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Beginners' Guide for Applied Research Process: What Is It, and Why and How to Do It?

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Abstract

Applied research, at its best, systematically uses high quality research standards and state of the art methods and tools to develop practical solutions for real world social problems faced by organizations and individuals. In practice, beginner applied researchers often perform below these standards resulting in inaccurate or irrelevant findings and wasted resources. Why? One of the challenges stems from common misconceptions about the peculiarities of applied research as a distinct craft with its own sets of priorities and constraints. Another difficulty lies in aligning different applied research elements – including the key problems, questions, methods, and techniques of data collection and analysis – to meet the research goals. When a clear set of actionable steps to guide the applied research process is lacking, teasing out relevant research tools and information can become an overwhelming task for beginners. Research methods textbooks mostly geared for basic/academic researchers provide extensive details on each method. However, few walk users through the applied research process – from the conception to the planning/design and implementation – in organisational and policy fields. Even fewer provide an accessible and easy-to-use guide for beginners.

This guide intends to address these two problems. The first part provides an overview of what applied research is and what it is not, how it is different from basic research, why it is important, and what constitutes high-quality applied research. Part II provides a simplified five-step framework for making social science methods more applicable and useful for problem solving and decision making in policy and organisational contexts. These steps provide a structure to frequently ambiguous and messy work of applied research. They help the researcher break down the research project into specific tasks and set deadlines, while also showing how they are connected and build on each other. Each step also provides a review of common pitfalls in this process along with tips for avoiding them.

This guide draws from the author's synthesis of key research methods textbooks. The five-step framework has been tested and refined in the process of teaching applied research courses and mentoring graduate students' research projects with public, private, nonprofit and international organizations for over a decade.

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Introduction

A team of students was working on a research project for a prestigious client. Despite the students' top grades in research methods courses and their considerable work experiences, the team really struggled. Students did not clearly understand the client's needs and problems. Thus, they did not know whether they were asking the right questions and whether they were gathering relevant and high-quality information from the right sources employing the right methods. The research methods textbooks that they had read explained how to use each research method or technique, but they did not help the team find their focus, i.e. to articulate their research goals and questions and align them with their data sources and data collection and analysis methods. After a semester of ambiguity, frustration, and tension, their considerable effort seemed to be to no avail. Finally, the team delivered its presentation to the client which failed to meet the client's and their professor's expectations. The client politely thanked the group.

The example above illustrates typical challenges beginners face in the research process. Such challenges are common, especially in applied research characterized with greater ambiguity and constraints. I have experienced them myself as student, and also observed how other students grappled with them time and time again. These experiences and observations taught me a valuable lesson about the importance of managing the research process well, including by developing clear research questions and properly aligning different research tasks towards meeting the research goals.

That is why I wrote step-by-step instructions to help beginner applied researchers to work with more clarity, efficiency, and effectiveness in the process of designing and conducting a research process.

Designing and carrying out an applied research project is not an easy task for few reasons. The differences between applied and basic research are not always understood. For practitioners it is not easy to adapt powerful tools from basic research to find or generate relevant and useful information. Moreover, while an extensive body of knowledge on social science research methods exists, most textbooks on research methods are written for basic (foundational) academic research. The few exceptional textbooks on applied research are mostly designed for more advanced users.¹

When a clear set of actionable steps to guide the applied research process is lacking, teasing out relevant information and tools can become an overwhelming task for beginners. Often, applied researchers can become stuck in common but preventable pitfalls.

This guide intends to address both of these problems by clarifying the differences between basic and applied research in Part I and providing a step-by-step guide on key components of the research process in Part II.

This guide draws from my synthesis of key classic research methods works,² combined with more than a decade of teaching applied research courses and mentoring graduate students' ap-

¹ See the list of such books in Appendix #1.

² See Appendix #1 for a list of these resources.

plied projects with public, private, nonprofit and international organizations. I tested different variations of the five-step framework over a decade with my students and continually tried to improve upon it.

While I still consider this guide to be a work in progress, I hope it will be a useful tool for beginner applied researchers, especially those working in organizational and policy fields. It also may be useful for professionals in other fields.

Part I of this guide explains what applied research is, why it is becoming an increasingly important skill for professionals, and how it is different from basic (fundamental or academic) research. The last section in Part I provides a set of criteria for high-quality applied research.

Part II provides a five-step framework for designing and conducting applied research with detailed tips for every step. These steps will help applied researchers to find their focus and design a practical plan to help them answer their clients' questions. The guide also points out common pitfalls in applied research and proposes tips for preventing or dealing with them accordingly. These steps are meant to be learned through application. Therefore, reading this guide alone will not help you learn. On the contrary – the detailed steps may even leave you overwhelmed. For optimal learning, try to *apply* the guide using a fictional or actual case and reflect on what you learn.

Part I: The What and Why of Applied Research

1.1. What Is Applied Research?

The word “research” can bring to mind the type of work academic and research institutions do – such as large-scale surveys or highly technical research projects in labs where people in white coats conduct intricate experiments. This is one type of research commonly referred to as “*basic*”, also known as academic or foundational, usually conducted by university professors and experts at specialized research labs and institutions. The goal of such research is to advance and expand human knowledge about the world by answering fundamental questions pertaining to the nature of the universe, society, organisms, etc.

Yet, most research actually happens outside universities or research labs. Employees and consultants in all industries – whether they are part of the government, nonprofit, or private sector³ - routinely engage in inquiries to help solve specific problems. For example, organizational and policy professionals are frequently compelled to answer such questions as: What do users/citizens want from us and what services should we offer or change to better meet their needs? What do we need to do differently to increase our impact? How do we know we are actually making a difference? What options do we have? What shall we prioritize given our limited resources? How did we do on this project or this year, and what can we learn from this experience?

A research that takes place in an everyday context to solve specific problems of individuals, organizations, and/or industries is called “*applied* research.” Applied researchers do not usually seek to solve big unanswered questions about the universe or society. Rather, their goal is to simply generate answers to solve specific down-to-earth problems that someone is facing (we will call the users of such research “clients”) using sound evidence and thinking. People who engage in such research are not always called “researchers” and often go under a wide range of job titles including policy analyst, monitoring and evaluation (M&E) specialist, consultant, strategy expert, organizational development/change expert, and market analyst.

Beginner applied researchers in different organizations/entities can benefit from this guide. For example, research staff in policy and advocacy organizations need such research to identify solutions to specific policy problems. Nonprofit organizations need applied research to identify the needs of their constituents or evaluate the effectiveness of their programs. International development organizations need such research to identify which of their pilot interventions worked so they know whether to scale them up in other countries or regions. Private sector organizations also need to identify key problems their customers face with their products/services so that they can improve upon them. Every leader concerned with improving their organization’s efficiency will benefit from identifying key bottlenecks and obstacles for higher performance. And, of course, applied research is the ‘bread and butter’ of policy, research, and management consultants regardless of whether they work for a consultancy firm, are employed at a university or research institution, or do freelance work.

³ Applied research happens in every industry and field ranging from hospitals to civil engineering. This paper focuses on applied research in organizational leadership and policy contexts and will limit examples to the latter. Nevertheless, the insights from this paper can be applied to other fields as well.

1.2. Why Do Applied Research?

A traditional approach to change in policy and organizational contexts often reflects the notion that: “if it isn’t broken don’t fix it”. But sticking to old practices is not an option in an age of rapid social, economic, cultural, and environmental changes taking place globally. Those who decide to respond to change, usually take one or more of the following approaches: they rely on their leaders’ intuitions (“guts”), copy what they or others have done successfully in the past (“best practices”), rely on long-term planning, or outsource applied research to consultants.

Each of these approaches has its pros and cons. Following *intuition* can be beneficial if the decision maker has extensive and relevant past experiences to draw from. But intuition may lead us astray when sufficient relevant expertise is lacking, when the decision maker has deeply-seated biases and blind spots preventing them from clearly seeing the actual reality, and when the situation is too complex. *Best practices* can save time, but they are usually *past* practices which were designed or emerged in response to a specific situation/problem of a particular entity in the past, so replicating the same conditions in the future is not always feasible. Given that each situation is unique and constantly evolving, the application of best practices often fails to deliver expected results. *Long-term planning* can be useful when it relies on solid and relevant research combined with strong coordination and implementation skills. But without such capacity, strategic or development plans become yet another political tool in an effort to convince the users and/or funders that serious work is being done even when it is not. *External consultants* can bring novel perspectives and avoid pervasive biases that insiders may harbor, but they usually lack familiarity with the nuances of the situation, meaning that they take much longer to understand what is going on and/or fall back on best practices. Even if they do deliver good answers, it may be too costly to hire them frequently.

