EDITORIAL ESSAY

Using Action Research to Study E-Collaboration

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ABSTRACT

This paper begins with a discussion of action research from an historical perspective. It then puts forth some ideas on how this research approach can be used in investigations of the design or e-collaboration technologies and the impact of those technologies on people. This is followed by a discussion of key epistemological considerations, including whether action research can be conducted in a positivist manner. The paper then summarizes two special issues of journals on information systems action research that provide scholarly illustrations of some of the arguments presented here. Finally, the paper concludes with a discussion of how action research can be used by doctoral students investigating e-collaboration issues.

Keywords: *action research; e-collaboration; epistemology; qualitative research; quantitative research*

INTRODUCTION

According to most accounts, action research (AR) originated independently in the U.S. and England in the 1940s. In the U.S., AR emerged from the work of Kurt Lewin on a variety of topics, ranging from child welfare to group dynamics. Lewin was a German-born social psychologist, whom many see as the father of AR. In England, AR's origins are not tied to a particular individual but to an institution — the Tavistock Institute of Human Relations in London, where AR was used as a research method to both understand and treat sociopsychological disorders associated with war-related experiences.

To say that the range of areas and ways in which AR can be conducted is vast is an understatement. AR can be used in many general fields of inquiry, such as bilingual education, clinical psychology, sociology, and information systems. It can be conducted in ways that are aligned with most epistemologies, including the positivist, interpretivist, and critical epistemologies. AR can have as its unit of analysis the individual, the small group, and even the entire organization. It can be used to address issues as varied as health concerns, environmental problems, engineering techniques, and business methods.

One of the key characteristics that distinguishes AR from most other research approaches and also constitutes one of its main

appeals is that AR aims at both improving the subject of the study (often called research client) and generating knowledge, achieving both at the same time. While this characteristic may seem straightforward enough to easily differentiate AR from most other research approaches, such as experimental, survey, and case research, it is not.

Let us assume, for the sake of illustration, that a survey-based research project was conducted, addressing the differential access to the Internet between two main income groups — one high (wealthy) and the other low (poor) — in a particular city, where the reasons for the digital divide are unclear. Can that research be considered AR, if a report based on it is used by the city's government to bridge the gap that characterizes the divide? The answer is yes, if the research encompasses the city's actions and possibly a follow-up survey assessment of the impact of those actions. The answer is no, if the research ended with the analysis of the survey and the publication of the summary report.

Because of AR's dual goal, researchers employing it are said to have to satisfy two "masters" (Kock & Lau, 2001; Sommer, 1994) — the subject (or subjects) of the research, and the research community. Historically, one could argue that it has been harder to satisfy the latter, especially in fields of inquiry where AR has not traditionally been used — such as e-collaboration.

ACTION RESEARCH AND E-COLLABORATION INQUIRY

Research on e-collaboration has flourished worldwide, especially since the 1990s. This has been motivated by a number of factors, including the development of and experimentation with a variety of e-collaboration tools in the 1980s and 1990s (e.g., workflow coordination and group decision support systems), the emergence of the Internet in the early 1990s, and the explosion in the personal and commercial use of the Web in the mid-1990s (motivated by the development of the first Web browsers). The flourishing of e-collaboration research has coincided generally with the increasing use of AR in the study of technology-related issues, culminating with the publication of two related special issues dedicated to the discussion and illustration of the use of AR in information systems research (Baskerville & Myers, 2004; Kock & Lau, 2001).

In spite of the fact that e-collaboration research and AR have grown in importance together in the last 15 years or so, there is less AR applied to e-collaboration inquiry than could be expected. To be sure, there are examples of e-collaboration studies employing AR, including some relatively recent ones (DeLuca, 2003; Kock & Davison, 2003; Yoong & Gallupe, 2001). Nevertheless, the vast majority of the research on e-collaboration produced in the last 15 years has employed experimental research methods, followed by survey and case research methods. AR trails way behind, accounting for probably no more than 5% of the total e-collaboration research output. This situation mirrors a research-orientation trend discussed in the early 1990s by Orlikowski and Baroudi (1991), when AR was found to account for less than 1% of the total information systems research output published in several major academic outlets.

While there is no typical e-collaboration AR study, previous research (Kock, 1999, 2001) suggests the existence of key elements that are likely to be shared by most e-collaboration studies employing AR, particularly studies following the positivist epistemological paradigm (this will be explored in more detail in the next section). Those key elements can be summarized as follows:

- *Research question(s)*. This is the theory-based research question (or questions) that

guides the data collection and analysis. Instead of a research question, the data collection and analysis may be guided by one or more hypotheses, but this is less commonly the case in AR than in other research approaches (e.g., experimental research). An example of a research question is the following: Does the use of a video-conferencing suite improve the quality of the outcomes generated by new product development teams whose members are geographically dispersed?

