



Technical Report

Formation of planning groups and data collection in a Change Laboratory

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Abstract: This article discusses strategies for planning a Change Laboratory (CL), with a focus on the formation of planning groups and the collection of mirror data. Planning is organized into three levels: (i) strategic, composed of researchers and decision makers, which aligns the intervention with organizational objectives; (ii) methodological, bringing together experienced and novice researchers, with an emphasis on method and peer learning; and (iii) operational, which involves researchers and participants in reflecting on the sessions and adapting the actions to practice. As for data collection, different methods can be used, such as interviews, shadowing, field visits and participant observation, in addition to workshop records, documents, questionnaires, videos, or the collection carried out by the participants themselves. Mirror data, by reflecting the reality of the activity, is fundamental to fostering discussions and promoting expansive learning. It is concluded that the methodological and operational groups strengthen the sustainability of learning, allowing their continuity beyond the sessions.

Keywords: Planning; Change Laboratory; Data Collection; Mirror Data.



1. Introduction

Once the realization of a Change Laboratory (CL) has been approved by the managers, the institutional commitment to support has been established and the necessary resources have been secured, the crucial planning stage begins. The conduct of the sessions, although the most visible aspect of the process, corresponds only to the tip of the iceberg, representing a relatively small fraction of the time invested by the researcher. Much of the work focuses on preparation: collection and selection of mirror data, preliminary analysis, organization of materials and definition of the dynamics of each meeting.

The data collection and analysis phase corresponds to what is called *phenomenology* in the methodology of *Developmental Work Research* (Engeström, 1987), also often associated with ethnography. In this approach phenomenology refers to grasping the experienced problems, doubts, and uncertainties of participants in an activity, by closely observing, listening, and engaging with their experiences. Delineation follows this step, as it involves defining the concrete locus, boundaries, and actors of the activity, which can only be properly identified after immersing in its daily practices. In addition to serving as data for the research, this stage, carried out before the beginning of the sessions, has as its main objective to prepare the team of interventional researchers, enabling them to understand the contradictions and the functioning of the system or systems of activity involved in the study. In addition to supporting the initial understanding of the context, this phase guides the planning of the sessions and supports the selection of mirror data that will be used throughout the intervention.

In view of this, central question arises: how to plan a CL effectively? What are the general objectives of each session? What mirror data should be collected and how to select it? What techniques can be used to enhance participation and learning? And how to carry out the preliminary analysis that will sustain the discussions? This article seeks to explore these issues, offering practical and theoretical subsidies for the planning of a CL.

As mentioned earlier (Querol, 2025), a Change Laboratory involves three levels of planning: strategic, methodological, and operational. In this article, we will focus on methodological and operational planning. First, we will describe these two types of planning and the groups that are formed to carry them out. Next, we will discuss the process of data collection and the methods that can be used. We will then continue with the preliminary analysis of the data and explain how mirror data are selected. By presenting the paper in this sequence, we aim to guide the reader through the steps of methodological and operational planning and show how they structure the intervention process.

2. Formation of planning groups

One of the first steps is the formation of planning groups. As Virkkunen and Newnham (2013) do not differentiate the planning group between methodological and operational (Virkkunen & Newnham, 2013). However, we observed that in the execution of the CLs that the planning group was naturally divided into two, one formed by researchers, the methodological planning and the other by the participants, the operational planning. These experiences show that the construction of an operational group, open to all participants, between sessions has proven to be an interesting strategy to increase the effectiveness and sustainability of interventions (Querol, 2025), as it allows the consolidation of both the learning of the content of the sessions and the method.


Table 1. Planning groups, their objectives and composition

| Group | Goal | Composition |
|-------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Strategic planning | Define activity, pilot and forms of support | Researchers and strategic decision-makers |
| Methodological planning | Analyze, formulate hypotheses, evaluate directions, needs for adjustments and auxiliary artifacts | Researchers with different levels of experience |
| Operational planning | Reflect and adjust the intervention | Interventional researchers and participants |

The negotiation, the strategic planning defines the activity to be developed, the pilot unit and links the intervention with the other actions of strategic development of the activity (Virkkunen & Newnham, 2013). This group is composed of the researcher and the management and should be permanent during the sessions, not limited to the initial phase.