Meanwhile, the need to answer challenging questions requiring systematic research in organizational and policy contexts is increasing, along with growing complexity and increasing users’ demands for high-quality services and goods. This is especially true for public policy-making and organizational leadership. Important decisions warrant relevant, valid, and reliable information – especially when decisions involve public goods or where the stakes are high.

The private sector embraced evidence-based decision-making first, which means their important decisions/policies are ought to be informed and justified by valid and reliable information obtained through systematic and high-quality research. Those companies that adopted evidence-based decision-making both in terms of *what* they do (products/services) and *how* they operate (internal organizational processes) emerged as the best run and most sought-after organizations to work for with vast influence globally.⁴ It is true that issues faced by policy makers and organizational leaders in the public sector are much more complex than what their private sector counterparts deal with. Yet this is not a reason for eschewing evidence-based decision-making. In fact,

⁴ For example, Alphabet (formerly Google Inc.) is among the companies that lead this trend of systematically using empirical data for every major decision they make – not only with regards to products and services they offer, but also with regards to its internal management and administration. It has also been considered among the top ten global companies to work for, for several years in a row. Source: The World Economic Forum. These are the World’s Best Companies to Work for. Retrieved March 1, 2018 from <https://www.weforum.org/agenda/2017/11/the-worlds-best-employers-in-2017/>.

the government organizations rated as the “best places to work” also use high-quality research to inform both what they do and how they do their work.⁵

For the last few decades, public and nonprofit sectors globally have been slowly waking up to this reality and have been trying to adopt more evidence-based decision-making practices. For example, many large international and nonprofit organizations have set up monitoring and evaluation (M&E) units. These have extended the work of the previous auditing units which were only in charge of checking financial compliance. The M&E units are usually in charge of collecting and using systematic data to assess the design and performance of their projects, programs, and services to inform their future work.⁶

And yet, skills needed for applied research are not always available in low capacity organizations where they are most needed. Frequently, applied research projects take too long to complete, and result in irrelevant or raw data along with wasted time and resources without really generating answers addressing practitioners' problems/questions. As mentioned in the introduction, this problem partly stems from a lack of clear understanding of how applied and basic research differ. The following section addresses this accordingly.

1.3. How is Applied Research Different from Basic Research?

The work of applied research practitioners has a lot in common with what basic researchers do. They both ask questions and collect information to answer those questions by testing their hypotheses/guesses using empirical evidence, instead of relying on their subjective opinions or preferences. Basic and applied researchers both draw from roughly the same set of methods and seek to conform to standards of validity and reliability.

Basic and applied research are also *complementary*. Applied researchers frequently *apply* relevant findings and theories developed in basic research. In other words, while basic research generates universal knowledge, applied research usually applies this knowledge to solve specific problems of a particular client. For example, for the last decade, cognitive and behavioral scientists have vastly expanded our understanding on how people think, make decisions, and behave. Such basic knowledge has potential to increase the effectiveness of organizational leaders and policy makers⁷ who are usually concerned with steering people's behavior in a specific direction.

⁵ For example, the US Government Accountability Office (GAO) – a research arm of the US Congress – is the leader in conducting high-quality applied research. It uses research skills both to inform its reports for its stakeholders and to inform its internal operations. It similarly has topped the list of “best places to work” among government organizations in the US since 2005. Source: Government Accountability Office, Press Release: GAO Again Named one of the “Best Places to Work, retrieved March 15, 2018 from <https://www.gao.gov/press/2017bestplaces.htm>

⁶ Among Central Asian governments, for example, so far only Kazakhstan has created such a structure within its public sector. In Kyrgyzstan, such skills seem to mainly reside in independent consultants trained abroad and/ or by international development agencies. Such consultants have started competing with expatriate organizations to bid for local projects requiring applied research skills.

⁷ For example, OECD's publication “Behavioral Insights and Public Policy: Lessons from Around the World”, 2017, provides extensive examples of how basic science from behavioral sciences can be applied in policy contexts. It can be downloaded via this link: https://people.kth.se/~gryne/papers/OECD_2017.pdf (accessed on March 19, 2018).

At the same time, there are significant differences between the two types of research. As detailed below, the key distinction between basic and applied research⁸ lies in *why* and *how* the research is conducted, particularly with regard to the use of time, resources, research context, and methods.⁹ Unlike basic researchers, applied researchers do not get to select their questions or problems, and need to tackle multiple questions at a time, while working under tight deadlines and dealing with resource constraints. Therefore, they need to be particularly resourceful, practical, and savvy about combining different methods and techniques. These differences have major implications for every step of the applied research process as elaborated in Part II. The table below summarizes such key differences after which details and examples are given for each of them.

Table 1. Prevailing Characteristics of Basic vs. Applied Research¹⁰

	Basic/foundational/academic Research	Applied Research
Purpose	To advance human understanding and knowledge of the universe. To uncover universal laws, e.g. pertaining to space, matter, energy, society, living and nonliving systems, etc.	To help clients (e.g. policy makers or organizational leaders) to make a decision about a particular situation, problem, or opportunity.
Initiative	Researcher initiates based on their own expertise, research skills, and interest.	Client initiates based on their need for information in response to a particular situation, problem, or opportunity.
Funding	Funding is usually available from government, universities, and private foundations in the form of research grants.	The client pays for a consultant or employs an in-house member of staff. Funding is usually much less than needed for a thorough research.
Who does research	A solo researcher, usually from one discipline Team projects are less common	In-house member of staff or consultant(s). (Ideally it should be a research team consisting of experts from relevant and complementary disciplines.)
Timeframe	Usually longer timeframes compared to applied research	Tied to the client's timeframes; Significantly shorter deadlines than researchers would ideally need.
Research setting	Research can be autonomous from its environment	Research is embedded in, and inseparable from, its real world context
Research methods	Usually uses fewer varieties of data sources and data collection methods. Data collection and analysis methods usually build on the researcher's unique strengths.	Tends to use a combination of multiple methods of data collection from different sources and a mix of qualitative and quantitative data analysis methods.
Evaluation and outlet	Presented in scientific conferences and published in journals subject to peer review process.	Presentation and report submitted only to the client who is the sole evaluator of the work. The client decides whether and how to use the information and whether to make it public.

⁸ Note that there is also a form of research that combines features of both, such as those conducted by some academic institutions. The tips here may also be relevant for these types of research.

⁹ This section partially draws from Hedrick, Bickman, and Log, 1993 (see Appendix #1 for detailed citation) and further extends their classification.

¹⁰ This table highlights prevailing tendencies in the two types of research. There are, of course, many exceptions to the characteristics summarized in this table.

Purpose, initiative, and funding of research. As mentioned above, the main purpose of basic research is to uncover universal laws that explain the nature of things or how they work or relate to each other and various kinds of consequences. For example, a research trying to identify common human biases in decision making would usually attempt to identify patterns generalizable to everyone. Researchers do not usually pursue this question to benefit one specific organization or group, but rather to advance human knowledge. This knowledge could be used by anyone, assuming it is made publicly accessible. Such research is usually funded by governments, private foundations, and universities.

Applied research is designed and conducted to answer practical questions to address real world problems and the needs of a particular client. For example, a city council might commission a study to figure out how best to reduce homelessness in the city in response to increasing citizen complaints and media coverage. The purpose of such a study might be to identify solutions to reduce homelessness in a sustainable and cost effective way. In general, the researchers here would not be concerned about generating information applicable for all cities or for the world as a whole, but just for that particular city.

The client – i.e. the organization or people who request the study – usually pays for such research if using consultants' services. However, most practitioners in public and nonprofit sectors still do not value research enough to allocate the required funding, and as a result end up doing it on a slender budget relying on in-house staff.

