Action Research

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NYT C04

Agenda

1. Action research
2. Participatory action research
3. Problem identification
4. Research design
5. The action-feedback loop
6. Quality assurance

1. Action Research

Action Research

Action research is a research methodology in which the researcher

- Iterates over **applying**, evaluating, and revising a theory
- To **cause change** and build out the theory

Key is

- The active involvement (the “action” and/or “intervention”) and
- Its expected effects in the world

The researcher is not just a distant observer!

Facilitation vs. Participation

The researcher is not necessarily executing the action themselves

- An outside researcher is a facilitator
- An inside researcher is a participant

Duality of Purpose

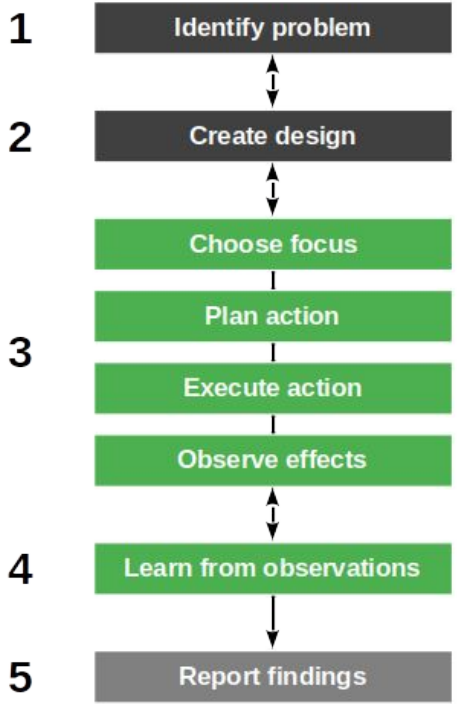
The goal of action research is to

1. Improve practice
2. Build out a theory

The Action Research Process

Action research is linear yet iterative

1. Identify (research) problem
2. Create research design
3. Perform action
    a. Choose focus
    b. Plan action
    c. Execute action
    d. Observe effects
4. Learn from observations



Three Motivations for Action Research

Technical action research is interested in

- Improving control over outcomes

Educational action research is motivated by

- Helping practitioners act more wisely

Critical action research is motivated by

- Emancipating practitioners

Variants of Action Research

Action research (AR) is

- The original research methodology (as before)

Participatory action research (PAR) is action research in which

- The researcher is an active participant of the whole research process

Critical (theory) participatory action research is action research in which

- The research uses critical theory as the underlying epistemological position

Critical theory seeks

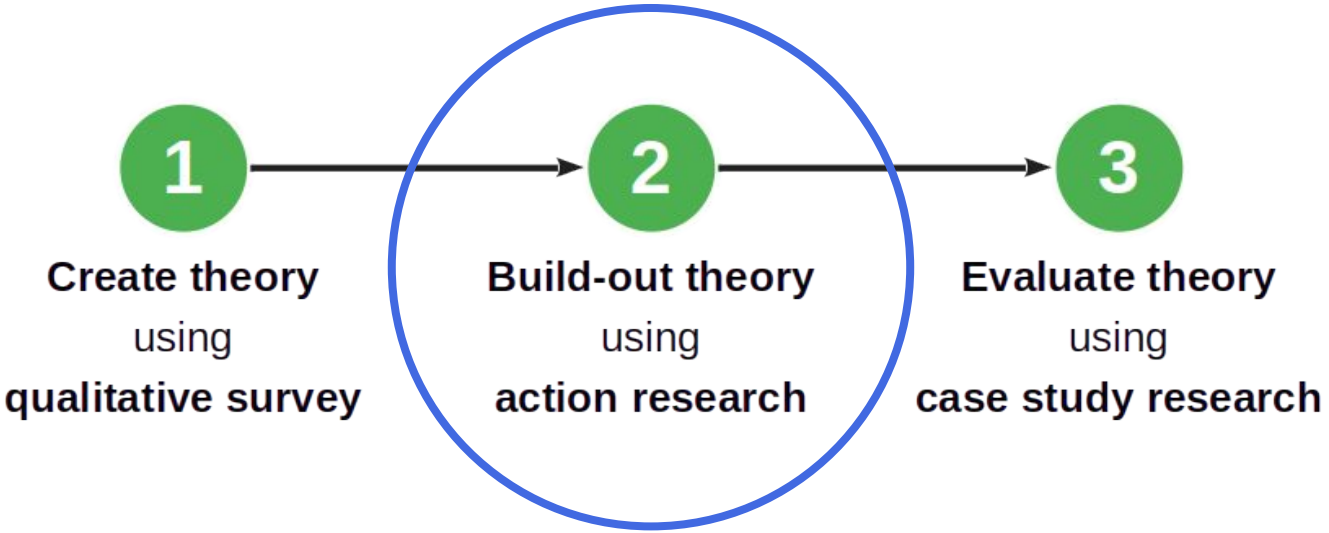
- “to liberate human beings from the circumstances that enslave them” [1]