A good example of a strategic planning group was the formation of a steering group that took place in an intervention carried out in Finland, within a project called *Innoväxthus*, which aimed to improve the quality of tomato production along the tomato supply chain (*Innoväxthus* | Vakra, 2019). The intervention involved not only farmers, but also the cooperatives responsible for purchasing, packaging, and selling the products to supermarkets. Strategic negotiation and planning took place monthly with the manager and the farmers members of the committee of an association called ÖSP, as well as in periodic bilateral meetings with the managers of the packing-house cooperatives. In these meetings, the trajectory of the intervention was planned, assessed, and decisions were made regarding its progress, whom to invite, and which interventionist actions to implement, such as workshops and other forms of communication.

Methodological planning aims to plan, discuss which mirror data to collect, make analyses, formulate hypotheses of contradictions, evaluate learning between sessions, and define the general objective of the sessions and the need for adjustments, as well as define possible stimuli to be used in them. The methodological planning can be conducted by a group composed mostly of researchers, what is sometimes called the interventionists group.

The interventionist group is fundamental, especially for learning among researchers. The exchanges between the most experienced and the new researchers, discussing the data in each session and planning what will be done next, help the novices to materialize theoretical learning and to be able to see theory in practice. It is by experiencing that one learns. This discussion enriches and goes far beyond simply reading a manual to apply it. Because each CL has its peculiarities and requires adaptations, and researchers need to discuss together to continuously learn from each new intervention.

Most CL interventions involve at least a planning group of interventionists. In some cases, these groups consist mainly of a supervisor and a student, while in more demanding interventions they include larger teams of researchers. One example of a more complex interventionist group took place at a university hospital in Brazil (Ferreira et al., 2024). In this case, three experienced CL researchers worked with a researcher conducting a CL for the first time, supporting her in the preliminary analysis and in planning the sessions. This support was especially important during the initial sessions, when the new researcher was still uncertain about the concepts and principles of the method.

An operational planning group is composed of the interventionist researchers and the most engaged participants. It aims to reflect on the learning that occurred in each session, what was



learned, impressions, possible problems, unforeseen events and challenges that occurred. It also aims to think about the need for possible operational adjustments, such as who to invite to the next sessions, adapt the mirror data and second stimuli to the reality of the participants. This group can usually be formed initially by a few people, who were more interested in CL during the collection of mirror data, and later increase with the most active agents. It is suggested that this group be open to all interested participants.

The idea of creating a group formed mostly with the participants came from the report of the first action research intervention conducted by Kurt Lewin and colleagues (Lewin, 1948; Lippitt, 1949). In this intervention, the researchers pointed to the planning group as an innovation that arose when the participants, when passing in front of the researchers' planning meeting, asked if they could participate. The group has been increasing and proving to be an extremely valuable space for learning, both researchers and participants.

An example of an operational planning group occurred in an intervention with labor inspectors (AFT) of the Ministry of Labor and Employment (MTE/Brazil) aimed at developing the activity of labor inspection. In this intervention, a planning group was created, which initially consisted of two people (the researcher and an interested participant). As the sessions progressed, the number of participants increased, voluntarily and progressively, until it reached a total of six, and its main common characteristic was that the most agitative were the most active.

The group was an important space to allow: 1) the participation of an experienced and interested subject, who was hampered by the final schedule of session dates; 2) clarifications on theoretical doubts; 3) the continuation of the discussions held during the CL sessions; 4) evaluation of the progress of the work and reflection on the need to change course or adopt another approach strategy; 5) exchange of ideas about the next stimuli, both first and second stimuli, which could be used in each new session; 6) update on the progress of the research for those who, for any reason, had to be absent in previous sessions; 7) reports on consequential actions that these participants initiated in their workplaces, as a result of the CL; 8) collective decision on how to incorporate these reports into subsequent CL sessions and; 9) a support space for the most active participants to help each other, with ideas on how to develop and customize the solutions they were spearheading in their decentralized units in view of the different specificities.

3. Data collection

The collection of preliminary data has the objective not only to be used in research, but also to help researchers understand and formulate hypotheses about the activity to be developed and to produce mirror data to be used during the sessions. This data is usually collected by the research interventionist, but in some cases, it can also be collected by the intervention participants.