Who does research? Basic research is most often led by a solo researcher, usually with help from a team of research assistants. For example, a research on decision-making biases may be conducted by a researcher with a background in experimental methods and psychology assisted by a team of graduate students. Researchers also collaborate with their peers from academia or industry but solo research is more common.¹¹

Applied research, in contrast, is frequently conducted by an in-house or a consultant team. Diverse team composition in terms of skills and knowledge is often a prerequisite given that applied research problems and questions tend to be multi-dimensional, requiring a different set of skills and strengths. A study on homelessness, for example, might benefit from: the expertise of an economist to figure out the costs of different solutions; a legal expert who can illuminate legal aspects of a situation; or a clinical psychologist to point out aspects about the behavior and mental health of homeless people.

Timeframes allocated for basic and applied research vary greatly. Basic research usually takes place under more flexible deadlines. With some university grants, the researcher can determine their own deadline. Government or foundation grants may come with specific deadlines and deliverables. In contrast, applied researchers almost always face firm deadlines from clients who, in turn, face deadlines of their own. Therefore, applied researchers need to be particularly disciplined about balancing the client's needs with the need for a thorough research. Sticking to deadlines can be difficult as interviews often have to be rescheduled, and funding can be delayed, but

¹¹ This preference might be partly influenced by incentives built into most universities where professors get more recognition and rewards for single-authored peer-reviewed publications as opposed to a team article even if both take up a similar amount of commitment and effort.

the deadlines rarely move. Researchers need to be creative and resourceful about finding high-quality and relevant information in a way that uses time and resources as efficiently as possible.

The research setting. The purpose of research dictates the kind of environment in which the research will take place. In some social sciences, such as economics or psychology, basic research is frequently conducted in a controlled environment such as a university or research lab/center. This is primarily done when there is a need to isolate any intervening effects of external factors that are not essential for understanding the phenomenon or phenomena in question, and partly for researchers' convenience. For example, a researcher studying human biases in decision making may ask subjects to answer a series of questions in a classroom under the same circumstances to ensure everyone is exposed to the same set of factors. In other social science disciplines, such as anthropology and political science, field research is very common.

In contrast, applied research is usually embedded in its natural environment where the problem is unfolding so that the researchers can access the most relevant and up-to-date information, including key contextual factors. For example, a research team studying homelessness in city X might study homeless people's behavior patterns to learn how they live and transition in and out of homelessness. In this case, focusing the research on contextual factors affecting homeless people would be more practical compared to studying their individual traits. Why? Because the city council would have more discretion to change contextual factors and there would be almost no chance of changing personality traits of homeless people.

Research methods. Basic research tends to mirror the strengths of the researcher in research design, data collection and data analysis methods. For example, studies of human biases and behaviors are usually conducted by behavioral scientists who excel at designing experiments to test their theories. True experiment¹² is considered as a gold standard for research design when it comes to exploring causation.

Designing and carrying out true experiments is extremely difficult for applied researchers. For example, an applied research team may wish to test which of the three solutions they have identified might be more effective in reducing homelessness. Such study requires a lot of resources, time, and additional research skills. Moreover, the findings of the study will be affected by study subjects' unique traits and environments, as well as other unexpected factors that could influence them during the experiment. Not surprisingly, applied researchers use experiments sparingly.

Basic research relies on fewer variety of data sources, which may include (1) a review of the existing literature and/or data, and (2) collection of primary data from firsthand experience of the target population. Data analysis tends to rely on qualitative or quantitative methods or both.

In contrast, applied researchers usually consult a wide variety of data sources. For example, the research typically starts with a meeting with the client to clarify what is expected of the researcher, how much the study may cost, and the client's deadlines and constraints, among other issues. Frequently, clients have some needs but are not able to clearly articulate the problem or the goal and questions of the research. It is then the researcher's responsibility to clarify the problem

¹² See Part II for more information about different types of research designs.

driving the research, the research goal, and the boundaries of the research. This often requires reviewing the existing information, including by searching for similar studies and interviewing knowledgeable people on the subject (key informants) and meeting with the client one more time to make sure they are on the same page.

Typical methods of data collection used in applied research include desk research to review existing data (statistical databases, various records, research articles or books, etc.), observations of the target population or a process, surveys, various types of interviews, and, sometimes, focus groups. Data analysis in applied research is also more varied, usually including a mix of qualitative and quantitative methods (Part II elaborates more on these methods).

Evaluation and outlets of research findings. Basic researchers, upon completion of their research, will write up their findings and usually present them at scientific conferences to expose their work to their peers' critical review. They may then try to publish such works in peer-reviewed journals where other researchers anonymously review such drafts subject to reliability and validity criteria (see section 1.4 for more on these criteria). If the draft passes such a review it is eventually published.¹³

In contrast, applied researchers are obligated to report their findings to the client, who evaluates the quality of the work and decides whether and/or how to use this information. It is common practice to present the findings to the client and get their input before submitting the final written report. Sometimes all that is needed is a formal presentation. An applied research report is not usually made public unless the client wants it to be. Submitting the report to the client does not guarantee that the client will act on the research findings and proposed recommendations.

1.4. What Accounts for High-Quality Applied Research?

Basic research quality is commonly measured against validity and reliability criteria. Applied research has several more criteria to meet on top of these two, including effectiveness, efficiency, feasibility, relevance and sufficiency. This section unpacks each of these criteria by first explaining what each of them mean, using an example followed by specific tips on how to satisfy them.

Validity means the extent to which the study is credible, accurate and free of biases. The primary task of the researcher is to provide objective and valid information. This criterion is met if the study actually does what it says it is doing, and the data adequately and accurately represent actual conditions. To meet this criterion, the researcher has to make every effort to eliminate bias, distortion, and unsupported assumptions and conclusions from *every* step and aspect of the research. Such validity threats could be found at any stage of the study – including in the definition/conceptualization, sampling, question formulation, data collection and analysis, and development of recommendations.

¹³ Lately, more and more researchers have been opting to publish their work directly on their own or university websites for few reasons. Besides a time lag, most of such journals are not publicly accessible so their work does not become a public knowledge from access standpoint. Furthermore, the peer review process can unjustly filter out research not aligned with the reviewer's core ontological or epistemological assumptions.

For example, if researchers wrongly defined/assumed that *all* homeless people lack employment skills, the solutions they developed could overlook the needs of homeless people and the reality that they may have such skills. If, for example, they asked leading questions in the survey to validate their prior assumptions or the client's political agenda, they are not likely to find out what is really happening. A leading question steers the respondent towards an answer through the way the question is framed. For example, a leading question might ask "Would you agree the city is doing its best to help the homeless by providing hot meals once a week" and urge the respondents to choose a yes/no answer. A more neutral question might ask "Tell me about the kinds of assistance you have been received from the city" and "rate your level of satisfaction with each kind of such assistance on a scale of 1-10."

Worse still, intentionally skewing research findings in a pre-specified direction, besides resulting in invalid information, is highly unethical and should be avoided.

Furthermore, if researchers only analyzed quantitative information from surveys, and did not look for patterns in interviews or observations, they may miss important clues about the problem, and fail to draw valid conclusions. In other words, every aspect of the research has ample room for error, and thus every detail and aspect of the research has to be designed and conducted to correct biases and untested assumptions.

There are several common obstacles researchers face in meeting the validity criterion. First, everyone carries biases and, worse still, we are usually blind to them. Moreover, decision making is often a political process with winners and losers, and practitioners will try to directly or indirectly sway researchers in the direction they want the research to go. Even if researchers are aware of their own biases, and even if practitioners stop showing preferences on what they want researchers to find or recommend, researchers could still interpret data erroneously and reach wrong conclusions.

One tip for eliminating or reducing validity threats is to convene a research team with diverse perspectives so that they could check each other's assumptions. For example, in the homelessness study mentioned above, a team consisting of people with diverse perspectives might help to curb some of the biases pertinent to each discipline/profession. For example, economists may be more concerned with the financial costs and benefits of a homelessness reduction program (efficiency), while psychologists may focus on the long-term viability of the proposed programs in terms of homeless people's psychological needs (effectiveness). It is recommended that such validity checks are made regular practice throughout all stages and aspects of the research.

