

Chapter 15

IS ACTION RESEARCH AND ITS CRITERIA

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Abstract: There is little agreement on which criteria should be used in the design and evaluation of IS action research. Much action research is not at all explicit about the applied criteria. This chapter seeks to remedy this by eliciting from twenty odd years of action research six criteria. The epistemology of action research has traces back to pragmatism and with this as background the six criteria are presented and illustrated through a piece of recent action research. The contributions of the chapter are the six criteria, how to model these in their context of research activities and research contributions, and how to understand these criteria in a pragmatist view.

Key words: action research criteria, pragmatism, experience, problem solving, research design, research evaluation.

1. INTRODUCTION

In the mid-1980'ies when I came to Lancaster University, UK, to study for my Ph.D. I was struck by the clarity with which Checkland and his colleagues explained their use of action research. Their particular use of action research had already then led to many advances in their research on problem-solving methodology in what is commonly known as Soft Systems Methodology (Checkland, 1981). I came from a Scandinavian background where action research was legitimate, but never well understood as a means for researching information systems. In retrospect, I think it is fair to state that it was more luck and good intentions that had led us to a reasonable research process. When I came to Lancaster, I was for the first time confronted with a clear intellectual account of action research. I was pleased to find that we had implicitly practiced action research – at least in part –, but it was also painfully apparent that we had much to learn. The Lancaster account of action research influenced our research practice immensely and

we have since been seeking to explain with clarity what we have done and why our findings amounted to research contributions. Much has happened with action research in the last twenty years and its use has diffused to larger parts of information systems research.

In this chapter I present how we now explain the criteria by which we design and evaluate action research. We have for many years used action research to study and improve the professional practice of information systems development. A few pieces of our action research are: the study of the use of methods in practice (Nielsen, 1990), a summary of the research on reflective systems development (Mathiassen, 1998), improvement of development practices (Iversen et al., 1999), the organization of action research and collaborative practice research (Mathiassen, 2002), an organizational view on software process improvement (Mathiassen et al., 2002). We first used the now six criteria explicitly in (Iversen et al., 2004). The purpose I will pursue in this chapter is to discuss pragmatism as the underlying research epistemology as well as how research activities, contributions, and criteria come together in designing and evaluating action research.

2. ACTION RESEARCH EPISTEMOLOGY

Most accounts of action research focus on its methodology, i.e., what to do and why. Action research methodology has often been traced back to Lewin (US) and to Tavistock (UK) where the discussions have concerned its therapeutic intentions. The epistemology underlying action researches has so far received little attention. Jönsson attribute his criterion of truth to the pragmatists James and Mead (Jönsson, 1991, p. 392). Baskerville & Myers in their foreword to the special issue on action research in *MIS Quarterly* suggest that pragmatism is its underlying philosophy (Baskerville & Myers, 2004). In this chapter I shall follow the same traces of action research epistemology.

The emergence of pragmatism as a philosophical discourse was for the most part due to William James though he attributed its principles to Charles S. Pierce more than a hundred years ago. An excellent historical account of pragmatism can be found in *The Metaphysical Club* (Menand, 2001). James summarises Pierce's pragmatism with the idea of clearness:

“To attain perfect clearness in our thoughts of an object, then, we need only consider what conceivable effects of a practical kind the objects may involve. ... The ultimate test for us of what a truth means is indeed the conduct it dictates or inspires.” James, 1907, cited here from (Menand, 1997).

Thus, what we take to be a true theory is a theory that has some consequence in action. If it does not have a consequence, it is not a clear theory and thus not relevant to consider. To pragmatists, it does not make sense to think of a theory as a mirror of reality; a theory (or knowledge as the later pragmatists prefer to call it) is an instrument or organ of successful action (Dewey, 1908-09, cited here from (Menand, 1997)).

John Dewey who was influenced by James developed pragmatism much further in his integrated theory of knowledge as holistic, of politics as democratic, and of education as progressive. A core idea not only to his theory of learning-by-doing, but in all his work is that knowing and doing are inseparable aspects of the same process.

To Dewey, “the function of knowledge is to make one experience freely available in other experience” (Dewey, 1916). While experience is central in his thinking it is not so that all experience will lead to knowledge or will be educative:

“Experience and education cannot be directly equated to each other. For some experiences are mis-educative. Any experience is mis-educative that has the effect of arresting or distorting the growth of further experience.” (Dewey, 1938, p. 25)

Dewey is not concerned with action research, but his concept of experience is very relevant to understand better the action aspects of this particular kind of research. It is from the action we are trying to elicit the research findings. Dewey would say that, irrespective of whether we are looking at education or problem solving, experience is foundational. Therefore everything rest on experience:

“Everything depends on the *quality* of the experience which is had. The quality of any experience has two aspects. There is an immediate aspect of agreeableness or disagreeableness, and there is its influence upon later experiences.” (Dewey, 1938, p. 27)

Based on this Dewey developed two criteria for experience (Dewey, 1938, p. 35-44):

1. The *principle of continuity of experience* whether that is due to habit or explicit value-making discriminates desirable and successful actions from those that are failed action, not desirable outcomes or perhaps just less desirable consequences. Growing experience is a special case of the principle of continuity. This may also be referred to as progress – progress according to a set of values.