Among the preliminary data, data are selected that will be used in the sessions as the first stimulus, which is called mirror data. It receives this name because it reflects the practices and elements of the reality of an activity (Querol & Seppänen, 2019; Sannino, 2015; Virkkunen & Newnham, 2013). Examples of mirror data are statements about problems, historical records, cases of disturbances¹ and examples of successful situations. This data works as the first

¹ Disturbances are undesirable events that hinder or prevent the activity from achieving its expected outcomes (Querol & Seppänen, 2012).



stimulus during the sessions. It is important to note, however, that the first stimuli are not restricted to mirror data: they can also include models or results of analyses carried out in previous sessions. In addition, mirror data can refer not only to the present, but also to the past and future projections.

The collection of this data should be foreseen already in the negotiation phase of the intervention. When also used for research purposes, it must be detailed in a project submitted and approved by an *ethics committee*, in accordance with the rules applicable to research in the human sciences that involve data from people.

Data collection can be carried out through different methods, such as interviews, shadowing, participant observation, collective analyses and diaries of disturbances. It is also possible to collect mirror data from the workshop and from the CL sessions themselves. In some cases of intervention, the statements of the participants in previous meetings were used as mirror data, serving as a useful resource to foster and deepen the discussions. In addition to the mirror data sources that will be mentioned below, we can also mention the application of questionnaires and the use of documents and videos from the internet. Below, we briefly present each of these methods.

3.1 Interviews

One of the most classic forms of data collection is conduct interviews with key actors. One possible strategy for selecting interviewees is to initially turn to management or contacts within the organization and then apply the "snowball" method, in which each interviewee nominates other potential participants. Depending on the focus of the study, some profiles may be more relevant than others. For example, to obtain information about the history of the activity, it is recommended to interview people with more experience – including those who have already retired.

In the approach, the researcher must clearly present the objectives of the research, explain the use that will be made of the data and expose the confidentiality terms.

The interviews can generate valuable information about the historical trajectory of the activity, the main disturbances faced, the current functioning, the conceptions about the origin or causes of the problems, the previous attempts to solve them, the results obtained and the suggestions on what could be done to overcome them.

In interviews aimed at obtaining historical data, the interviewer may ask, for example: "*Could you tell me the history of the activity? How did it come about, by whom and why?*" A useful resource to stimulate the interviewee's memory is the use of a timeline: the researcher offers a sheet with a line and asks the participant to record the date and the events he considers most relevant, commenting on them as he reports them. During this process, the interviewer can take notes, make the recording (with consent) and use the elements of the activity system as a guide to stimulate different aspects to be addressed. It is recommended to pay special attention to the object purpose of the activity, since it guides its central dynamics.

The application of interviews requires a certain flexibility and can take both semi-structured and open forms. One possibility is to start the conversation by presenting the objectives of the survey and then ask the interviewees to comment on the development of their activity. After this introduction, they can feel free to report their experiences in temporal order, bringing perceptions and reflections spontaneously. If, throughout the speech, a point arises that is not clear enough, the interviewer can intervene with clarification questions, without compromising the fluidity of the report.



In the interviews about the disturbances, the interviewer may ask the participant to describe the main problems faced, asking for concrete examples. To deepen understanding, the researcher can explore the sequence of events that led to these problems, questioning how and why they occurred, and their consequences.

As mentioned, in addition to historical data, disturbances and their explanations, it is equally relevant to collect information on the attempts already made to solve them and their respective results, as well as on plans or ideas that could contribute to overcoming them. These data allow the researcher to evaluate the degree of expansion present both in the definition of the problem and in the proposed solutions, providing subsidies for the planning of materials, tasks and discussions to be used in an eventual need for expansion.

It is interesting that the data obtained in the interviews are recorded through notes, and audio recorded, since isolated notes can lead to the loss of relevant information. In addition, taking notes allows you to point out ideas and thoughts that arise throughout the interview and also allows you to improve the location of the data during the analysis. If the recording is used, the researcher must request the consent of the interviewee and explain in a transparent way the destination and use of the data.

