https://osi-ngo.org/agir-vous-memes/centre-de-ressources/communautes-de-pratiques/article/quels-formats-de-mise-en-oeuvre-possibles-de-la-recherche-dans-le-cadre-d-un

Objectif Sciences International
Since 1992 - Special Consultative Status to United Nations (ECOSOC)
Participatory Research: The key to effective Education and achieving the SDGs

Possible Implementation Formats for Research within a Participatory Research Project

- Act Yourself - Resources Center - Communities of Practice -

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Participatory Research is a specific format of Research.

When it is sufficiently supported by both the scientific community and one or more citizen communities involved in the Research, it would represent a significant missed opportunity for Science if this format only served to propose the same projects, following the same epistemological approaches or experimental methods as Academic Research.

In this context, what approaches and proposals are unique to Participatory Research?

Also check out the training on the design and facilitation of a Participatory Science project [https://training-for-development.com/-Sciences-Participatives-Step-1-?lang=en]

Sommaire

Translate

To properly focus on the subject of this article, it is useful to first situate the role of Real Research across various formats of Science with and for Society.

	Citizen Science	Participatory Science	Participatory Research with Impact	Community-Based Participatory Research
General Format	Contributions of non-scientific citizens to data collection or processing	Non-scientists participating in several stages, including experiments	Non-scientists involved in all stages of research not directly related to their personal interests	Involves individuals in research addressing issues specific to their community
History	Emerged with the rise of technology and the Internet, facilitating citizen participation	Evolution of citizen science towards broader participant engagement	More recent form focusing on varied scientific issues	Originates from social justice movements and local initiatives
Drivers	Citizens and scientists, with strong scientist initiative	Collaboration between scientists and non-scientists	Researchers, educators, NGOs, and diverse publics	Local communities, associations, and researchers
Goals	Large-scale data collection, enhancing scientific knowledge	Citizen engagement in research, increasing scientific transparency	Advancing knowledge in strategic areas not directly connected to participants	Solving community-specific problems, enhancing self-determination
Common Fields	Astronomy, environment, biodiversity	Biology, ecology, social sciences	Energy, environment, sustainable development	Public health, local development, sociology

Examples	Galaxy Zoo, eBird...	Local wildlife observations, collaborative social studies	Projects on climate change impacts, medical research	Participatory action research on health issues, community agriculture

Epistemological Approaches

Epistemological approaches are theoretical frameworks that guide how researchers approach their research and interpret results. Currently, different epistemological approaches are used in scientific research, each with its advantages and limitations.

The main epistemological approaches implemented in traditional research include, though not exhaustively:

- **Positivism:** This epistemological approach considers that reality can be objectively observed and measured. However, it may overlook subjective and complex aspects of reality, as well as the interactions between the researcher and the subject of study.

- **Social Constructivism:** This epistemological approach emphasizes the social construction of reality and the role of individual and collective interpretations. However, it can be criticized for excessive relativity, placing less importance on objective facts and empirical research.

- **Postmodernism:** This epistemological approach questions grand narratives and absolute truths. However, its radical skepticism can make it difficult to reach consensus and produce reliable knowledge.

Epistemological approaches in Science regularly evolve, as scientific research is a vast and diverse field, and each researcher may have their own approach and epistemological preferences.

However, it is possible to identify certain epistemological approaches that are less commonly used in contemporary scientific research. For instance, radical epistemological relativism, which holds that each perspective is equally valid and that there is no absolute truth, is generally less favored due to its implications for the validity of scientific conclusions.

Furthermore, some more philosophical epistemological approaches, such as mysticism or intuitionism, are generally considered incompatible with the fundamental principles of the scientific method, which is based on observation, experimentation, and empirical rigor.

At present, however, several epistemological approaches could be particularly beneficial in the context of research conducted in a participatory manner with non-scientific citizens:

- **Empiricism:** This approach emphasizes observation and experience. By encouraging citizens to observe and experiment on their own, research can be enriched by including different viewpoints and gathering empirical data from various sources.

- **Social Constructivism:** This approach emphasizes the social construction of reality and the role of shared knowledge. By encouraging the participation of non-scientific citizens in research, their awareness can be raised regarding how scientific knowledge is constructed and used, thus fostering critical reflection on this knowledge.

- **Pragmatism:** This approach emphasizes the practical application of knowledge. By working participatorily with

non-scientific citizens, research can address issues relevant to society and result in practical solutions that meet citizens' needs.

It is entirely possible that the still-young format of Participatory Research will give rise to new epistemological approaches that are yet unknown.

It is important to note that all epistemological approaches have their strengths and limitations, and it is often beneficial to combine different approaches in participatory research. The goal is to create an inclusive space where scientific knowledge and citizens' practical knowledge can mutually enrich one another.