2. The *principle of interaction* puts equal concern on the immediate experience and the influence on lasting experience. Taken together they form what Dewey calls a situation.

Donald Schön does not refer much to Dewey (at least not directly), but it is evident that his theory of problem solving rests on a similar pragmatic view of knowledge as “knowing and doing are inseparable” (Schön, 1983, p. 165). Schön seeks to explain in various ways and for several professional disciplines how knowing and doing come together in knowledge-in-action and in reflection-in-action. Reflection-in-action is particularly directed at explaining professional practitioners’ thinking in action. In reflection-in-action:

1. Situations are seen as unique though the professionals bring past experience to bear through *seeing-as* experimentation based on a repertoire of examples, images, understandings, and actions (Schön, 1983, p. 138). Dewey would undoubtedly refer to this repertoire as experience and possibly even as continuity of experience as the repertoire becomes tested over time.
2. Inquiry is seen as problem setting where means and ends are mutually dependent and therefore are set in the same process. The framing and re-framing of the situation happens gradually when the practitioner listens to the situation’s back-talk (Schön, 1983, p. 132). This is in other terms the principle of interaction.
3. Progress in problem setting is measured in terms of whether it leads to successful actions (Schön, 1983, p. 133-134): Can the problem be solved? Has the situation become coherent? Have we kept inquiry moving? This is equal to the principle of pragmatism and it is a practical way to exercise the principle of continuity.

Schön’s theory of reflection-in-action is relevant to mention within a pragmatist view of action research because it reflects a concern for action and for research where the two are inseparable. Schön’s theory influences the relationship between research and professional practice and between researchers and professional practitioners. Schön does not distinguish between these.

The criteria for action research should from a pragmatist viewpoint be congruent with Dewey’s two principles (continuity of experience and interaction) and follow Schön’s three principles of reflection-in-action. In our action research we have long been influenced by Schön’s theory. His theory is particularly relevant to us as our focus has always been that our research should be useful to practitioners of information systems

development. The traces back to Dewey and pragmatism has daunted on us only gradually within the last years. In the following I will try to relate our view on action research criteria to Schön's theory and pragmatism to provide a better foundation for the criteria and how we use these.

3. ACTION RESEARCH CRITERIA

Action researchers seek relevance in their results by committing themselves to a particular problem situation. This unfortunately leads to a number of limitations and pitfalls (Baskerville & Wood-Harper, 1996): (1) lack of impartiality of the researcher; (2) lack of discipline; (3) mistaken for consulting; and (4) context-dependency leading to difficulty of generalizing findings.

Criteria for action research are intended to reduce the inherent limitations and pit-falls, but have in general not been common until recently. Many have been influenced by Checkland's criterion of usefulness for his research on Soft Systems Methodology (Checkland, 1981), and that criterion I will return to later. Probably the first introduce explicit criteria into IS action research was Checkland in 1990 at the IFIP WG 8.2 conference in Copenhagen where he introduced the criterion of declaring a framework (Checkland, 1991). In the following I will present some of the existing criteria and discuss these briefly from a pragmatist viewpoint. I will then continue by presenting our six criteria and also discuss these from a pragmatist viewpoint.

3.1 Existing Criteria

Lau summarizes the criteria already in the literature in the late 1990's on action research (Lau, 1999) based on a few selected sources (Checkland, 1991; Hult & Lennung, 1980; Jönsson, 1991). He applies these criteria on the action research papers he has found in the mainstream literature by 1999. Lau's criteria are directed at reviewing journal articles. An example of a criterion is whether the reported action research led to appropriate and adequate changes in the situation in which the action research intervened into? When planning action research and when in the midst of action you cannot know whether the resulting changes are appropriate and adequate. Our argument has always been that it is part of the action research to figure this out and it depends among other things on the actors in the situation. The principle of interaction implies that it is in the situation that appropriateness of changes can be assessed. Based on Schön I will also argue that the appropriateness of changes must be seen as problem-setting and it cannot really be determined prior to engaging into action. While Lau's criteria are

all argue to be relevant for reviewing journal papers I shall maintain that action research criteria should be applicable throughout the endeavor, from designing, over engaging in action, to making sense of the findings and evaluating.