It is important to organize the files in a way that facilitates their later recovery. The best practice is to name each file clearly, for example: *Interview_Silva_13.09.2025*. In addition, a spreadsheet can be prepared containing the name of the files, the main topics covered and relevant observations, which facilitates future searches and analyses. When notes are made on paper, it is recommended to scan them, make backup copies and store them in folders organized by theme or date.

Transcription of interviews is highly recommended to make the most of the material collected. Currently, this process can be carried out relatively quickly with the help of software, such as *Transkriptor* or *Microsoft Word* itself, among others. Transcription contributes to better visualization of the content and facilitates subsequent analysis.

3.2 Field visits

There is nothing better than field visits for the researcher to have a real and concrete idea of what the activity is and how it works. It is recommended that if authorized, take photos and film. It is also recommended to take notes with general impressions. Footage and photos of disturbances are particularly interesting as mirror data. Like interviews, data must be named, recorded, and stored for later use.

An example of a field visit took place during an intervention with horticulture producers in Finland, where the first author, together with other researchers, visited greenhouses affected by pests such as whiteflies. The purpose was to observe firsthand the tools and practices farmers used to monitor the pests. During the visit, the researcher took photographs, made notes, and also interviewed the farmers (Vänninen et al., 2015).

3.3 Shadowing

Shadowing is another technique that can be used, which consists of closely monitoring a participant during their daily activities, as if the researcher were their "shadow". The goal is to observe in real time how tasks are performed, what difficulties arise, how decisions are made, and how workers interact with colleagues, tools, and rules of the activity. This method allows capturing details that would hardly emerge in interviews, such as improvisations, interruptions and deviations from the plan, offering a concrete view of the disturbances and the real



functioning of the activity. These data can later be used as mirror data to stimulate participants' reflection on contradictions and opportunities for transformation.

An example of shadowing was carried out by the first author in a study on learning challenges in biogas production within swine farming. To better understand the disturbances affecting biogas production, the researcher shadowed a technician over the course of several days, taking notes and recording interactions between the technician and the swine producers. By following the work of the technician undesirable events could be recorded and interactional discursive data collected for later analysis (Querol, 2011).

3.4 Participatory observations

Participant observation, in turn, involves the active insertion of the researcher in the activity environment, participating in the day-to-day of the activity; for example, helping with operations. Unlike shadowing, in which the focus is to follow an individual, participant observation seeks to experience the activity. This approach makes it possible to identify recurrent disorders, modes of cooperation, and adaptation strategies that workers develop. When systematized, these observations provide valuable subsidies for the Change Laboratory, allowing the participants to recognize and analyze critical aspects of their daily practice.

An example of participatory observation comes from the same study on biogas production mentioned above (Querol, 2011). The first author spent two days working on a swine farm, assisting the producer in daily actions such as castrating animals, filing their teeth, feeding them, and cleaning the pens. By engaging directly in these routine practices, the researcher was able to experience firsthand the challenges faced by the farmer, including the heavy workload and the strong odor of animal waste. This method not only enables the collection of more sensitive data—such as detailed fieldnotes and filming practices that would not be accessible during a brief visit or taking photographs—but also helps to build trust with the participants, allowing for richer and deeper insights.

3.5 Diary of disturbances

The disturbance diary is a technique used in the Change Laboratory that consists of asking participants to record, daily, in a notebook, the disturbances experienced in their work. These disorders can be understood as unwanted or negative events that make it difficult to perform the activity. In the record, the participant can write down what happened, when it occurred, in what way and for what reasons they believe it occurred.

The data collected through this diary can be used in two ways: research material to understand the activity and as mirror data, to be presented and discussed during the disorder analysis sessions.

3.6 Data collection by participants

Asking the participants themselves to collect prior and during the workshops, systematize and present the mirror data can be a very useful alternative. The experience took place in one of the first Change Laboratory interventions carried out in Brazil, at CEREST-Piracicaba (Cervený et al., 2020; Mendes et al., 2018). An initial meeting is organized to present the method to the interested participants and to assess their willingness to take part. Due to limited resources, the participants were also asked if they could support the researchers by collecting some of the data themselves. At the time, the participants were divided into groups, each one being responsible for collecting, organizing and presenting the mirror data to colleagues. One



group oversaw gathering information about the story, while another addressed the disturbances.