[1] See Horckheimer (1982): Critical theory.

As a Research Methodology Category

1. Action research (Lewin, 1946)
2. Participatory action research (McIntyre, 2008)
3. Critical participatory action research (Kemmis et al., 2014)

Action Research in a Larger Research Design



A Sweet Spot for Action Research

Participatory action research is a good choice if

- There is an initial theory already in place
- The researcher has access to appropriate cases
- The theory under development is evolving quickly
- There is significant tacit knowledge with the researcher
- Participants expect to learn/benefit from the research

Industry Consulting as Action Research

In industry consulting (paid or unpaid), a researcher provides advice to practitioners

- Researchers are called upon to help improve the outcome of practitioner work
- They do not have to be participants (of implementation), but may simply advise

Industry consulting on new, novel topics, works well with action research

2. Participatory Action Research

Participatory Action Research (PAR)

Participatory action research is action research in which

- Researchers and practitioners perform the research jointly and collaboratively

For the practitioners, this has the following consequences; they

- Can understand and develop practices while on the case
- Can develop a joint, reflective, language of critical debate
- Can form communities of practice based on the research

Participatory action research is a “practice-changing practice” [1]

[1] See Kemmis et al. (2014): Critical participatory action research.

Critical Participatory Action Research (CPAR)

Critical participatory action research is action research that

- Empowers participants to change practices in the face of
  - irrational
  - unsustainable
  - unjust situations

With this addition of critical theory, we are leaving positivism

- No objective independent reality but rather
- Individual and collective action and reflection

Context Specificity / No Fixed Formula

Participatory action research is context-dependent research

Every research project is different and so are the employed methods

May require significant adaptation to situation beyond the core process

Participatory action research has no single theoretical framework

Roles in Participatory Action Research

Everyone is a participant, some are

- Researchers
- Practitioners

You are either in the researcher or practitioner role

- Researchers are temporary participants
- Practitioners are (more) permanent participants