Recently, a set of principles for canonical action research was established and for each of the five principles there are a number of detailed criteria (31 in total) (Davison et al., 2004). These criteria are all very detailed and each criterion can in principle be answered with ‘yes’ or ‘no’. An example of a criterion is: “Was the focus of the research project specified clearly and explicitly?” It is also our experience that it is reasonable to ask this question, but in addition we have often been in research projects where the focus has changed – and with good reasons. Our research projects have often been longitudinal and our main concern has always been to design action research and hence also to redesign it when we had good reasons. That is, based on the principle of interaction and Schön it becomes apparent (as with Lau’s criteria) that these criteria are directed at evaluating action research, but suffer from a static view on the intrinsic relationship between action and research. I am not rejecting these criteria, but our experience with action research has led us in a different direction where attention is directed at creating and maintaining cohesion between our action and our thinking about research and its potential contribution. That is Dewey’s principle of interaction enacted.

Checkland made a very important point when he claimed that it is insufficient for action research to claim that some coherent action was useful. It is only proper action research if a framework is declared in advance and the framework allows for the formulation of lessons that can be learned from the action (Checkland, 1991). Following Checkland we also apply these two criteria, which I shall return to in the next section. Checkland’s two criteria have later been supplemented with the criterion of recoverability (Checkland & Holwell, 1998a). They argue that the action research process should be recoverable “by anyone interested in subjecting the research to critical scrutiny” (Checkland & Holwell, 1998a, p. 18). For research that is sound principle. For action research it is a much better principle that reproducibility which for obvious reasons does not make sense in action research. Recoverability addresses the heart of the principle of continuity. As research is a social activity the consumers of research should be able to see on which ground the action researcher claims a successful outcome, i.e., for research the principle of continuity should be exercised in public.

3.2 Six Criteria

In our use of action research criteria we have strived at setting-up the criteria in order to be relevant when designing an action research effort, while in the midst of the effort, and when evaluating past action research.

The six criteria that we developed for (Iversen et al., 2004) are:

- **Roles:** Clarify the roles of researchers and practitioners.
- **Documentation:** Explain the data collection approach and how data quality is maintained.
- **Control:** Explain the control measures.
- **Usefulness:** Establish the usefulness of the findings in the problem situation.
- **Frameworks:** Relate the actions taken as well as the findings to frameworks to support the study.
- **Transferability:** Explicate conditions for transfer of findings to other situations.

We have come use these criteria only gradually. We have for many years used these criteria more implicitly and mostly directed our full attention to explicating the usefulness and the frameworks. We believe that with these six criteria we are able to explain our action research better as research.

3.2.1 Roles

Clarifying roles can help establish our impartiality as researchers and explicate the discipline in collaborating with practitioners (Baskerville & Wood-Harper, 1996). Action researchers cannot be disinterested observers (Checkland, 1981, p. 152; Susman & Evered, 1978, p. 589). There are several roles in action research, e.g., client, sponsor, champion, practitioner, and researcher, that overlap and sometimes interchange in ways that cannot be fully anticipated (Clark, 1972). An action researcher “acts and simultaneously observes himself acting” (Mansell, 1991, p. 30). A reflective practitioner is, conversely, a researcher into his own practice (Clark, 1972, p. 72-73). Action research requires in this way “a partnership of practitioner-researchers and researcher-practitioners” (Schön, 1983, p. 323).

From a pragmatist viewpoint the roles should be clarified because of the principle of continuity. What is to be taken as successful outcomes is very likely to depend on who have been involved in which activities and which values they may bring to bear on these activities. Hence to be able to act, research and report on what in the situation was taken to be successful actions and reflection-in-action the roles needs to be clear. Because of the principle of interaction it also becomes important to be clear about how the researchers interact with practitioners. In general, it becomes interesting how

researchers and practitioners get feed-back from the situation and how they come to listen to the situation's back-talk (in Schön's sense).

3.2.2 Documentation

Explaining the data collection approach in detail is a key discipline that distinguishes research from consulting (Baskerville & Wood-Harper, 1996). Action research is such a empirical research and "there are two kinds of processes to record in social action research, the learning process of the host [practitioners], and the discovery and interpretation process of the guest [researchers]" (Jönsson, 1991, p. 391). Our experience is that proper data collection is often easier than done and we have had to look at other empirical approaches for relevant techniques.