This strategy emerged as a response to a limitation of research resources: the distance between the researchers and the location of the activity made it difficult to collect data directly. However, the solution proved to be highly positive, as it promoted greater engagement of the participants from the beginning, making them feel an integral part of the intervention and assume an active posture throughout the process. In addition, it favored learning about the content treated and provided a deeper understanding of the method itself. By systematizing the data, the participants appropriated the models and concepts of the CL, which contributed to the consolidation of its use even after the intervention. Another benefit was the reduction of costs and travel time for interventional researchers.

Of course, this strategy also has limitations. The quality of the data may not be ideal, and the learning of researchers tends to be reduced, since they do not participate directly in the collection. In addition, some participants may claim lack of time to engage in this process. However, it is understood that this issue is strongly linked to the perceived need for change and motivation: when truly interested, participants find ways to get involved.

A promising alternative is to adopt a hybrid model, in which both researchers and participants perform data collection. In this way, it is possible, at the same time, to maintain the engagement and learning of the participants, without losing the direct involvement and analytical experience of the researchers.

An occasion in which we applied a hybrid model of data collection—where both the researcher and the participants collected data prior to the workshops—took place during an intervention on waste management activities at a university hospital in Maringá, Brazil (Cassandre et al., 2018). After an introductory meeting of the method, the participants were asked to document their disturbances through a “disturbance diary.” This data complemented the data collected by researchers through interviews and observations. This experience proved to be highly positive, generating valuable data while also motivating the participants.

4. Preliminary analysis of mirror data

To understand the activity in focus, it is important to consider its components: the individuals who compose it, the actions performed, its mode of functioning, the structure of the activity system, the stage of development in which it is found and the possibilities of transformation. The researcher does not need to master all these aspects before starting the Change Laboratory, since much of this knowledge is built during the sessions, or even after them. However, the more information you have in advance, the more prepared you will be to conduct the process.

It is useful to understand the interviewees' statements to situate the subjects in the organizational structure of the activity, that is, to understand the organizational chart, its vertical and horizontal hierarchical relations. Another relevant aspect is to discover during the collection of mirror data how information flows, that is, how communications are made daily. Once the communication channels have been discovered, it would be useful for the researcher to be able to follow these formal and informal communications throughout the research, to continuously collect updated mirror data. This will make it easier for the researcher to understand the difference between what is prescribed, what is expected of the subjects of the activity under study and what is done in reality.



Previous studies indicate that insufficient collection of mirror data and the lack of prior analysis can compromise learning (Silva-Macaia et al., 2019). In these situations, the researcher may, for example, fail to perceive conflicts between the participants. Although researchers often do not have time for an in-depth systematic analysis, it is essential to construct, before the beginning of the CL, a minimal hypothesis about the historical contradictions of the system, its main manifestations and the conceptions of the problem in circulation. This hypothesis can be developed through a brief historical analysis, focusing on the changes that occurred in the object of the activity and the compatibility (or incompatibility) of these changes with the other elements of the system.

5. Mirror data selection

Mirror data should serve the learning and expansion process. They can refer to the past, the present, and the future.

Below we will point out three examples of mirror data from an intervention in the labor inspection at the Ministry of Labour and Employment in Brazil. The first example of mirror data was used to compare the present and the past, using excerpts from interviews with institutional partners stating that they participated or had heard of the existence of multiple successful actions in Occupational Safety and Health in the past. These cases were carried out in partnership and in inter-institutional collaboration, on a day-to-day basis with the labor inspectorate (e.g., in the area of Benzene, Asbestos, Repetitive Strain Injuries - RSI/Work-Related Musculoskeletal Disorders - WMSD, Risk Prevention Program in Presses and Similar - PPRPS, Pressure Vessels, among others). The interviewees reported that direct contact with the subjects of the activity at that time was easy, but today it has been restricted to the formalization of complaints through computerized systems, with little news of current collaborative work in OSH.

The first mirror data was selected with the purpose of pointing out to the participants, during the questioning phase of the Change Laboratory, the perception of some institutional partners about the changes that happened in the labor inspection, especially in relation to collaboration with the community and side effects of using some new instruments. This first example was successful because it helped the participants to become conscious about the changes in the activity. They started thinking that the activity they see in the present is different from how it was in the past, triggering discussions to find out what exactly happened in system.