At the design stage it helps to invite an external/neutral researcher to review the research design before the implementation stage. At the data collection stage, it can be helpful to collect information in pairs if possible, so that one can notice validity threats that the other person might overlook. The data analysis stage similarly requires an extra pair of eyes. Lastly, extreme care is needed when solutions derived from another location are exported to a new context. For example, large development agencies are frequently criticized on grounds of external validity when they recommend solutions developed for one set of problems and situation in a new context with a different set of challenges and opportunities.

Reliability refers to the repeatability of the findings. To meet this criterion, the research should be able to answer “yes” to the following question: “If someone else did this study, would they arrive at the same conclusions?” This criterion is usually more applicable for basic research compared to applied research. Why? Because basic research is better positioned to eliminate external factors influencing the phenomena/outcomes in question. In contrast, applied research often takes place in contexts/environments that continually change and evolve. In Heraclitus’s words “You can’t enter the same river twice.” Therefore, technically it is impossible to study the same social phenomena at a later date and arrive at exactly the same findings and conclusions with high precision. Still, in applied research the criterion of replicability should be respected in spirit by eliminating any biases researchers may have as much as possible and increasing a sample size of their data sources.

Effectiveness – the extent to which the study has met its stated goals – is especially important in applied research. For example, if the goal of the research was “to develop solutions to sustainably reduce homelessness in city X by 20% without exceeding its current budgetary allocations,” the researchers delivering only an analysis of factors affecting homeless people would fail to meet this criterion. To meet this criterion, researchers would have to make this raw information actionable by developing practical recommendations informed by this information.

The key to meeting this criterion is to have a clear research focus – i.e. to articulate the goal of the research as well as its boundaries and definitions, and to make sure the client shares this understanding. When the goal of the research is not clear, we cannot know whether it is effective or makes any difference. When the goal is clear, it is easier to translate the findings into actionable recommendations.

Efficiency is about using the minimum amount of time, resources, and effort to meet research goals and objectives. Effectiveness is often conflated with efficiency even though they are distinct. In applied research, both effectiveness and efficiency are important. For example, if researchers delivered extensive and valuable recommendations after the client’s deadline, the study might be useless once a particular political window of opportunity closes.

Applied researchers almost always face with a tradeoff between effectiveness and efficiency. The solution is not to select one or the other, but try to meet effectiveness criterion with the most efficient process or approach. A key to doing this is to always ask how one can get valid and relevant information with minimal effort, time, and cost. One way to do this is to use existing information whenever possible because collecting primary information via the likes of interviews, surveys, observations, and focus groups is the costliest part of the research (see more in section 2.1). If prior studies have been done on the same population, it is imperative to review them carefully and to make the best use of that information. For example, if homelessness-related projects were evaluated in the past, such evaluation reports may be highly informative. Bureaucracies are usually good at data collection and storage, so starting your research with a visit to a relevant agency may save you a lot of time and effort.

Another way to become more efficient is to talk to key informants early in the research. These are usually people who may have acquired relevant information as part of their job. In the homelessness study, it might help to talk to agencies, businesses, and NGOs who work with the homeless directly because they may have the most information about this population. They may also sug-

gest databases or reports that may be available, in addition to referring you to other knowledgeable people you may not have thought about contacting. Referrals will also make people more approachable compared to cold calls.

At best, searching for relevant existing information from written sources and people could save you a lot of time, money, and effort you would otherwise spend to collect such information from the target population. At the very least, doing extensive preliminary review of information and carefully planning primary data collection tasks will help you ask more precise questions and collect data from most important sources. This can help to minimize efforts spent on costlier parts of the research.

The **Feasibility** criterion means that the research design should be doable for researchers. As mentioned above, if the proposed research design is not feasible in terms of time, skills, information access, and resources of the research team, it is doomed to failure from the beginning. In such a case, it would not be recommended to start the study, and researchers would need to redesign the project.

Researchers and clients frequently neglect assessing the research design subject to its feasibility. This is partly due to prevalent optimism bias in humans, and partly due to pressures to start as soon as possible. Incomplete research is usually worse than no research at all as it can waste resources and time without generating helpful information.

To avoid this trap, it helps to have an outside researcher assess its feasibility and potential hurdles. It is also a good idea to review existing information before finalizing research goals and questions and consider which angle and method(s) would be most feasible for a given situation. And, of course, researchers need to continually modify their research design and methods when they face previously unforeseen hurdles without undermining the research's effectiveness, validity and reliability.

The **Relevance** criterion asks in essence: "Is the information you have collected relevant for answering your key questions?" Meeting relevance criterion can also make your research more efficient. Novice researchers tend to collect information that has little value for meeting research goals. For example, let's say that the research goal was to identify solutions for reducing homelessness in city X by 20% without adding extra costs. The researchers wrongly assumed their job is to answer but ultimately different question: "What are the best practices for reducing homelessness?" The latter would probably generate lots of useful information but much of it might not be relevant for the city which wanted specific recommendations for reducing homelessness given its unique context and financial situation.

While you will always end up collecting more information than you will actually use in your final report, it is important to stay focused on the key questions and goals of the project when collecting and analyzing data to minimize extra effort. It is also important to prioritize the information that comes from high-quality and credible resources whenever possible.

The **Sufficiency** criterion asks: “Will the information collected be sufficient to answer your key questions?” For example, your final report contains extensive information about causes of the homelessness in city X, but hardly any on possible solutions to this problem. This information would not be sufficient for meeting the project’s goals to develop actionable solutions to address homelessness in city X.

Again, the key to meeting this criterion is to articulate clear goals and questions in consultation with the client, to keep them in writing, and to continually revisit them to make sure the research design, findings, and recommendations are all aligned with each other as more information becomes available.

Part II. How to Design and Implement an Applied Research Project

Five Steps of Applied Research

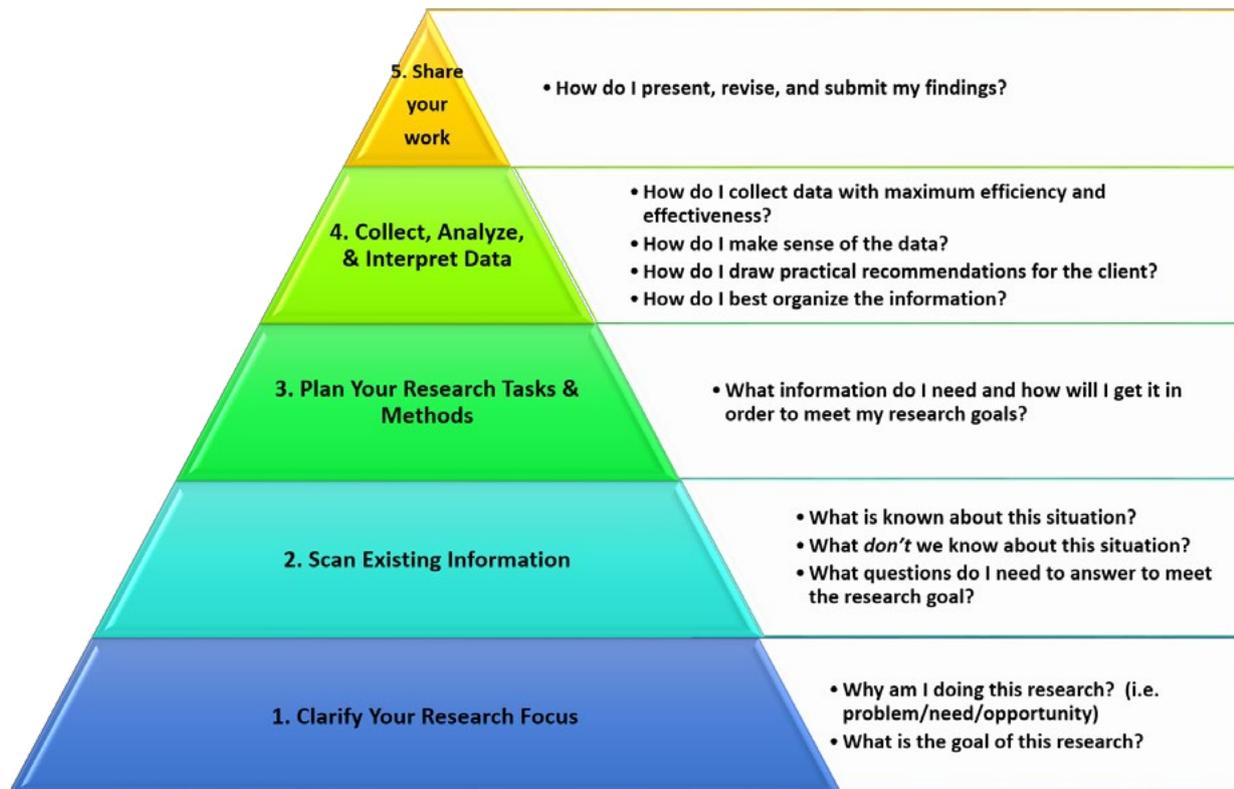
This section provides step-by-step instructions for designing and conducting applied research that meets the criteria for high-quality work. These steps are summarized in graph #1 below. Before delving into specific steps, please keep in mind a few important things about the overall applied research process itself.