Scientific Approaches

Scientific approaches are methods used to acquire knowledge in a rigorous and systematic manner. They vary based on disciplines, research questions, and methodological approaches. Here are the main forms of scientific approaches:

- **Hypothetico-Deductive Approach**
  This is one of the most classic approaches. It follows these steps:
  - Observation: A phenomenon is observed.
  - Hypothesis formulation: Based on the observation, a hypothesis is formulated.
  - Experimentation: The hypothesis is tested through experiments or studies.
  - Deduction: If the experiment confirms the hypothesis, a general law or principle is deduced.
  - Verification/Falsification: The law or theory can be reviewed based on new observations.

- **Inductive Approach**
  This approach is based on the accumulation of observations, leading to the formulation of general laws or theories:
  - Repeated observation: A certain phenomenon is observed multiple times under various conditions.
  - Generalization: From these observations, laws or principles are formulated that appear to apply broadly.
  - Validation: These generalities are tested in other contexts to ensure their validity.

- **Experimental Approach**
  This approach involves manipulating variables to understand their effect on a given phenomenon:
  - Hypothesis formulation: Based on a research question.
  - Experiment planning: Experimental conditions are carefully defined, with an independent variable (manipulated) and a dependent variable (measured).
  - Experimentation: The experiment is conducted, and data is collected.
  - Analysis and conclusion: The results are analyzed to determine whether the hypothesis is confirmed or refuted.

- **Descriptive Approach**
  This approach aims to simply describe a phenomenon without necessarily seeking to explain its causes:
  - Observation: A phenomenon is observed in its natural environment.
  - Data collection: Observations are meticulously recorded and described.
  - Analysis: The data is analyzed to identify trends or recurring characteristics.

- **Historical Approach**
  Primarily used in the humanities, this approach involves reconstructing and analyzing past events:
  - Source research: Documents, testimonies, archaeological artifacts, etc.
  - Interpretation: Sources are analyzed and interpreted to understand the causes and consequences of events.
  - Synthesis: Events are placed in a broader historical context to draw lessons or identify regularities.

- **Modeling Approach**
  This approach is particularly used in exact and natural sciences (physics, biology, economics, etc.):
  - Model construction: A theoretical or mathematical model representing a complex phenomenon is developed.
  - Simulation: The model is tested through simulations to observe its behavior.
  - Model revision: Based on results, the model is adjusted to better reflect reality.

- **Comparative Approach**
  This approach involves comparing different cases or phenomena to identify differences or similarities:
  - Selection of comparison objects: Different groups, events, or phenomena are selected.
  - Comparative analysis: The compared elements are studied to identify common patterns or significant differences.
  - Conclusion: Conclusions are drawn based on observed similarities or differences.

These various approaches are often complementary. In practice, a scientist may use several of these methods within a single study to address complex questions.

What Research is Possible in Citizen Science?

The question of **who asks which questions to know what in scientific research** is crucial, as it influences not only the choice of subjects studied but also how results are interpreted and applied. This context helps to understand the specificities and potentials offered by three types of research: **Private Research**, **Public Research**, and finally **Citizen Research**. Each has unique characteristics and offers unique opportunities depending on who leads it, with what goals, and what questions are posed.

Private Research

Private Research is conducted by companies or non-public organizations to develop products, services, or solutions for a specific market. It is often driven by economic interests or commercial goals.

- **Potential:**
  - **Rapid Innovation**: Private research is often focused on concrete results, which can accelerate the development of innovative technologies or products. It benefits from substantial funding and more flexible organization, allowing for responsiveness to market needs.
  - **Pragmatic, Results-Oriented Approach**: Due to the importance of financial returns, private research projects are often highly targeted on practical questions. This leads to innovations directly beneficial to society, such as medications, technologies, or environmental solutions.
  - **Public-Private Partnerships**: Increasingly, collaborations between the private sector and public institutions allow for resource and skill-sharing. This fosters synergies that drive research in strategic fields.

- **Limitations**:
  - **Profit Orientation**: Private research tends to prioritize topics likely to generate short- or medium-term profits, sometimes at the expense of fundamental research or non-profitable but socially essential fields, such as biodiversity or social inequality.
  - **Potential Bias**: Research questions may be influenced by commercial interests. This can sometimes lead to conflicts of interest or limit the transparency of results, particularly if findings are patented or protected as trade secrets.
  - **Exclusivity of Discoveries**: Unlike public research, private research findings are not always shared freely, limiting their global impact.

Public Research

Public Research is conducted by government-funded institutions (universities, public research centers) and aims at the common good rather than immediate economic profitability.

