some I do not understand, and some contradict previous representations and therefore leave a bit of a despairing element in one's gut."

I also noted that the e-mail particularly affected my confidence on the application of the next cycle of my action research. However, my judgement of the situation did not comply with the report in the e-mail. I also realised that the stakeholder interests of different individuals in the project almost certainly skewed the e-mail report and it did not represent a fair picture of the thoughts of participants. This proved to be a correct judgment and later one of my supervisors apologised for the e-mail. This

experience is one that is much more likely to happen in action research where a supervisor may have a stakeholder interest in the participating organisation, which was the case in this research.

One surprising influence of the participants' involvement was that a new criterion was introduced to the action research that had not been agreed at the beginning of the project: the time taken for the interviews. Therefore I addressed this issue in my reflection and action research implementation.

Another issue that arose was the issue of confidentiality. Although an approach for this was agreed in the planning phase of the action research, one participant was very reluctant to participate because he did not believe this had been satisfactorily addressed. I remember him giving unusual answers to straightforward questions. For example, in answer to a 'Yes/No' question he answered 'Not no'!

Such issues that arose during the action research reinforce my view that a rigorous well-planned approach to action research is vital to use the time in the field well. In this case it was essential to refer to this preparation to instil confidence from participants and maximise the success of the research from both an academic and practical angle. So, for example, with the participant referred to above, I was able to reassure him as to the use of the action research and a guarantee of anonymity in the write-up of the research. Arguably, this is an advantage of action research approach because the researcher is actively involved in the project and can reassure participants in the organisation.

Action research is a very difficult research methodology to deploy for a number of reasons including the level of skill involved, ethical issues and different stakeholder interests (Baskerville and Wood-Harper, 1998; Reason and Bradbury, 2001). I took considerable time reviewing relevant literature and choosing an appropriate approach. I discussed the details of my action research design at length with peers, supervisors and participants. On reflection, I think it was very important to establish the structure and rigour of the action research in as much detail as possible before implementation. This was particularly important, because of the limited length of time I had available to carry out the research in industry, and the need to harness goodwill with participants who were unfamiliar with action research. It was also important, because I needed to understand action research well enough so I could clearly explain it to participants. This involved used appropriate terminology that was not too academic and was easy for participants in industry to understand.

Action research usually involves different stakeholders with different interests in the research which can make it difficult to manage and control (Avison et al., 2001). In my experience, the company was primarily concerned with improving its business and making money. My principal supervisor was mainly concerned with my success as a student. My bridging supervisor had a dual interest: to protect the company's interests and my success as a student. I think this made the bridging supervisor's role difficult. This almost certainly led to some unbalanced advice at times (like the e-mail referred to above). Again, the significance of the ability to decide the way forward where different advice may be received was vital in this research.

Action research is also a difficult methodology to use, because the researcher is a heavily involved participant, who is required to deploy a wide range of skills and techniques. This means the researcher may do things that are difficult for others to replicate (Polanyi, 1998). In these circumstances it is important to be consistent and rigorous, so that a coherent body of evidence may be collected. My involvement in the problem domain may cause other difficulties. A greater variety of evidence and richness of feedback may be accumulated than when other methods are used. Therefore, I found that it was important to carefully scope the action research, so that it could be managed and written up effectively.

Although action research presents many challenges, I believe I chose the right research methodology. One thing I noted during the implementation of the action research was that my reflections on my concepts tended to go beyond the feedback other participants gave me and were more critical and related to aspects of finer detail. This was probably because I had a deeper knowledge of the KM method design issues and more experience of the implementation. Also, I had accumulated expertise in KM that other participants had not acquired. For example, I may have read more about the subject.

This was an advantage in developing MaKE. However, I also had to try to ensure that my expertise did not inhibit the production of a concept that can be used by other organisations and KM practitioners. However, I think that the value of close involvement outweighed these difficulties. Like an expert mechanic sorting out an engine and fine-tuning its design, I could make a better product.

One way of overcoming the difficulties of close involvement is the process of articulation and reflecting on the process and publication. Articulating reflection in writing helped evaluate learning and learn through writing (Halse 2011). Also, it helped my morale (Phillips and Pugh 1994) and develop the conceptual side of the research (Aitchison and Lee 2006; Kamler 2008). In recent years writing retreats have been seen as effective ways of encouraging these learning practices (e.g. Maher et al. 2008; Ferguson 2009; Lassig et al. 2009; and Parker 2009; Livingstone 2017).