Longitudinal research on organizational change (Pettigrew, 1990) offers a useful approach to documentation of action research. Pettigrew's approach is based on the assumptions that: (1) change processes should be studied in the context of change at another level of analysis, (2) the importance of revealing temporal interconnectedness, and (3) the need to explore context and action where context is a product of action and action is a product of context (Pettigrew, 1990, p. 269-270). These assumptions have implications for what we should collect data about. Pettigrew's data collection techniques are: in-depth interviews, documentary and archive data, and observational and ethnographical material. To this list we have added diary writing (Jepsen et al., 1989), i.e., the action researchers reflect in writing on events, ideas and actions as they evolve over time. Diary writing is appropriate since it offers data collection when the researchers are involved in the activities and they play an active role, which is a core characteristic of action research. These techniques address how we may collect data. Indicators of the quality of data are: (1) the extent to which the data cover Pettigrew's three assumptions, and (2) the extent to which the techniques have been systematically applied.

Where (Checkland & Holwell, 1998b) refers to recoverability as a criterion we prefer documentation in stead as it a prerequisite for later establishing recoverability. We have struggled with documentation for several years. For any particular action research effort we never take it lightly how we should document and without careful consideration it is easy to collect too much data, too little data or simply irrelevant data.

From a pragmatist viewpoint it is crucial to understand that in action research we need to see the principles of continuity and interaction not only against the background of the situation into which we intervene. We should also see it against the background of the action researchers' situation as part of a larger research community. I will refer both these backgrounds as one, namely the research situation. In action research it means that the research

situation can easily have two kinds of back-talk from the situation, i.e., from action and from research, but in general there is no reason to believe that there will be just these two kinds and that they will be that simple to explain. Primarily for the purpose of research we need to collect data and the data need to reflect the whole of the research situation and its back-talk. Without data the reporting will be less believable for other researchers.

3.2.3 Control

Action research is a social activity. It is emergent in nature and control issues are therefore relevant to consider in order to make sense of the research process and its outcomes. Avison et al. propose three control structures that we should be aware of and report on: control over initiation, determination of authority, and degree of formalization (Avison et al., 2001, p. 38). Initiation may be by: (1) the researchers (if they have theories or approaches to be tried in practice), (2) the practitioners (if they are facing difficult problem situations), or (3) it may evolve from existing collaboration. Authority may largely be determined by: (1) the client organization and the existing structure, (2) migration of power between stakeholders as part of the action research process, or (3) the researchers being identical to the practitioners. The degree of formalization may be characterized by: (1) formal contracts between researchers, practitioners, and the client organization, (2) informal agreement and commitment between the partakers, (3) or by the formality evolving over time as part of the action research process.

Through our experience with action research we have recently come to realize that the control of the research situation must be addressed. The social aspects of creating continuity and interaction in the research situation also deal with power and how power is exercised. What is taken to be successful outcomes in the principle of continuity is value-based and there may well be conflicting value sets. The conflicting values do not only have to be between practitioners' interests and researchers' interests. If there are conflicting values and interests it is our experience that it is often between practitioners. There are several ways to report of this. One is to use the control framework in (Avison et al., 2001). Another will be to analyze stakeholder interests or find other ways to map out various interests and how these may influence continuity of experience, interaction with the research situation, and specifically the problem-setting in the practitioners' situation.

3.2.4 Usefulness

Usefulness is perhaps the most important criterion, and it is also the criterion most commonly reported on in action research. Establishing

usefulness of findings in the problem situation supports the impartiality of action research and creates a baseline upon which the results might be transferred to other similar situations (Baskerville & Wood-Harper, 1996). Experienced usefulness is the pragmatic basis for evaluating action research. Checkland states that the “criterion by which the research was judged internally was its practical success as measured by the readiness of actors to acknowledge that learning had occurred, either explicitly or through implementation of changes” (Checkland, 1981, p. 253). Baburoglu and Ravn (1992) argue similarly that action research generates action knowledge, i.e., knowledge that actors are ready to act on or actually act on.

From a pragmatist viewpoint the criterion of usefulness deals with both the principle of continuity and the principle of interaction. If, as I the quote from Checkland, the practitioners willing claim that learning has occurred and progress has been made in their situation then from their perspective there is continuity of their experience. I shall call this first-order continuity. Second-order continuity happens when the researchers are willing to claim that it is progress in the research situation. This second-order continuity depends on the first order continuity to be stated, but there is not a 1-1 relationship.

Some of the least interesting action research I have participated in happened in a software company where the activities took the practitioners through significant learning, and though the framework we applied proved useful in the situation we did not learn anything new. The problems this company’s practitioners experienced were common problems in managing large software projects and we tried successfully to reduce the effects of these problems by means of an analytical framework for assessing specific management issues. Unfortunately for us this did not amount to a research contribution as no new understanding came up. Hence, there was no second-order continuity of experience. It could be argued that we did actually have continuity of experience because the framework was confirmed, but it was just to little progress to report to the research community.