First, do not be deceived by the neat graphic below. Research is rarely a clean-cut and straightforward process from a clear question to planning to data collection and analysis. Doing research is often akin to being stuck in a thick forest, where you are expected to carve out a path to your destination using your goal as a beacon. While you can't take the next step without taking the previous one, you will frequently go back and reexamine previous steps as you move forward because your preliminary ideas and guesses will be tested, retested, and refined as you obtain more accurate information with every consecutive step. For example, you may start with one set of research questions only to change them after a preliminary review of the existing information. This does not mean that taking that prior step was not useful – it was a stepping stone you used to get closer to your destination. In fact, all steps should be treated as stepping stones for gaining clarity and moving forward even if it means you have to periodically go back.

Second, keep in mind that every research is unique and there is more than one way to design and implement it. Each step described in this section contains information on what it involves, why it is necessary/useful, how to implement it, and what pitfalls to watch out for. Instead of blindly following these steps, be mindful and creative in applying this framework. Use parts and tips that help, discard those that do not, and modify them freely to help your specific task at hand. To make the best of the framework, try to understand the reasons *why* each step is useful or necessary. And if you do, the tips related to *how* to do it will make more sense.

Lastly, and most importantly, engage your client as much as possible in the research process. This is important for at least three reasons. First, it can help you to stay on the same page and make sure your work is relevant to that of the client's. Second, it can provide you with information from the client that you would not get otherwise. Most importantly, the more the client is engaged and the more time and effort invested, the more they will be receptive to your final recommendations. At the same time, seek, and be receptive to, feedback while maintaining your objectivity and integrity, and the validity of the research. It can be helpful to set up an information-sharing system (file-sharing, emails, or face-to-face) early on so your client is informed about your progress. It also helps to schedule meetings with the client in advance, ideally around each of the five steps. If this is not possible, try scheduling one meeting in the beginning, and one in the second half of the research so you have an opportunity to course correct if needed before it is too late.

Graph #1: Five-Step Framework for Applied Research Process



Step 1: Clarify Your Research Focus

The first step is the foundation of all the other steps, as illustrated in the graph. Clarifying your research focus involves communicating with the client to articulate which problem or opportunity the research is meant to address, what the goal and objectives of the inquiry are, and what the constraints are within which you will operate as a researcher. As the previous sections have made abundantly clear, *this is the most important step* in the research process. Do not expect clients to provide a clear focus for your research. Often the client has a vague idea of what the problem is, or may only be looking at symptoms of the problem or, more commonly, at a solution that may have worked elsewhere. Without understanding the situation and purpose of the inquiry, your research will be like a ship that does not know its destination and will waste a lot of time and resources. If you skip this step or rush through it without obtaining clarity and focus, the rest of your research, even if done perfectly, is not likely to lead to satisfactory results.

The step of clarifying the research focus has a number of components. There are important differences between the key problem (or opportunity) driving the research, research goals, and research objectives – and you need to be clear about each of them. Articulate each of these components by following the instructions below in sub-sections 1.1.-1.3. They are mutually reinforcing and work best in combination to clarify the research focus.

1.1. Identify the problem/opportunity your project will address. A useful problem statement contains (1) a specific social condition and (2) its negative consequences, both supported with accurate data from reputable sources. If the social condition has no actual or potential negative consequences, then it is not a problem. For example, “a two-fold increase in the homelessness population in city X for the last five years resulted in severe anti-sanitary conditions in parts of the city where homeless people are concentrated, along with an increased crime rates committed against them.” A clear problem statement helps you to focus on the central negative condition (“two-fold increase in the homeless population for the last five years in city X”), whereas the negative consequences (“anti-sanitary conditions” and “increased crime rates against them [the homeless]”) serve as motivators/reasons for addressing the problem. Every word matters in the problem statement because a vague or improper problem statement can misdirect you towards the wrong factors.

Tips:

1. Notice that a useful problem statement does not contain the causes of the central negative condition - i.e. factors explaining why the homelessness rate increased – usually because we do not know much about them at the outset. The research will identify those factors if needed in order to generate sustainable solutions to the problem.
2. Problems are often confused with “issues”, which is a phrase or a paragraph containing an open and broad mix of various problems and opportunities subject to various forms of interpretation. Examples of issues are “global warming” and “homelessness.” Issues can confuse you, while a clearly articulated problem statement can bring clarity and focus.

Another example: The dean of your school has asked you to help her improve the school’s curriculum. Before you make up your own assumptions about the reasons for the inquiry and jump into research, you need to understand what compelled her to initiate this inquiry. Is it because the school’s graduates are not getting the jobs in their fields? Is it because the school needs to go through a reaccreditation process? Did she initiate this project to chase a new fad in higher education? Asking the client to specify the problem underlying the research project will help you figure out what exactly you need to focus on and to find out in order to address that problem.

Tip: Using tools such as the [“problem tree”](#) can help you to correctly identify the negative social condition itself and separate it from its root causes and consequences.

Problem vs. opportunity: While most applied projects are driven by problems or crises, sometimes the research project is prompted by an opportunity to make an improvement. In either case, be clear about what is driving the research – a clear problem or opportunity statement will serve as a powerful motivator for you and for your client. However, without an articulated problem or opportunity driving it, your research may be perceived as irrelevant or not urgent, and will not receive sufficient attention from stakeholders whose cooperation you may need.

1.2. Define the goal(s) and objectives of the research project. Understanding the problem/opportunity underlying the inquiry will help articulate the project goal and objectives. **The research goal** states *what* you intend to accomplish in this research, while **objectives** state *how* you will go about it. They are often used interchangeably but the distinction is important.

For example, your **research goal** might be *“To develop recommendations to the dean to better align the school’s curriculum with core competencies essential for our alumni’s successful employment in top organizations they wish to work for.”*

Tip: Beware of conflating the goals of *your* research with the goals of *your* client. If this happens you will get off track and waste your resources. For example, your client is the dean of school X and her goal might be *“to overhaul the school curriculum to ensure a better fit between the school’s curriculum with top employers’ needs.”* Your research goal would *not* be *“to improve the school curriculum”* because this is probably beyond your paygrade.

The **research objectives** break a large goal into a number of more manageable tasks. The research objectives need to be achievable, necessary, and sufficient for meeting your goal.¹⁴ Research objectives for the goal stated above might include the following:

1. *To identify core competencies essential for successful careers in organizations where most students aspire to work.*
2. *To identify gaps between employers’ needs and what the school offers and the reasons why this gap exists.*
3. *To generate recommendations for school administration (the dean) on (1) modified content and (2) pedagogy to further improve the school curriculum in order to prepare professionals for the needs of top organizations where the school graduates seek employment.*

Tip: Ideally, objectives should address both *what* and *how* questions, because social outcomes are usually shaped by both what (content) we do and how (process) we do it. Researchers tend to focus on content (e.g. a curriculum in this case) while frequently neglecting relevant processes (e.g. *how* the curriculum is developed or changed or delivered). In the example above, objectives #1 and #2 focus on the content of the curriculum whereas the objective #3 focuses on the process of curriculum delivery.