- *E-collaboration technology*. This is the technology whose impact on a research client is the main subject of the research. An example of e-collaboration technology is a video-conferencing suite.
- *Practical problem(s)*. This is the problem (or problems) being faced by an individual, group or organization, which the e-collaboration AR study aims at solving, at least in part. Some prefer to refer to practical problems by using a more benign term; namely, opportunities for improvement. An example of a practical problem is the following: New products need to be constantly developed by geographically dispersed teams, but the transportation and lodging costs associated with bringing team members together currently prevent more than two-thirds of the needed teams from being conducted.
- *Research client*. This is the individual, group, or organization whose practical problem (or problems) is supposed to be solved by the e-collaboration AR study. An example of a research client would be an automobile manufacturer with several factories in the U.S. and overseas.

One of the most straightforward and efficient ways of conducting an e-collaboration AR study is to collect data using the same instrument (e.g., a questionnaire) at two key points in time; namely, before and after the introduction of the e-collaboration technology. The technology introduction would more often than not have the goal of solving an important practical problem being faced by the research client. Usually, it is a good idea to collect quantitative as well as qualitative data before and after the technology introduction. The quantitative data can be used in simple non-parametric comparison of means analyses, whereas the qualitative data can be used to find explanations and underlying causes for the patterns observed in the data.

In spite of its simplicity, this type of research design is relatively rare in AR. It is much more common to see published examples of AR in which only qualitative data is collected, mostly during and after the AR intervention (e.g., e-collaboration technology introduction). Moreover, quite often AR studies are conducted through multiple iterations of Susman and Evered's (1978) AR cycle, rather than the "one-shot," non-cyclical research design mentioned above. Susman and Evered's (1978) AR cycle involves the identification of practical problems, the solution of those problems, and reflection on the part of the researcher, which is then followed again by the identification and solution of problems, new reflection, and so forth.

SOME EPISTEMOLOGICAL CONSIDERATIONS

Epistemologies can be seen as systems of concepts, rules, and criteria that find acceptance among a community of researchers as a basis for the generation of what that community of researchers sees as valid knowledge. By far, the most widely subscribed epistemology among e-collaboration researchers is positivism.

Research that conforms to positivist inquiry tenets usually departs from a set of theoretical propositions or hypotheses and aims at testing those propositions or hypotheses through the analysis of empirical data. Also, in positivist research, the data are usu-

ally (although not always) of a quantitative nature. The research methods employed in positivist studies often reflect those traditionally used by natural scientists.

One issue that has led to some debate among AR scholars in the past is whether AR can be conducted in ways that are consistent with different epistemologies, including the positivist epistemology. The debate has been motivated by the fact that AR traditionally has been used in research studies that do not conform very well with traditional positivist standards and that are better aligned with what many would see as the interpretive and critical epistemologies (Audi, 2003). In fact, one could argue that today there is resistance in scholarly AR circles to the notion of positivist AR, and that resistance can be quite strong within specific AR communities (e.g., AR practitioners in Scandinavia).

This scenario creates a problematic situation, what one could reasonably call a vicious cycle. Since e-collaboration research is overwhelmingly positivist in nature, and since there are practical reasons for this status quo, researchers who try to employ AR to study e-collaboration are hampered not only once, but twice in their efforts. On one hand, they have to justify using AR in a positivist manner, which is likely to meet with opposition from AR scholars. On the other hand, they have to sell the notion that AR can be useful for e-collaboration research, which is likely to be seen with suspicion by established e-collaboration researchers.

This is an unfortunate state of affairs, because AR can address a key problem with past e-collaboration research; namely, its lack of real-world appeal. In other words, since past e-collaboration research has been based by and large on laboratory experiments with students, it has been difficult for practicing managers and professionals to relate to many of the findings resulting from that research. Moreover, on a related note, research conducted in controlled laboratory settings arguably leads to findings that carry little external validity, which, interestingly, is often a criticism of AR studies, as well (Kock, 2004).

Can AR be successfully employed in e-collaboration research? The answer to this question is certainly yes, and there are several examples of that (Kock, 1999, 2004). Can that be done in a positivist way? Based on some recent examples (DeLuca, 2003), the answer to this follow-up question also seems to be yes. The key here is perhaps to be creative, so that certain characteristics of AR are used to add natural strengths to e-collaboration inquiry rather than only natural threats, for which methodological antidotes already exist (see Kock, 2004, for a discussion of three such threats and related methodological antidotes).

A natural strength of AR comes from the observation that it exposes the researcher to significantly more (although relatively sparse) data than more focused research approaches (e.g., experimental and survey research). If one were to adopt Popper's (1992) view that exposure to a large body of data, whose analysis does not uncover evidence that contradicts a hypothesis, is, in fact, evidence in support of the hypothesis, then AR could be seen as quite adequate for positivist e-collaboration inquiry (see Kock, 2001b, for a study that builds explicitly on this view).