Participation vs. Involvement

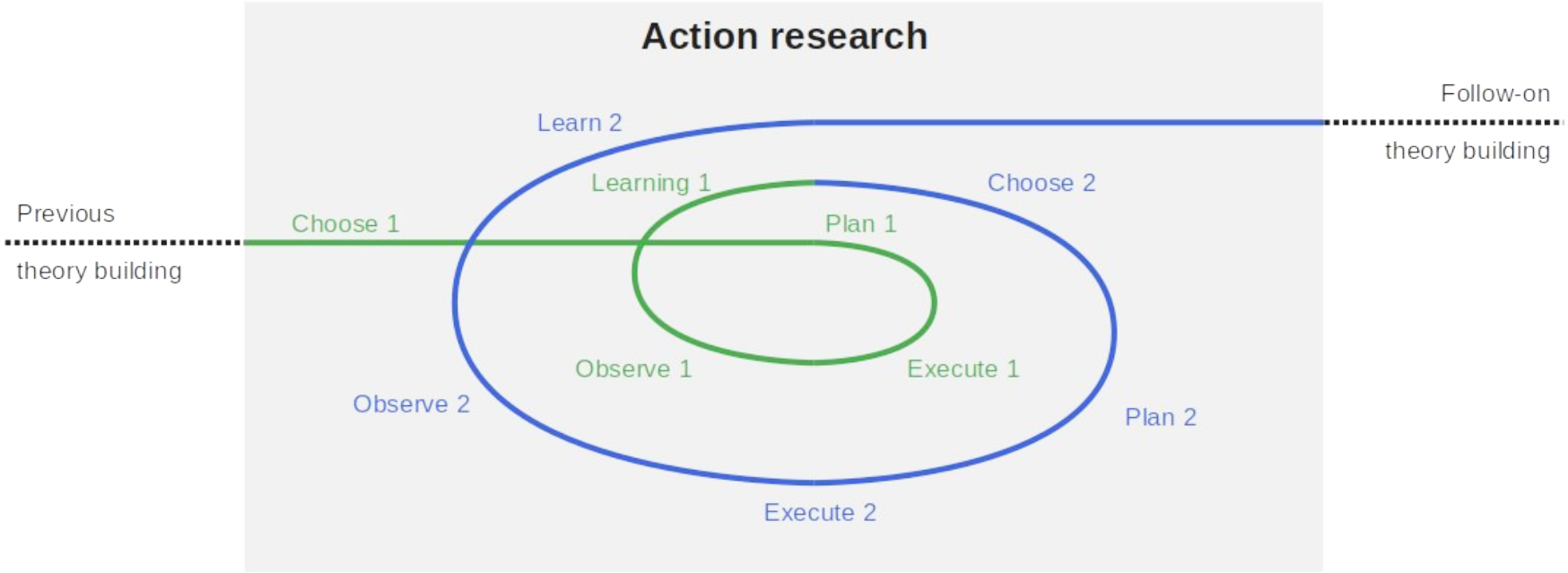
Participation

- Participants are stakeholders
- Participation may be uneven

Involvement

- No agency or ownership

The Action Research Process in Context



Activity Names by Methodology Variant

Generic	Action research [1]	Participatory AR [2]	Critical PAR [3]
–	–	Questioning	–
Choosing	–	Investigating	Reconnaissance
Planning	Planning	Developing	Planning
Executing	Executing	Implementing	Enacting
Observing			Observing
Learning	Fact-finding	Refining	Reflection

[1] See Lewin (1946): Action research.
[2] See McIntyre (2008): Participatory action research.
[3] See Kemmis et al. (2014): Critical participatory action research.

3. Problem Identification

Problem Identification

You choose action research, because

- Your theory is young
- You may have a project at hand
- The project can benefit from your help

You approach the project with the goal of

- Helping practitioners
- Performing research

Example Problem Identification

We identified a need by companies to manage using open-source software

[1] See Riehle et al. (2021): Pattern discovery and validation.

4. Research Design

The Handbook Method

The handbook method is an approach for taking research results into practice

1. A research theory is codified as a best practice handbook of the domain
2. The best practices are derived from practitioners using a qualitative survey
3. Using action research, a researcher helps a practitioner apply the handbook

Example Theory Building

We identified a need by companies to manage using open-source software

- First, we developed a theory using a qualitative survey
- We then codified (wrote down) the theory as a best practices handbook
- The resulting theory had substance but was still young

We then took the handbook to an industry partner for participatory action research