3.2.5 Frameworks

Relating results to an existing framework or to an existing body of knowledge supports the impartiality of our research, it is a key discipline in all research that distinguishes it from consulting, and it provides a basis for discussing transferability of results (Baskerville & Wood-Harper, 1996). Checkland and Holwell argue that “it is clear that the recognition that the changes have occurred and lessons have been learnt will be much helped if we have declared in advance the intellectual framework within which ‘lessons’ are defined” (Checkland & Holwell, 1998b, p. 24). They therefore argue that the framework on which we base the research intervention should

be explicated. Explicating the framework, its background and the researchers' background will assist the interested reader in recovering the course of action more convincingly (Checkland & Holwell, 1998a, p. 18). In this way we can turn the focus away from the experience *per se* to how the obtained experience and results draw upon and relate to existing bodies of knowledge.

This criterion addresses directly the principle of continuity. It is never straight forward what the quality of our experience is: what experience conforms to the immediate agreeableness or disagreeableness of the present situation and what experience should readily influence later experience in another situation. In action research this is even more difficult largely because of the difference between first-order and second-order continuity. In research we need to relate any experience that we claim can be transferred to other situations to what the research community at any given time agrees to be sound experience or sometimes even sound knowledge. In second-order continuity, frameworks are central to communicating experience between researchers. Frameworks are thus central in the research situation and whether a framework becomes believable and agreeable to the research community is a matter of back-talk. It is not easy, not to say impossible, to listen to this back-talk from the research situation if we are not communicating by means of frameworks. It should be noted here that I use the term 'framework' to cover also published research knowledge and theories; but I prefer to call it framework though in (Iversen et al., 2004) we call it 'theory'. I prefer 'framework for 'theory' as 'theory' often gets confused with the positivist notion of a predictive theory which makes less sense for action research.

3.2.6 Transferability

Explicating conditions for transferability of research findings addresses the situation-dependency of action research and reveals the limitations that apply to generalizing the findings (Baskerville & Wood-Harper, 1996). By relating results to existing bodies of knowledge we explicate the research contribution and increase the transferability to similar situations. In addition, we need to explicate the general characteristics of the findings and the conditions for transferring them to other situations.

While many refer to this criterion as generalisability we have come to prefer to call it transferability. This preference we based on the idea that results from action research tend to be concrete and not abstract. For the purpose of continuity of experience the experience does not have to be general and abstract in order to be transferred to another situation where it is applicable. According to the pragmatists continuity of experience depends not on the generality of the experience. It depends on the *quality* of the experience (Dewey, 1938, p. 27).

3.3 The Six Criteria in Context

The six criteria exist in the context of the research situation. This is similar to the dual processes of action research found in (McKay & Marshall, 2001), but the focus here is on the criteria, see figure 15-1.