TWO SPECIAL ISSUES OF JOURNALS WORTH CHECKING

E-collaboration researchers often identify themselves with broader research communities. One such community is that of information systems researchers. With that in mind, a couple of special issues on information systems AR are worth checking, as they provide exemplars of AR studies that can be used as a basis for e-collaboration researchers interested in employing AR. The first is the special issue on AR in information sys-

tems published in the journal *Information Technology & People 14*(1) in 2001. The second is the special issue on AR in information systems published in the journal *MIS Quarterly 28*(3) in 2004.

The special issue published in the journal *Information Technology & People* in 2001 was the first special issue ever on AR in information systems (Kock & Lau, 2001). The issue contained six articles. Three of those are conceptual, in the sense that they are aimed at providing insights on how to conduct information systems AR. The other three articles are empirical, in the sense that they discuss actual information systems AR studies and their results. Of the empirical articles, two addressed e-collaboration issues in the context of group support systems (Kock, 2005) investigations.

The special issue on AR in information systems published in the journal *MIS Quarterly* in 2004 was aimed at providing a set of exemplars of information systems AR studies of an empirical nature (Baskerville & Myers, 2004). As such, all of the six articles published in this special issue report on empirical studies that employed AR to investigate information systems phenomena. None of the articles seems to be aimed at squarely addressing e-collaboration issues, although at least two of the articles — Braa et al.'s "Networks of Action" and Kohli and Kettinger's "Informating the Clan" — address issues that are likely to be relevant for e-collaboration researchers.

DOCTORAL ACTION RESEARCH ON E-COLLABORATION

A great deal of the research output produced every year and published in academic journals is the direct result of doctoral research investigations. The field of e-collaboration is no exception to this general rule, so it is a good idea to contemplate the pros and cons of conducting doctoral research on e-collaboration issues employing AR.

Phillips and Pugh (2000), in their excellent book on how to successfully complete a doctoral program, state that one of the best ways to get a doctoral degree is to test an existing theory. Conversely, the authors point out that it is not very wise to try to develop a new theory as part of one's doctoral research project. In spite of many doctoral students' propensities to think of their research projects as likely to lead to theoretical insights that will change the world in a major way, it is a good idea to heed Phillips and Pugh's (2000) advice. It is unlikely that doctoral students' ideas will have the same impact as Darwin's theory of evolution or Einstein's theory of relativity (which were not developed as part of Darwin's or Einstein's doctoral work, by the way).

Conducting research aimed at testing an existing theory is quite likely to lead someone's research to fall into the general epistemological category called positivist research, discussed earlier. As previously argued, there is nothing wrong with conducting AR in a positivist manner. However, one problem may arise. Traditionally, AR has not been seen as the best approach for the conduct of positivist inquiry. In fact, AR has been viewed widely as an ideal approach to create new theories grounded in action-oriented projects, particularly in organizational settings.

So, what is a doctoral student to do when contemplating using AR to investigate e-collaboration issues? First, it would be advisable to have a look at recent examples of doctoral dissertations that accomplished this (see DeLuca, 2003). Second, it is highly advisable to design the research in a positivist manner, following some of the suggestions provided earlier in this paper. Finally, the student should make sure that the doctoral dissertation committee members are receptive to the idea of AR being conducted in a positivist manner.

After all, those committee members ultimately are the ones that will decide whether the degree is granted or not. Those who employ and/or subscribe to the AR approach known as "canonical AR" are likely to be so inclined, and others who are not can be educated based on publications discussing canonical AR (see, e.g., Davison et al., 2004).

Nevertheless, a number of obstacles await those doctoral students who decide to employ AR to study e-collaboration issues. Those students who opt for studying e-collaboration effects in organizational settings, for example, will face the challenge of finding an organization or organizations willing to work with them. Even when organizational support is achieved, there is the danger that the support will be withdrawn before enough research data are collected. Finally, a multitude of political issues will have to be dealt with. For example, there may be suspicion and opposition by employees, if support is obtained from the organization's management first, without much grass-roots consultation. Dealing with such political issues is likely to ensure that the doctoral student employing AR will have to spend significantly more time and effort with the research project than doctoral students employing more traditional e-collaboration research approaches (e.g., experimental research).

CONCLUSION

This paper discusses a number of issues in connection with the use of AR to conduct research on e-collaboration issues. It starts with a brief historical review of AR and its contemporaneous origins in the U.S. and England. The paper also discusses AR's more recent use in information systems, a field of inquiry that often is seen as related to that of e-collaboration. The paper then goes on to discuss key elements that are likely to be shared by most e-collaboration studies employing AR.

Underlying much of the discussion presented in this paper is the belief that AR can be conducted in ways that are closely aligned with the positivist epistemology. In fact, the paper goes so far as to argue that there are certain advantages in conducting positivist AR in the context of e-collaboration inquiry. Among the reasons is that today, the most widely subscribed epistemology (by far, it seems) among e-collaboration researchers is positivism.

The paper provides a short review of two relatively recent special issues of journals, which are worth checking by those interested in conducting e-collaboration studies employing AR. It then concludes with a discussion on how one can successfully carry out a doctoral AR study addressing e-collaboration issues, as well as some of the difficulties that the doctoral student is likely to face.

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