Illustration of Open Source Governance Handbook 1 / 3

Base structure

1. Domains
2. Workflows
3. Practices

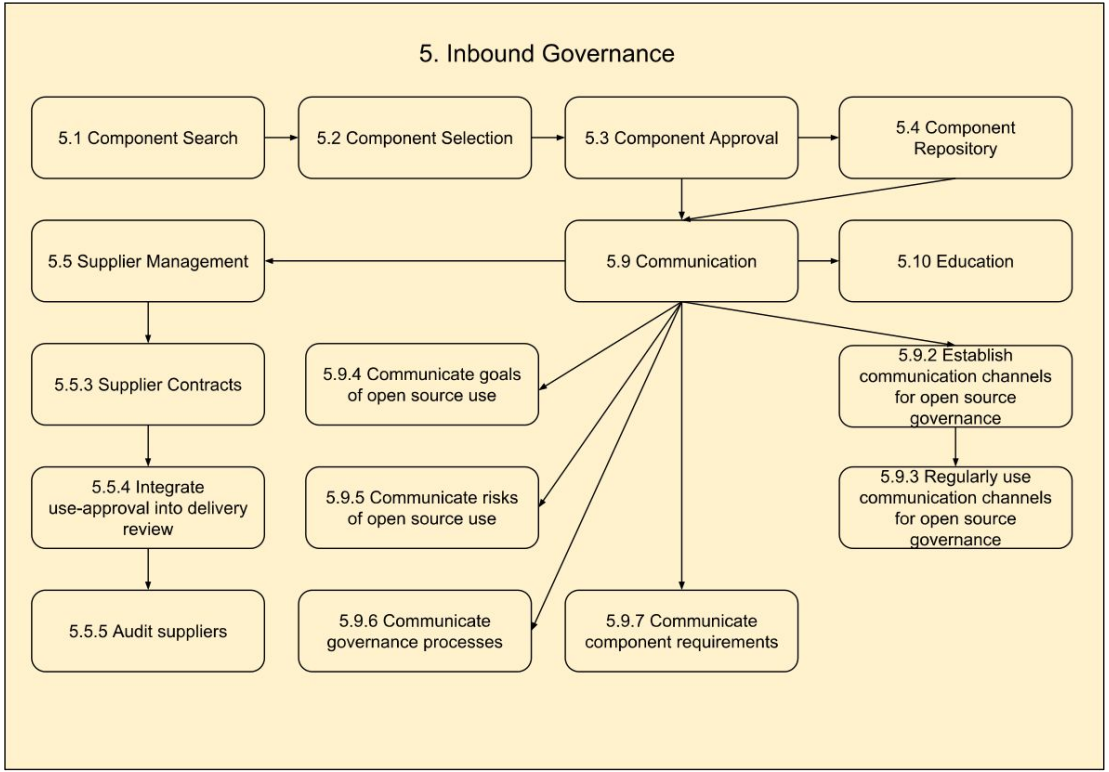


Illustration of Open Source Governance Handbook 2 / 3

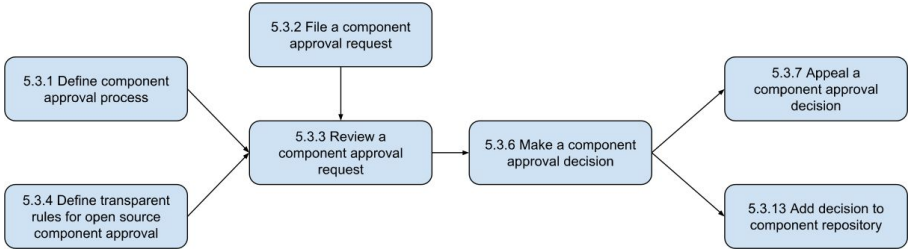


Illustration of Open Source Governance Handbook 3 / 3

Name	Make a component approval decision
Actor	OSPO (Open Source Program Office)
Context	Software developers → *file component approval requests* to OSPO. OSPO → *reviews component approval requests*. Now OSPO needs to make a decision whether to approve or reject the use of the given open source component in the product.
Problem	How should OSPO make a decision about component approval requests?
Solution	OSPO must first double check if the component can be automatically approved or rejected. This applies only to the previously used license/use case pairs, meaning the requested open source license has already been used in the requested use case. OSPO refers to its → *defined rules for open source component approval* and its previous → *decisions added to component repository*. The following decisions are taken: • if open source licenses contradict company's open source governance policy for all use cases, then the component is automatically rejected • if open source licenses/use case pairs contradict company's open source governance policy, then the component is automatically rejected • if open source licenses/use case pairs correspond to the company's open source governance policy, then the component is automatically approved. For situations where the open source license and/or the use case are new to the company, OSPO needs to → *analyze code for license compliance*, while assessing its use case. After this OSPO (supported by the legal department) must decide if the new license/use case pair to corresponds to to company's open source governance policy. To decide OSPO hears the assessment of its legal and business decision maker members. OSPO also → *reviews open source component use in context of product architecture*. Once an approval or rejection decision has been made, OSPO → *adds this decision to component repository*. The developer who submitted the component approval request can → *appeal a component approval decision* to the Open Source Program Officer.

Research Protocol

As before, describe methods and data to be acquired

As you are now dealing with human subjects, also

- Review research ethics and implications
- Document expected effects on human subjects
- Devise strategies for protecting human subjects
- Acquire and document ethics board approval

Include this additional information in research protocol

5. The Action-Feedback Loop

Choose Focus

During **choosing (focus)**, you

- Choose which aspect of your theory to build out

Criteria to choose focus by can be

- Strategic: Immaturity of theory aspect chosen
- Pragmatic: Aspect readily available in project

Action research prefers pragmatic choices

- Because it is about helping practitioners

Example of Choosing Focus 1 / 2