**Practical Lessons Learned**

In short, my reflection on this action research experience suggests a number of things about the methodology which I have learnt that you can apply in your research:

- Be conscious that it may be helpful to have a gatekeeper contact in the organisation where you plan to do your action research. This gatekeeper can help connect the project to the suitable context in the organisation and develop suitable terminology for explaining the project to participants.
- Be careful to set suitable boundaries for your action research project (e.g. criteria for evaluating success and a limited number of cycles of implementation)
- Create a rigorous well-detailed advanced plan (including a research ethics case that satisfies all participants in addition to criteria for evaluating success)
- Rigorously implement your plan in a consistent way (e.g. carefully record and share reflections). This gives a researcher a structure for successful completion of the project and a higher likelihood of satisfaction of different stakeholders;
- Ensure it is clear that you (as the action researcher) have the prerogative to make final decisions during the project. This is so that you can control the project and manage different views from different stakeholders on how the project is going. Also, you can ensure that the project can continue to completion.
- Reflect on the process of your action research during the project. This helps you develop theory, enhance learning, address administrative issues, handle the project effectively and help your personal morale;
- Bear in mind before embarking on the action research that this methodology requires the use of many skills by the researcher (e.g. communicating with different stakeholders and handling effectively their expectations for the project);
- Use appropriate terminology to explain your research to participants in industry. Obtain different stakeholders' feedback on how you propose to implement the project and learn what terminology works best (while being true to the research).
- Keep different stakeholders updated during the project so that trust in you as a researcher is maintained;
- Devise a conflict resolution plan before commencing implementation of the project so that you can handle conflict if it arises during the project because different participants may want different things from the project.

**Conclusions**

Over the last 20 years I have been involved in Higher Education Institutions and crossed boundaries with industry and other environments where the skills and learning from an action research have been increasingly important. This methodology enables a researcher to handle complex problems in an organisation where there are different stakeholders with different interests. However, the advantages of using the approach outweigh the disadvantages if the researcher is addressing real problems in an organisation and he/she adopts a rigorous approach that applies learning from previous action research. Hence, in my view, this approach is particularly relevant for complex issues of managing knowledge and learning in organizations.

## Exercises and Discussion Questions

1. Consider a project in your life where there are numerous people involved and they all have a different stake in the project. Consider why action research may be a suitable methodology for you to use for the project?
2. How can social media and the increasing sophistication of technology help you in the project or make it more challenging?
3. Brainstorm all the potential challenges there may be in carrying out a complex project and for each challenge consider a solution to address the challenge (that you could put in place before starting the project). Write the challenges and potential solutions up in a table to help you think this through.
4. What ethical issues may be significant to your project that you should address?
5. How would you address them in the project to bring greater 'buy-in' from participants and at the same time enable you to publish/share your research with others?
6. For each of the Practical Lessons Learned above, consider how each lesson may or may not apply to your project. Discuss this with someone you trust to help you think about these issues.

## Further Reading

Baskerville, R.L. and Wood-Harper, A.T. (1996) A Critical Perspective on Action Research as a Method for Information Systems Research, Journal of Information Technology, 11, 235-246.

Checkland, P. (1991) From Framework through Experience to Learning: the Essential Nature of Action Research, in: Nissen, H-E, Klein, H.K., and Hirschheim, R. (eds.) Information Systems Research: Contemporary Approaches and Emergent Traditions, Elsevier Science Publishers BV, Amsterdam, ISBN: 0 444 89029 7, 397-403.

Lyytinen, K. (2003) Beyond the Grasp and Reach in IS Research: the New Agenda for IS Community Building, London School of Economics, ESRC seminars, 21st February 2003.

Reason, P. and Bradbury, H. [eds.] (2001) Handbook of Action Research - Participative Inquiry and Practice, The Cromwell Press Limited, Trowbridge, Wiltshire, ISBN: 0 7619 6645.

Schon, D.A. (1983) The Reflective Practitioner: How Professionals Think in Action, Ashgate Publishing Limited, Aldershot, England: ISBN: 1 85742 319 4.

## Web Resources

Introduction to action research by an example applied in a teaching context: http://www.mun.ca/educ/courses/ed4361/virtual_academy/campus_a/aresearcher/chapter1.html

This case (above) advises action researchers to take the principles of action research and devise a rigorous form of it that makes sense for your own project.

## References

Note about acronym MaKE [tm]: MaKE stands for "Manage Knowledge Effectively" (Sharp, 2003). I wish to acknowledge that this is not to be confused with an acronym similar to, but different from this one, which is described in Winfield et al. (1996).

Aitchison, C. and Lee, A. (2006) Research Writing: Problems and Pedagogies, Teaching in Higher Education, Volume 11, No. 3, July 2006, pp 265-278.

Avison, D.E., Baskerville, R.L., and Myers, M. (2001) Controlling Action Research Projects, Information Technology and People, 14 (1), MCB University Press, 0959-3845, 28-45.

Baskerville, R.L. and Wood-Harper, A.T. (1996) A Critical Perspective on Action Research as a Method for Information Systems Research, Journal of Information Technology, 11, 235-246.

Checkland, P. (1991) From Framework through Experience to Learning: the Essential Nature of Action Research, in: Nissen, H-E, Klein, H.K., and Hirschheim, R. (eds.) Information Systems Research: Contemporary Approaches and Emergent Traditions, Elsevier Science Publishers BV, Amsterdam, ISBN: 0 444 89029 7, 397-403.