- **Potential:**
  - **Fundamental Knowledge**: Public research is essential for the development of fundamental knowledge, often without immediate application but with long-term implications (e.g., theoretical physics, basic biology, mathematics).
  - **Public Interest**: Unlike private research, public research addresses questions that benefit society as a whole, such as public health, education, or the environment. It is less influenced by commercial imperatives, allowing for greater diversity in topics addressed.
  - **Transparency and Results Sharing**: Public research results are generally accessible to the public through open scientific publications, allowing other researchers and the public to benefit from these advances.
  - **Long-Term Project Support**: Governments can support long-term research projects, even without immediate results. This stability is crucial for large-scale projects like research in astrophysics, climatology, or medicine.

- **Limitations**:
  - **Limited Funding**: Public research depends on government budgets, which can fluctuate according to political priorities. This can limit certain disciplines' ability to fully develop.
  - **Process Slowdown**: Public institutions may be more bureaucratic, sometimes slowing down project implementation and results exploitation.
  - **Lack of Immediate Pragmatism**: Some public research may be overly theoretical and lack immediate or practical applications to address urgent societal needs.

Citizen Research

Citizen Research is a participatory approach that engages non-professional citizens in scientific projects at all stages of the research process, including the scientific question being posed. This type of research offers unique advantages:

- **Potential:**
  - **Diversification of Research Questions**: Citizen Research allows addressing questions not always prioritized by professional researchers or public/private institutions. Citizens, directly involved in daily life, can

raise local, social, or environmental issues often overlooked.
- **Science Ownership and Democratization**: Involving citizens in knowledge production can bridge the gap between the scientific community and civil society. It makes science more accessible, enhances transparency, and can build greater trust in research.
- **Data Richness**: Citizens can be a major data-collection force, especially in studies requiring extensive geographical or temporal coverage. For example, in environmental research, citizen networks can collect information on biodiversity or weather conditions.
- **Social Innovation**: Citizen research can foster practical and innovative solutions to social problems, as citizens are directly affected by the issues being studied. This approach facilitates the emergence of ideas that might not have been addressed by traditional researchers.
- **Independence**: Unlike private research, citizen research is often less influenced by financial or commercial interests. This allows for freer, sometimes more critical, questions regarding existing economic or social models.

- **Limitations**:
  - Identifying and securing funding and resources that Citizen Research could benefit from on par with private or public research (Project calls) or specifically (Impact Philanthropy, Blended Finance, Crowdfunding, Donation-Action...).
  - Ensuring scientific rigor and result reproducibility by building capacity among participating citizens alongside members of the Scientific Community.
  - Supervision and training of citizens, before, during, and after projects, are necessary to prevent biases in data collection.

The **potentials of Citizen Research** lie in its ability to address public interest questions often neglected by other types of research and democratize science by bringing citizens closer to knowledge production processes. **Private Research**, on the other hand, provides rapid and targeted innovation but with economic bias risks. **Public Research** focuses on general and fundamental interest questions, with open knowledge access but sometimes faces budgetary, bureaucratic, or even political or strategic limitations.

Each of these forms of research thus plays a complementary role in knowledge production, and collaboration between these different spheres can maximize societal benefits.

Conclusion

The format of Participatory Research is still young, and it is noted that scientific supervisors and project facilitators tend to want to implement Participatory Research projects under their responsibility by adopting commonly recognized approaches within traditional scientific research projects.

However, this approach represents a significant missed opportunity regarding the added value that Participatory Research offers. Failing to implement the alternative approaches and epistemological stances allowed by Participatory Research not only limits its benefits, but traditional research itself also looks to Participatory Research to address areas of action that it cannot cover, thus expanding possibilities for data collection, methods, and cross-referencing frameworks.

In this context, it is expected that Participatory Research project supervisors will explore new forms of research implementation, new project possibilities, or even new epistemological stances. In anticipation of

such innovative frameworks, supervisors are encouraged to deploy within Participatory Research the epistemological stances and scientific approaches that exist but are not currently undertaken by traditional research.

A Training on the Design and Facilitation of Participatory Science Projects

In collaboration between Objectif Sciences International and Step and Go, this training is specifically dedicated to the techniques for creating and designing a Participatory Science project for Sustainable Development, as well as the techniques for leading and facilitating a Participatory Science project using a Project-Based Learning approach:

https://training-for-development.com/-Sciences-Participatives-Step-1-?lang=en
[https://training-for-development.com/-Sciences-Participatives-Step-1-?lang=fr]

Choose the 3-day residential version or the 4-day non-residential option, in the Alps, Paris, Nice, New York... or request a date specifically dedicated for your team.