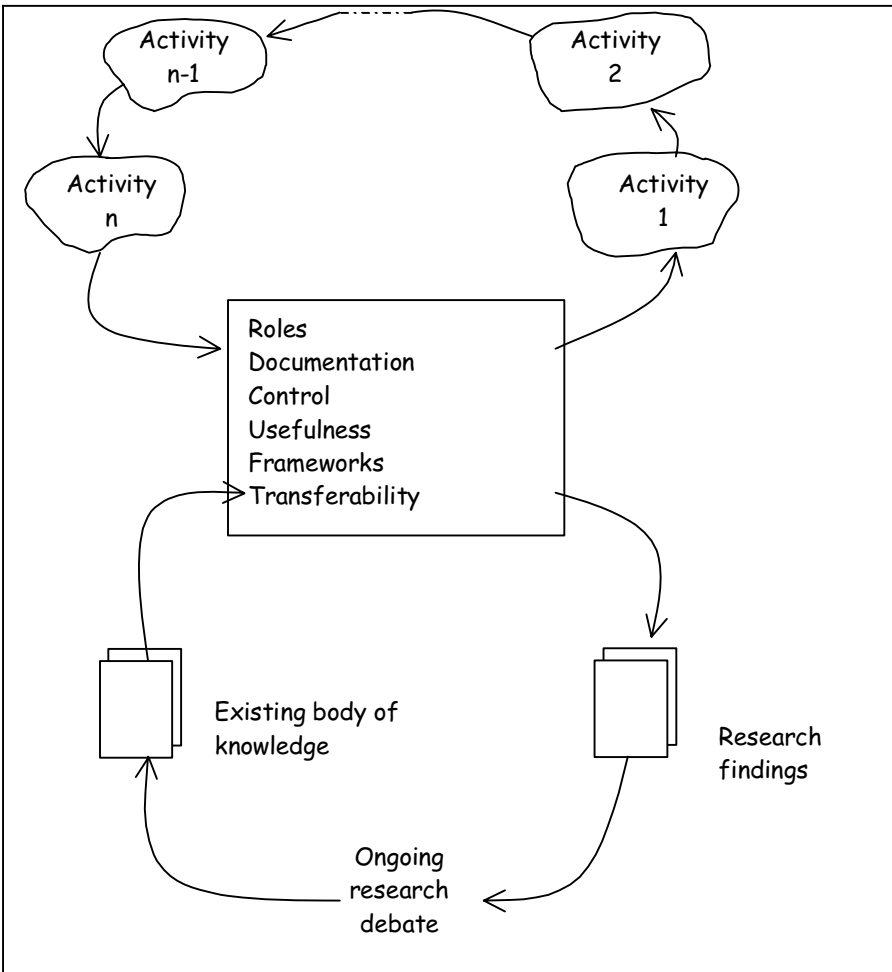


Figure 15-1. The six criteria in context

The criteria constrain the activities by adding requirements to their planning and later to the evaluation thus enforcing the research aspects of action research. The activities should be performed through the designed roles, documenting the activities, exercising the agreed control measures and utilizing the frameworks. As activities are performed the situation may well change and the activities may then lead to a revised set of roles, documentation, control, and frameworks. The activities also eventually lead to assessments of usefulness and transferability of findings.

The activities should be understood as a set of necessary activities where the arrows depict the logical dependencies between the activities. This is in accordance with the idea of a conceptual model of a human activity system as used in Soft Systems Methodology (Checkland, 1981). The overall outcome of the activities are the research findings.

The criteria are in place not only to regulate the activities, but also to constrain what can be taken as research findings. Research findings in turn are feed into the ongoing research debate in the research community. From the ongoing debate stems the existing body of knowledge from which the frameworks may be formulated and relative to which contribution and transferability may then be explained.

The relatedness of the criteria underlines that they should be seen as a coherent whole. In our thinking about these six criteria we have come to see these as relevant for both the design of action research efforts as well as for their evaluation.

3.4 Example of Design and Evaluation Using the Six Criteria

We have used the six criteria explicitly in (Iversen et al., 2004) and it may serve as an illustration of the six criteria. Figure 15-2 summarizes the research design.