If the problem, the goals and objectives of the research are clear, it will be easy to tease out research questions that will be explained in Step 2. However, when client cannot clearly articulate the problem, goal or objectives, you can ask which *specific questions* your client wants you to answer. If the client has specific questions, you can formulate the research goals and objectives from them. In the example above, the dean may wish to know: Which core competencies are sought by top employers where school graduates want to work? Why are they seeking those competencies? What is the best way to teach/instill those core competencies? What do other schools with similar specializations teach?” (The research questions will be covered in details in Step 2.5 below.)

A clearly articulated goal will serve you well down the road. Besides helping to articulate research objectives and questions, a clear goal will serve as a reference point when the you get stuck or face tradeoffs. Most importantly, your research goal and objectives need to be shared with everyone you interview or survey in order to frame the conversation optimally. Without proper fram-

¹⁴ Some recommend using SMART criteria to break down the goal into objectives – i.e. the objectives have to be Specific, Measurable, Achievable, Relevant, and Time-Bound.

ing, the conversation can go off track and waste your and others' precious time. Moreover, without clear goal, the entire research is likely to be watered down to general ideas around an issue.

If new relevant information emerges after the launch of the study, the researcher and the client may need to meet to revisit the goals and objectives in light of this new information or circumstances. For example, if major program changes happened at the school while the curriculum research project was underway, researchers may have to go back to the drawing board to redefine their research focus – i.e. the key problem, research goal, and objectives.

1.3. Clarify logistics. Openly discuss questions pertaining to timelines, information access, costs, and other logistical issues with the client as early as possible. You will have more success addressing these questions in the beginning when your client is most motivated and interested in the project. This discussion can prevent future tensions and unmet expectations, while also helping you to design a more realistic and feasible research project. Here are some sample questions you may ask your client at your initial meeting:

- How much time do you have for this project? What are the final and intermediary deadlines?
- What format will your deliverable follow? Will you submit a report or presentation or both? Will you build a website or another deliverable? Which format will best suit the project goal?
- Will you only report findings or also develop recommendations and/or an implementation plan? Are you also expected to help implement your recommendations?
- Has your client conducted prior research or undertaken other efforts on this subject? If yes, request all documents and reports from those projects. Similar questions are often recycled in organizational and policy contexts, and it does not hurt to ask this question. Prior reports by staffers or external consultants can save you a lot of time and effort if accessed at this stage.
- How much access will you have to relevant information? Can your client secure you access to archives? Can you speak to key stakeholders? People may wish to avoid talking about sensitive topics, so securing leadership support in advance can help to open doors that may otherwise remain shut.
- How will the client reimburse research-related costs?

Step 2: Scan Existing Information

Once you know which problem, goals, and objectives your research is expected to pursue, it is time for a preliminary review of the existing information to uncover *what is known about this case and what new information is needed*. Your intention at this step is to learn as much as possible about the research problem, goal, and objectives in a short period of time. This will be a necessary preparation for Step 3 were you develop a full-fledged plan to collect and analyze the data that is missing or not available in order to meet your research goal.

Step 2 is important for at least four reasons. It can help you to see the big picture and clarify the research goals and objectives. It can prevent you from spending time on the wrong problems or questions that may have already been answered elsewhere. It can also help you to collect es-

sential and low-cost information to start answering your key questions. Lastly, knowing which information is already available, and which information is needed or missing, will be necessary for Step 3 in which you will plan how to collect such missing information. Step 2 includes the following components:

2.1. Conduct a preliminary review of relevant information pertaining to the research problem/goal. Here are a few sources that you might start with.

Review existing reports and administrative documents. In the example discussed above, it may help to review the school's curriculum and course offerings for the last few years, as well as reports of previous committees, if available, on curriculum changes.

An academic literature review might include research into what competencies college graduates usually, or are expected to, develop, and what "core competencies" usually mean.

Researching the curricula of better-performing competitors and comparing them with the school's curriculum may also provide good ideas on where to focus.

Tip: Be selective and review only the most relevant and credible information - you will not have time to review everything. Also try to identify and examine similar studies/projects conducted by others (e.g. reports and curricula) in the same field or in that of others. Pay attention to what they found and how they designed their methodology. You can borrow good ideas for your own report and research design from such studies as well.

Talk to key informants - these are usually people who may know something about the subject or problem as part of their job or close engagement with the key users. For example, a former dean or members of a faculty committee who had worked on a curriculum overhaul may be good sources of information for the curriculum change project. Career advisors who deal with the problem every day would be another source of useful information at this stage.

Tip: Whenever possible, start with reviewing existing documents before talking to key informants. You will get more from such preliminary key informant interviews if you already know a thing or two about the subject. Key informants can refer you to other documents or people you may not have otherwise known or have had access to. Note that you may come back to these informants with more detailed questions at the later stages of the research so be respectful of their time and nurture such relationships.

Visit sites to observe the phenomena in question, if possible. Observing classroom instruction and contrasting this with the typical workday of the alums may provide more information than could be found in any document. If "a picture is worth a thousand words," observing the actual process may be worth even more.

2.2. Define key terms ([operationalize variables](#) if doing a quantitative study). The literature review and experts can help you clarify the key terms in your research. Using the example above, you may find that "core competencies" refer to knowledge, skills, experiences, and attitudes. This is an important step because a wrong definition or a failure to clearly define terms may lead to

inaccurate or incomplete results. Talk to your client but also consult the literature to define terms because the client may define key terms differently.

2.3. Articulate your **conceptual framework (CF)** or model specifying what might be happening with the phenomenon in question. CF is academics' way of saying a "guess." This step is **optional** and you can skip it, but I urge you to give it a try. This is a powerful tool for clarifying your thinking at this stage when you are trying to find your foothold. The CF - your preliminary guesses and ideas about the situation in question - is formed based on your prior knowledge and/or preliminary scan of the literature.

Most people routinely internalize others' (clients', experts', media's) assumptions about a situation without even realizing it. Even when you think you do not know enough about the situation, you usually have *some* ideas informing your inquiry, and you need to be explicit about them. Articulating CF helps you see those assumptions more clearly and subject them to a critical review using credible evidence.

Ideally, the CF should specify key factors/variables and how they are related. It can be conveyed in textual or visual/graphical form. Try using both forms. Visual models - such as a [Venn diagram](#) or a [process flowchart](#) - are better at showing relationships among key factors. Text is better at specifying key terms. The CF can be simple or elaborate.

Here is an example of a simple textual CF for the above-mentioned project on curriculum change:

Core competencies needed for school students = certain skills, knowledge, experiences, and attitudes most sought by employers.

If you select this CF, the rest of your research would focus on specifying those skills, knowledge, experiences, and attitudes.

You can also use prevalent general models of social relationships or someone else's theory to explain what is happening with the phenomenon you are researching. For example, using a supply-demand model, the CF for the same study might look like this:

Demand (i.e. core competencies top employers seek) - Supply (i.e. what the school curriculum offers) = the gap that the revised curriculum should address.

This CF forces you to systematically account for both sides of the equation and focus on the gap you have identified.

As you can see in the example above you can have more than one complementary CF. Try to focus on the key problem/need when developing CF so you do not get sidetracked by chasing secondary questions.

As you can see in the examples above, the CF is useful for a number of reasons. It can be a source of simple language/metaphors to communicate your key ideas to the client and research subjects. The CF can help you to clarify what you know and what you do not know about the subject in question. It allows you to identify biases and gaps in your logic, to subject them to critical review, and to correct them in the process of research. It can also help you to ask the right and balanced questions. Lastly, and most importantly, it can help you reframe the situation so that

you are not blindly following and reinforcing others' (including the client's) limited perspectives of CFs.

2.4. Revisit Step 1 – the key problem, goals, and objectives of research once you have completed steps 2.1-2.3. In light of the information you have found so far, you may find that your problem definition or goal and objectives statements need adjusting.

2.5. Articulate (or revisit) research questions. It helps to distinguish main and subordinate questions. The main question is an overarching umbrella question, whereas the sub-questions help you break that main question into specific details/parts (similar to how the goals are broken down into smaller objectives in Step 1).