Ferguson, T. (2009) The 'Write' Skills and More: A Thesis Writing Group for Doctoral Students, Journal of Geography in Higher Education, Volume 32, Issue 2, pp 285-297.

Feyerabend, P. (1991) Against Method: Outline of an Anarchistic Theory of Knowledge, 2nd Impression, Verso, London, ISBN: 0 86091 934 X.

Fitzgerald, B. (1997) The Use of Systems Development Methodologies in Practice: A Field Study, Information Systems Journal, 7(3) 201-212.

Gottschalk, P. (2000) Knowledge Management in the Professions: the case of IT support in law firms. Proceedings of the 33rd Annual Hawaii International Conference on Social Sciences 2000.

Halse, C. (2011) 'Becoming a Supervisor': the Impact of Doctoral Supervision on Supervisors' Learning, Studies in Higher Education, Volume 36, No. 5, August 2011, pp 557- 570.

Kamler, B. (2008) Rethinking Doctoral Publication Practices: Writing from and Beyond the Thesis, Studies in Higher Education, Volume 33, No. 3, June 2008, pp 283-294.

Lassig, C. J., Lincoln, M. E., Dillon, L. H., Diezmann, C. M., Fox, J. L., and Neofa, Z. (2009) Writing Together, Learning Together: The Value and Effectiveness of a Research Writing Group for Doctoral Students; in Australian Association for Research in Education (2009) International Education Research Conference, 29th November to 3rd December 2009, National Convention Centre, Canberra.

Light, G., Cox, R. and Calkins, S. (2009) Learning and Teaching in Higher Education: the Reflective Professional (2nd edition), Sage Publications, London.

Livingstone, I. (2017) Roles and Responsibilities for Maintaining Progress, Research Supervision Seminar, University of Northampton, 15th February 2017.

Lyytinen, K. (2003) Beyond the Grasp and Reach in IS Research: the New Agenda for IS Community Building, London School of Economics, ESRC seminars, 21st February 2003.

Maher, D., Seaton, L., McMullen, C., Fitzgerald, T., Otsuji, E. and Lee, A. (2008) 'Becoming and Being Writers': the Experiences of Doctoral Students in Writing Groups, Studies in Continuing Education, Volume 30, Issue 3, pp 263-275.

Parker, R. (2009) A Learning Community Approach to Doctoral Education in the Social Sciences, Teaching in Higher Education, Volume 14, Issue 1, pp 43-54.

Peiwei, L., Ross, K., Zhao, P. and Dennis, B. (2018) Critical Action Research: How Do Graduate Students in an Introductory Research Class Conceptualise 'Research'? Sage Research Methods Cases, Sage Publications Limited, London, ISBN 978 147398 9115, 24th April 2018.

Phillips, E.M. and Pugh, D.S. (1994) How to Get a PhD – a Handbook for Students and Supervisors, 2nd ed., Open University Press, Milton Keynes.

Polanyi, M. (1998) Personal Knowledge - Towards a Post-Critical Philosophy (reprint - first print in 1967), Routledge, 11 New Fetter Lane, London, EC4P 4EE, ISBN: 0 415 15149 X.

Reason, P. and Bradbury, H. [eds.] (2001) Handbook of Action Research - Participative Inquiry and Practice, The Cromwell Press Limited, Trowbridge, Wiltshire, ISBN: 0 7619 6645.

Schon, D.A. (1983) The Reflective Practitioner: How Professionals Think in Action, Ashgate Publishing Limited, Aldershot, England: ISBN: 1 85742 319 4.

Sharp, P. (2001) SolSkeme: A Knowledge Management Evaluation Scheme, MSc Dissertation, School of Computing, Staffordshire University.

Sharp, P.J. (2002) SolSkeme - A Scheme for Managing Knowledge in Organisations, in: Proceedings of Third European Conference on Knowledge Management (3rd ECKM), Trinity College, Dublin, Ireland, 24th-25th September 2002, MCIL, Reading, UK, 609-617.

Sharp, P.J. (2003) MaKE – a KM Method, PhD Dissertation, School of Computing, Staffordshire University.

Sharp, P.J. (2006) MaKE – a Knowledge Management Method, Journal of Knowledge Management, Vol 10, No.6, 100-109.

Stewart, T.A. (2002) The Wealth of Knowledge – Intellectual Capital and the Twenty First Century, Nicholas Brearley Publishing, London.

Susman, G. and Evered, R. (1978) An Assessment of the Scientific Merits of Action Research, Administrative Science Quarterly, 23 (4), 582-603.

Winfield, M. J., Basden, A., and Cresswell, I. (1996) Knowledge Elicitation Using a Multi-Modal Approach, World Futures, 47, 93-101.

Yin, R. (1994) Case Study Research Design and Methods. 2nd ed., Applied Social Science Research Methods Series, Sage Publications Ltd, London, ISBN: 0 8039 5663 0.