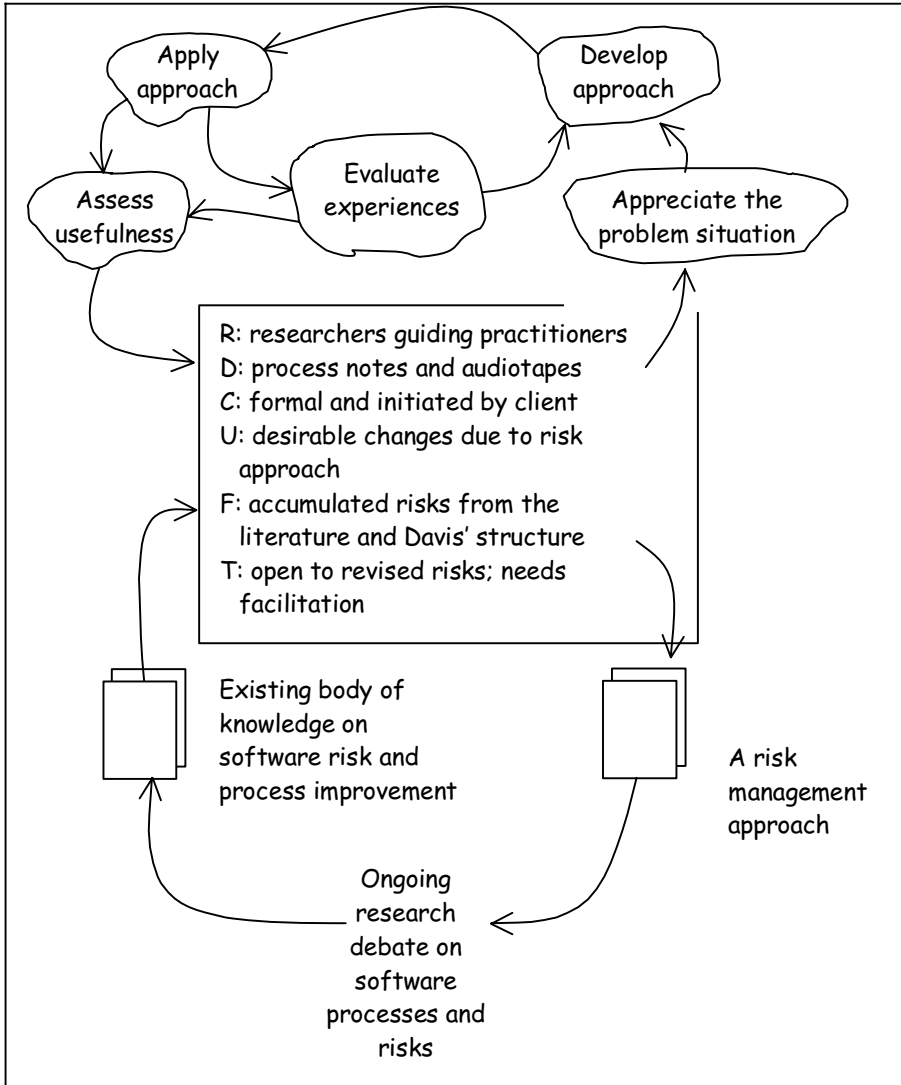


Figure 15-2. Research design with the six criteria

The action research is reported in detail in (Iversen et al., 2004) where in particular the criteria, the research process and the framework are explained. Figure 15-2 has been drawn in retrospect, but the elements of the conceptual model were explicit at the time where we did the research.

For brevity the details are referred to the original paper, but a brief explanation is in place. The research was done in the IT department of a large bank. In this IT department we worked together with a group of practitioners that were responsible for improving software development processes. As a part of that effort we worked for a period of five months on creating and improving an approach to the used eventually by the practitioners in managing risks related to software process improvement. We created the risk management approach through first studying the relevant research literature on software risk approaches and the reported risks with software process improvement. That was combined with the practitioners experience with the risks of improvement in their IT department. Based on this we built a new risk management approach addressing directly the risks of software process improvement. The structure of the approach we got from (Davis, 1982). The new approach was applied, evaluated, and modified through four consecutive iterations each dealing with an improvement effort, e.g., the project responsible for implementing a new quality assurance processes.

The criteria were applied in the following way. From the beginning the researchers were guiding the practitioners in risk management and in particular in the activity 'Apply approach' (Roles). Data about the activities 'Apply approach' and 'Evaluate experiences' that we performed together with the practitioners were recorded in the researchers' process notes and on audiotape (Documentation). There was a formal contract between the IT department and its practitioners on the one hand and the researchers on the other hand (Control). The practitioners took the initiative to work on a risk management approach for software process improvement (Control). Through the activity 'Assess usefulness' we tracked the actual changes in the IT department that could be traced back to the applied risk approach (Usefulness). The research literature on risk management and software process improvement was studied in detail and based on the activity 'Appreciate the problem situation' the core ideas in the framework were selected and the approach was developed in the activity 'Develop approach'. The framework came to be the accumulated risks and resolutions from the literature as well as a structure of the risk approach from Davis' approach for risk strategy determination (Frameworks). The limitation on transferability came late in the process as part of the assessment of the usefulness. We evaluated based on our use of the approach that though it was useful it also would need to be facilitated by a practitioner competent in this approach and with good knowledge of likely risks (Transferability). We also assessed that the risk approach would not be difficult to transfer to similar situations because the specific risks in the approach could gradually be revised when experience in another situation would call for it (Transferability).

Several issues related to the six criteria are noticeable. First, the criteria changed during the course of action – not radically, but sufficient to notice. This is important to pay attention to during the action. If changes are merely implicit our experience tells us that we can easily encounter difficulty at a later stage. For example, if our framework has changed, but we have not been aware whether that should also lead to a change of the documentation we might end up not being able to document our finding in a recoverable way. Similarly, if we are not performing the planned activities the roles may change, control measures are not appropriate, and documentation is not adequate for later asserting the usefulness of the findings.

Second, four of the six criteria influenced the activities directly. Roles, documentation, control, and frameworks have immediate consequence for the activities. Usefulness and transferability are different, as they do not in the same way influence activities. These two criteria, on the other hand, address directly the quality of the experience and hence how we exercise the principle of continuity.

Third, three of the six criteria are related to the research outcome. Usefulness, frameworks, and transferability directly affect the research outcome.

Fourth, the six specific criteria make sense only in their context of activities and research contributions. The meaningfulness of the six specific criteria has to be asserted in the light of which activities lead to which contributions. The six criteria seen in context form a whole where relatedness and internal consistency is important.

Fifth, the six criteria are not generic; they are specific to the action research effort, i.e., to the research situation. The framework is specific to the problem situation. The criterion of usefulness is specific to the framework addressing what a risk approach is and the developed approach being applied in a software organization. Similar arguments can be used for the other criteria.

Sixth, it is not difficult to envisage that there could be more than one such explanation of wholes. Soft Systems Methodology and all of its soft systems thinking (Checkland, 1981) could then be applied to make sense of several action research wholes – referred to as systems or holons (Checkland & Scholes, 1990).