Once you have articulated the goal and objectives of the research, developing questions becomes a rather straightforward task. All you need to do is convert the goal and objective statements into question statements making necessary adjustments and adding nuances as required. Here is how such a conversion might look like in the example we have been using so far:

Table 2. Example of Converting Research Goals and Objectives into Research Questions

Project Goal ►	Main Research Question
To develop recommendations for the Dean to better align the school's curriculum with core competencies essential for our alums' successful employment in top organizations they wish to work for.	How might the school improve its curriculum to better prepare successful professionals for jobs at top organizations they wish to work for?
Objectives ►	Subordinate Questions
To identify core competencies essential for successful careers in organizations that most students aspire to work for.	Which core competencies account for successful careers in those top organizations for entry-level professionals? Why?
To identify gaps between employers' needs and what the school offers as well as the reasons why this gap exists.	Which of these core competencies sought by top employers are covered by the school curriculum? How effective is the school in helping students to learn the competencies which are being offered? What does it do well? What does it not do so well? Which of these core competencies are missing in the school curriculum? Why?
To generate recommendations for school administration on (1) modified curriculum content and (2) pedagogy to further improve the school curriculum in order to prepare professionals for the needs of top organizations that the school graduates wish to work for.	How might the school change its curriculum content to better align it with the needs of top employers (content question)? How might the school help students to master these core competencies (process/pedagogy question)?

2.6. Defining the scope and boundaries of the research – i.e. specifying what you will not do in a given research project - is another important way to keep your research on track given that applied researchers usually work within limited time and resource constraints. This is different from “logistics” items detailed in Step 1.3 above. The logistical details are usually determined by the client, while the researcher can set practical boundaries for the research based on the goals, objective and constraints with which the researcher will work. Better understanding your client’s goals and reviewing the existing information can help you to more realistically set boundaries for the research. Here are a few dimensions where boundaries are commonly set.

Timeframes: Which date ranges - i.e. how far back or forward in time – will your research focus on? In the example of the curriculum research, one of your objectives might be to identify the skills sought by the school’s top employers. To identify such skills, going as far back as 20 years does not make sense given that the nature of jobs is rapidly changing. The skills listed in the job descriptions for the last year or two will probably be more relevant. With regards to future timelines, you might add a list of skills that are expected to be in high demand in the next 20 years.¹⁵

Geographic boundaries for this research would specify how far you would reach out to narrow down the list of potential employers. Would these all be in the same country or region? As mentioned above, understanding how your client will use your research will help you to set more relevant and realistic boundaries.

Level of analysis: Which level of social organization will you focus on – the individual (students, alumni), the organizational (competitor schools, top employers), or the societal level? Unlike basic research, applied research usually tends to focus on multiple levels.

Statistical significance: If using statistical methods, it also helps to understand which level of precision your client wants to obtain because higher precision usually requires a significantly larger sample size requiring more time, resources, and effort.

2.7. Share your Step 1 and 2 answers with your client, including the problem/opportunity, goal, objectives, definitions, key questions, logistics, as well as your CF and boundaries of the research. If possible, meet with the client in person to clarify any questions either side may have.

Step 3: Plan Your Research Tasks and Methods

Once you have well-defined research goals, objectives, and clear questions, you are ready to design your research methodology. Research methodology is a plan of your research tasks that specifies how you will answer your research questions. It includes which methods of sampling, data collection and analysis you will use to collect what kind of data from which sources.

Careful planning will save you a lot of time and effort down the road while also helping you to stay focused on your target. Step 3 may seem complicated, and it can be, if the previous steps are not well executed. Its success depends on how well Steps 1 and 2 are completed. In turn, the quality of your planning in Step 3 can make or break your research.

¹⁵ For example, the World Economic Forum’s [The Future of Jobs Report](#) contains such information.

Step 3 includes the following components – some of them are briefly elaborated upon in the next few pages, while the hyperlinks provide additional information. If possible, I also recommend complementing this step with a good research design textbook (see recommended books in appendix #1) that explains different research methods in detail.

1. Select the research [design](#) framework (experimental or descriptive).
2. Specify the information needed to answer each research question.
3. Identify data sources for each piece of information needed.
4. Specify how you will [sample](#) your data sources.
5. (specify [variables](#) and [measurements](#) if doing a quantitative study).
6. Select data collection methods.
7. Design data collection instruments/forms/questionnaires and procedures corresponding to each data collection method if you plan on using interviews, surveys, focus groups, or observations. Pilot your data collection instruments and revise them as needed.
8. Identify data analysis methods and tools for qualitative and/or [quantitative](#) data as relevant. Specify data collection, coding, and analysis procedures.
9. Plan how you will address validity and reliability issues.
10. Develop a schedule (e.g. using a [gant chart](#)) for carrying out the tasks listed in this step.
11. (If doing formal proposal add a budget and information about the research team's qualifications.).

You will see that each subsequent component builds on the previous one(s), so all of them are interdependent. For example, you cannot design your survey instrument before you identify what kind of information you need to collect using the surveys, and who will be ideal source of such information. The Methodology Matrix (table #2) below shows how they are related to each other.

Tip: Watch out for the misuse of key terms in describing these distinct elements of research. In the literature they are often mixed up, and can create a lot of confusion. For example, you will frequently see that “survey” is used as a research design framework and contrasted with an “experiment”, even though a survey is a data collection method, whereas an experiment is a research design (skeleton) that often encompasses a survey as one of its data collection methods.

This table can help you to plan and carry out your research systematically if you are using multiple sources of data and/or multiple data collection methods. Without a systematic approach, important questions, perspectives, or methods might be omitted from your research. *If the research uses only one source or method of data collection, you may not need this table.*

Table 3. Methodology Matrix

Objectives	Questions to answer (or activities needed) to meet your objectives	What information is needed to answer this question	Best source of this info	How will you <u>sample</u> from this source (sampling method)	How will you collect the data (i.e. data collection method)	How will you analyze the data (data analysis method(s))
Objective #1	Question #1					
	Question #2					
Objective #2	Question #3					

Once you have completed this table for each research question, you can develop instruments for each data collection method to collect the information you need. For example, if your data collection methods include interviews, your interview questions would be developed with the intention of gaining the information listed in column 3.

3.1. Select a Research Design. The research design is a frame – like a skeleton – that holds together other research components including methods of data collection, sampling, and analysis. A research design framework can be experimental or non-experimental/descriptive. Most actual research projects combine elements of one or more designs.

- **Experimental designs** are typically used when you are trying to test or establish *cause-effect relationships*. For example, if you are evaluating whether a program worked, you might evaluate the outputs/outcomes of the program by looking at how the group that benefitted from the program compares with a similar group that did not benefit from it. Varieties of experimental design include **true and quasi-experiments**. Experiments may be combined with one or more of the designs listed below.

Experimental designs are also well suited for answering “why,” “what if,” and “how” questions. Applied researchers often ask such questions trying to gauge whether a particular solution will work. As mentioned in Part I, experiments present an ideal design to test such solutions before adopting an idea to a whole population – whether it be a school, city, or country.

However, experiments can be prohibitively expensive and logistically challenging, especially considering that most decisions are made by political officials who operate within short timelines. Contrarily, with the complex changes they are in charge of enacting, such processes usually take a long time to materialize, interact with random factors, and it can be hard to isolate the effects of the intervention in question.

- **Non-experimental/descriptive** studies often answer “what is” or “what was” questions, and are *exploratory* in nature. Cross-sectional and longitudinal studies are two common varieties of this design.
- **Cross-sectional studies** provide a snapshot of the characteristics of a unit of the studied population in a given time period, e.g. corruption rates or wealth distribution of countries

in the year 2013. Cross-sectional descriptive design allows you to generalize to an entire population from a representative sample. Such studies are also well suited for establishing correlations.

- **Longitudinal studies** observe and study changes in the unit of analysis over time. Experiments can also include elements of cross-sectional and longitudinal studies.
- **Case studies**¹⁶ focus on an object or phenomenon (“case”), whether it is one individual, one organization or its sub-unit, or one decision, etc., in order to provide an in-depth and rich account of that object or phenomenon in its context. Hence, findings would not necessarily apply to other cases although they may generate insights that can be helpful for understanding other similar phenomena as well. A comparative case study focuses more than one objects/phenomena with the purpose of comparing their key characteristics. Due to their demanding nature, comparative case studies typically focus on no more than a dozen cases at a time.