The second example of a given mirror in the case, in the analysis phase of the CL, was the use of a visual model of a historical line on the evolution of normative changes that impacted the activity of labor inspection, along with an indication of the change in the form of action according to the interviewees of the ethnographic phase, which was also reported in the speeches of the CL participants themselves in the first sessions. The discourses and the model were chosen because they reinforced the process of awareness started with the mirror data explained in the previous paragraph and they helped to start the discussions about the changes of the elements of the activity system, so that the participants could identify the contradictions that arose overtime.

This second example succeeded in stimulating the participants to reflect that the isolation and distancing of the labor inspection from their partners could be a result of changes in the system's mediators. Lively discussions about the transformations of OSH activity took place consequently. They verbalized, during the questioning phase, that one disturbance that needed to be resolved is the society's lack of recognition in relation to the labor activity efforts. After this second mirror data, in the analysis, the participants started verbalizing that maybe this lack of



recognition is a result of the isolation from the partners, which is related to changes in the rules and in the division of labor. In the end of this discussions they expressed the need of expansion of the *community* element of the activity system.

A third example of a given mirror used for the *design* of the future, in the modelling phase of the CL, was the speech of a politician president of the BNDES, in a recorded public seminar available on Youtube², in which he cites a good practice of the bank of only granting loans to companies without evidence of slave-like labor throughout the applicant's production chain. It was chosen because it shows the participants possible idea that could be applicable to their case while modelling a solution to the labor inspection. The participants of the CL were encouraged to reflect on why this type of practice should also not be incorporated into the area of OSH, extending an agreement that already exists between the institutions (MTE and BNDES). This third example was successful because it helped the participants to start envisioning solutions and a new proposed model for the OSH labor inspection. The mirror helped them to think about the possibilities of expansion of the object and what could be changed in the elements of the activity system. The selection of these mirror data was intended to help CL participants to recognize the zone of proximal development of labor inspection, especially in OSH, and to anticipate where they want to go and what could be done.

6. Final considerations

This article aimed to present ideas and suggestions on how to plan a Change Laboratory effectively, addressing the formation of planning groups and the possibilities of collecting and selecting mirror data.

Three levels of planning were proposed: strategic, methodological and operational. Strategic planning, composed of researchers and managers, seeks to align the intervention with the organization's development objectives and actions. The methodological group, formed by experienced researchers together with beginner researchers, focuses on the application of the method. The operational group, which brings together researchers and participants, focuses on promoting learning through reflection on what happened in the sessions, adjusting what was planned in the methodological group to the reality of the activity.

Several methods of data collection can be used, such as interviews, shadowing, field visits and participant observation. In addition, other forms of mirror data collection are also possible, such as records of the workshop itself, document analysis, application of questionnaires, use of internet videos or even the request for participants to collect part of the data.

We conclude that the methodological and operational planning spaces are fundamental not only for learning during the sessions, but also for their continuity after the end of them, as

² This given mirror of the seminary was located as follows. As the Activity under Study is the Labor Inspection, the researcher signed up at the beginning of the research, in the ethnographic phase, on the YouTube channel of the Ministry of Labor, as well as on that of partner institutions (such as BNDS), to receive the reports and communications. The Seminar was publicized at the time and caught his attention when it was selected, because it had the participation of the Minister of Labor, the main senior hierarchical position in the organizational structure of the MTE, where the activity of the Labor Inspectorate is inserted. An excerpt from the recording that announces an innovative practice of the BNDS was selected, because if it were also adopted in OSH, it could enable the expansion of the object. This innovative practice was the result of a partnership between the BNDES and the MTE that is aligned with the object of labor inspection in the area of social legislation. It is noted that the tracking of communications related to the activity, as they are published, allowed the participants to present the current mirror data that provoked interest, and stimulated the group to want to design solutions to develop the activity in the area of OSH. Link to the Seminar: [Development and the World of Work](#)



they allow for the expansion of learning beyond the formal space of the Laboratory. The methodological group contributes to the training of novice researchers, while the operational group favors the deepening of the participants' learning, by promoting reflections on their own experience. Thus, we recommend these strategies as ways to strengthen the sustainability of expansive learning in Change Laboratory interventions.

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