4. DISCUSSION

To look for consistency between the six criteria seen in their context deserves a more detailed discussion. Consistency has two sides: in designing action research it means we will be striving at creating specific criteria,

planning activities and contributions that have a high degree of consistency; in evaluating action research it means we will scrutinize their consistency in retrospect. By consistency of the whole we mean:

1. The six criteria are internally consistent. A few examples are: (i) the roles have to match who has the initiative according to the control measures; (ii) the documentation has to be built to elicit the traces of usefulness to appear during the activities; (iii) the selected frameworks have implications for which data should be collected during documentation.
2. The six criteria are consistent with the activities. For example, there has to be a convincing way in which the activities can be documented and the roles exercised through the activities.
3. The six criteria are consistent with the research contributions. For example, the research contributions concern the frameworks directly.
4. There are too many possible consistencies to enumerate, but the point here is not to establish a rigorous mechanism for assessing all aspects of consistency. The point is rather that we should be able to defend the choices of criteria we have made.
5. Consistency is important to pursue because it leads to a coherent explanation of the action research effort.

As already mentioned the criteria are specific to the action research effort. More precisely, the specific criteria are unique to each unique action research effort (as used in figure 15-2). The six types of criteria on the other hand have emerged through twenty odd years of practicing action research and those we find gradually more useful across our action research.

We have only shown a single example above, but to illustrate the point further we may take the action research reported in (Lindgren et al., 2004) and show how an overview of the research design can easily be presented. Briefly, what Lindgren et al. have done is that they have experimented with competence management systems in two significantly different action research cycles, the first cycle was based on existing and traditional systems, and the second cycle was based on prototypes built on new design principles. They make a contribution to both the knowledge on competence management and design principles for competence management systems. They have evaluated their research using the criteria from (Davison et al., 2004), but let us look at their research in the light of the six criteria, see table 15-1.

Table 15-1. The six criteria compared for two action research studies

	(Iversen et al., 2004)	(Lindgren et al., 2004)
Roles	Researchers guiding practitioners	Researchers interviewing, designing and monitoring prototype experiments
Documentation	Process notes and audiotapes	Interview data and prototyping results
Control	Formal and initiated by client	Formal and initiated through partner contract
Usefulness	Desirable changes due to risk approach	Use of prototypes based on design principles influenced by F were feasible
Frameworks	Accumulated risk items from the literature and Davis' structure for the process	Skill-based view of competence management and a competence typology
Transferability	Open to revised risks; needs facilitation	Design principles seen as hypotheses to be tested further

The point here is not to evaluate Lindgren et al.'s research as that has already been done in their paper. This is a merely an illustration that the criteria for the two studies are very different and there is little sense in trying to reconcile these differences. Our study's research contribution was an approach to risk management. Lindgren et al.'s research contribution was a set of design principles for a special branch of information systems called competence management systems. These two research contributions are worlds apart and their design and evaluation criteria will remain apart as well.

Based on Schön's arguments for problem solving as reflection-in-action we can elaborate on this. Since all problem solving situations unique so are also action research efforts. Action research problems are set with ends (criteria) and means (activities) being mutually dependent. As in problem solving progress is measured in terms of whether the research led to successful action in the client organization (Usefulness).

How then can we ever hope that action research can live up to the accumulative research ideal? Because of experience, the pragmatist will say. The principle of continuity of experience says that lasting experience influences and has consequence for later experience. When Checkland claimed that Soft Systems Methodology was a result of several hundred applications (Checkland, 1981), he was judging based on continuity of experience. The explication of criteria as they have been presented in this chapter supports the evaluation of desirable outcomes. The principle of interaction says that there should be equal concern for the immediate experience faced in the unique situation (and alleviating the perceived problems) as for the influence on lasting experience (as that is filtered

through scholarly documented knowledge). This chapter's idea of explicating unique criteria supports the evaluation of action as well as research. That is action research; neither action nor research is primary.

5. CONCLUSION

In this chapter I have first traced the epistemology of action research back to pragmatism. A clear theory in pragmatism is a theory that has consequence in action or for action. Whether these consequences are desirable can only be judged through the continuity of experience and through the interaction between immediate experience and lasting experience. Problem solving according to Schön is based on similar ideas with a focus on situations' uniqueness, seeing-as a way to bridge experience, inquiry as problem setting, and progress measured by successful actions being taken.

Through twenty odd years of action research we have come to rely on six criteria for designing and evaluating action research. The six criteria thus identified are: roles, documentation, control, usefulness, frameworks, and transferability. The six criteria were used in (Iversen et al., 2004) and I have used this to illustrate the criteria in the context of activities and contributions. Based on that I tend to conclude that the six criteria made it possible to reason about the design of the research effort and whether the criteria, the activities and the expected research outcome were consistent and formed a coherent explanation.

I have then discussed the implications of using the six criteria. The criteria cannot be general; they must remain specific though the six types of criteria seem to be useful for many different action research efforts.

In the spirit of pragmatism, the six criteria are temporary; i.e., they are currently the best explanation we have.

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