We decided early to focus on the component approval process

- Component approval is a critical process in open source governance

Example of Choosing Focus 2 / 2

As participant improving practice

- We helped review the situation

As researcher performing research

- We performed participant observation

Plan Action

During **planning**, you

- Choose an appropriate method to perform the action and investigate its effects

Example of Planning an Action 1 / 2

We worked with the OSPO to define the component approval process

- We used the handbook to define a first version of the process

Example of Planning an Action 2 / 2

As participant improving practice

- We helped define the process

As researcher performing research

- We continued participant observation

Execute Action

During **execution,** you follow your plan and

- Participate in the project working on the aspect of choice

Example of Executing Action 1 / 2

We helped the first component approval processes along

- We performed both entry and exit interviews
- We performed participant observation

Example of Executing Action 2 / 2

As participant improving practice

- We helped the first process instances

As researcher performing research

- We continued participant observation
- We performed entry interviews
- We performed exit interviews

Observe Effects

During **observation,** you continue with your plan and

- Observe the results of the execution using the methods you chose

Example of Observing Effects 1 / 2

After the action, in addition to in-action observations, we reviewed the results

- More interviews with the OSPO after a couple of instances had run
- Taking note of statistics (duration, complications, results)

Example of Observing Effects 2 / 2

As participant improving practice

- None

As researcher performing research

- Continued participant observation
- Conducted additional interviews
- Took notes of emerging statistics

Learn from Observations

During **learning,** you

- Analyse the observed data towards the aspect of interest

Example of Learning from Observations 1 / 2

We built out our theory and used it to provide feedback and make suggestions

Example of Learning from Observations 2 / 2

As participant improving practice

- Discussed ways to improve process

As researcher performing research

- Integrated collected data into theory

Closing the Action-Feedback Loop

Based on what you learned, you

- Either continue with another iteration of action research
- Or move on to next steps (publications / methodology)

6. Quality Assurance

Quality Assurance

Quality assurance is closely tied to the research methods employed

In our example (open source governance) these were

- Participant observation
- Practitioner interviews
- Qualitative data analysis

Summary

1. Action research
2. Participatory action research
3. Problem identification
4. Research design
5. The action-feedback loop
6. Quality assurance

Thank you! Any questions?

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