Among these designs, non-experimental and case study projects are most commonly used in applied research because they are more efficient in terms of cost, time, and capacity. The curriculum overhaul study would be an example of a case study where we are delving deep into the needs and problems of one school to develop curriculum solutions, the findings of which are intended to help only that school.

3.2. Specify the information needed to answer each question

If you have articulated a clear set of questions and sub-questions, it will be easy to identify what kind of information you need. If you skip this step, you may leave out important questions during data collection. If you were doing a curriculum overhaul research, you would need information on who the top (i.e. most desirable) employers are and careers your students most wish to pursue upon graduation, what core competencies they require for entry level specialists, etc.

3.3. Identify data sources for each piece of information needed. Once you know what kind of information you need, it will be easier to discover where best to source that information from. Data sources can include people, documents, databases, journals, books, and actual sites (which you may observe).

Tip: Before deciding to collect data yourself, it may help to take a step back and think about who handles such data as part of their job. For example, if you need to find out which are the most desired employers/organizations your students wish to work for upon graduation, it may be wise to ask their career counselor who works with this information first hand. A quick talk with them or an email may save you days or months of tedious interviewing or survey time.

Similarly, if you need to identify core competencies sought by such organizations, one source of such data would be human resources divisions or managers in such organizations, but talking to them may also require a lot of time. An easier and cheaper way to collect these data would be to look at job postings from these organizations.

¹⁶ An excellent textbook on case studies is written by Yin, Robert as listed in Appendix #1.

3.4. Specify how you will **sample** your data sources

Sampling is a process of selecting a number of units from a defined population. We use sampling so we do not have to reach out to the entire population yet still get good quality data generalizable for this population without extra effort and expense. You do not need to survey all alumni, for example, in order to get a good idea of what they wished the school had offered. You can get pretty accurate information by randomly sampling alumni to get roughly the same data.

Sampling can be classified into [random/probability](#) or [non-random/nonprobability](#) methods with further variations within each category. Basic researchers usually rely on random sampling because they are primarily concerned with the generalizability of their findings. Applied researchers also use random sampling methods when needed. But they tend to rely more on non-random sampling methods because generalizability is not always of primary concern for them; rather, many are more concerned with collecting relevant, useful, and low-cost data.

Among nonprobability sampling methods, applied researchers often rely on **convenience sampling** – i.e. sampling populations at places where they can be easily reached. For example, in order to collect data from school alumni it may be easier to administer quick polls or interviews at annual alumni gathering events. Compared to emailing surveys, the likes of in-person data collection are likely to result in a higher response rate. Using convenience sampling can be a red flag for basic research concerned with the generalizability of findings. But in applied research it can be justified if it can get relevant and valid data without costing too much.

Another type of nonprobability sampling commonly used by applied researchers is **judgment sampling**. It relies on the researcher's judgment or a specific set of criteria to sample from data sources, such as in selecting key informants or case studies for deeper study. A variation of judgment sampling is used in the **positive deviants (PD)** approach for social change. PDs are people who perform unusually well in certain criteria compared to the rest of their community despite not having any advantages. This approach became popular after the work of researchers Jerry and Monique Sternin who studied children's nutrition problems among poor rice farmers in Vietnam where the vast majority of kids were malnourished. The researchers wanted to find out what worked in this specific context so they singled out those farmers whose kids were well-nourished. By studying those farmers' practices, the researchers found that they fed their kids three to four times a day smaller meals (compared to two big meals as practiced in other families), ensured they washed their hands before meals, and added greens and sources of protein they could find in the fields to their meals. Researchers then asked those farmers to teach other families about their practices. Such locally-based solutions can be more effective compared to best practices imported from elsewhere.

Snowball sampling is another useful nonprobability sampling method to have in applied researchers' toolbox, especially in situations when one is not very familiar with the subject or lacks access to right sources. Using this method can help the researcher reach people or sources they are not aware of. For example, to interview successful alumni working for the most desirable employers, if the school does not have a database of alumni positions and contacts, researchers can start with one person who fits this description and keep asking every new respondent for contacts of others who meet this criterion. If the new respondents know their friend has already spoken with the researcher, they will be more responsive to the interview request. The main downside of this sampling method is that it can confine you to one network of people, thereby limiting your perspective to the views of that network alone.

3.5. Select data collection methods

This step can be performed in conjunction with selecting the sampling method. The five most commonly used methods of data collection include [observation](#), [focus group](#), [interview](#), [survey](#), and a review of documents.¹⁷ The latter is sometimes referred to as “desk review” or “archival research.” As mentioned before, try to minimize the effort spent on collecting primary (first-hand data collected directly from respondents) information using interviews, surveys, observations and focus groups. If, for example, you can avoid conducting surveys of employers and instead use their job postings to learn about core competencies they seek in job applicants, do so by all means.

Each data collection method has its own strengths and limitations as summarized in the table below:

Table 4. Comparison of the Most Commonly Used Data Collection Methods¹⁸

Method	Use when	Advantages	Disadvantages
Document Review	Program documents or literature are available and can provide insight into the program or the evaluation	<ul style="list-style-type: none"> • Data already exist • Does not interrupt the program • Little or no burden on others • Can provide historical or comparison data • Introduces little bias 	<ul style="list-style-type: none"> • Time consuming • Data limited to what exists and is available • Data may be incomplete • Requires clearly defining the data you're seeking
Observation	You want to learn how the program actually operates—its processes and activities	<ul style="list-style-type: none"> • Allows you to learn about the program as it is occurring • Can reveal unanticipated information of value • Flexible in the course of collecting data 	<ul style="list-style-type: none"> • Time consuming • Having an observer can alter events • Difficult to observe multiple processes simultaneously • Can be difficult to interpret observed behaviors
Survey	You want information directly from a defined group of people to get a general idea of a situation, to generalize about a population, or to get a total count of a particular characteristic	<ul style="list-style-type: none"> • Many standardized instruments available • Can be anonymous • Allows a large sample • Standardized responses easy to analyze • Able to obtain a large amount of data quickly • Relatively low cost • Convenient for respondents 	<ul style="list-style-type: none"> • Sample may not be representative • May have low return rate • Worded can bias responses • Closed-ended or brief responses may not provide the “whole story” • Not suited for all people—e.g., those with low reading level
Interview	You want to understand impressions and experiences in more detail and be able to expand or clarify responses	<ul style="list-style-type: none"> • Often better response rate than surveys • Allows flexibility in questions/probes • Allows more in-depth information to be gathered 	<ul style="list-style-type: none"> • Time consuming • Requires skilled interviewer • Less anonymity for respondent • Qualitative data more difficult to analyze
Focus Group	You want to collect in-depth information from a group of people about their experiences and perceptions related to a specific issue.	<ul style="list-style-type: none"> • Collect multiple peoples' input in one session • Allows in-depth discussion • Group interaction can produce greater insight • Can be conducted in short time frame • Can be relatively inexpensive compared to interviews 	<ul style="list-style-type: none"> • Requires skilled facilitator • Limited number of questions can be asked • Group setting may inhibit or influence opinions • Data can be difficult to analyze • Not appropriate for all topics or populations

¹⁷ See also [here](#) for more details on each of these data collection methods.

¹⁸ Source: Ontario Mentoring Coalition. *Program Evaluation, Learning and Improvement*. Retrieved April 18, 2018 from <http://ontariomentoringcoalition.ca/mentoringyouthfacingbarriers/program-evaluation-learning-improvement/collecting-data-methods-tools/>

Choose the method that best fits the question and sources at hand rather than the one you are most comfortable with. Also try to select the methods that fit the social, economic, cultural and political context where you are conducting the research. For example, if the majority of the people you are surveying cannot read (e.g. homeless people), a self-administered survey will not be appropriate.

Among these five commonly used data collection methods, applied researchers almost always use some form of an **interview**. Interview is a versatile data collection method that also has advantages of observation. Three general types of interview are as follows.

- *Structured interviews* are a type of a survey conducted face-to-face where you ask everyone the same questions in the same order without any variation. This is the most expensive way to conduct a survey compared to using email, mail or phone. But the main advantage of administering surveys face-to-face is that it can help to increase the response rate especially if researchers are asking open-ended questions.
- *Semi-structured interviews* contain a mix of standard questions you ask all respondents combined with individualized probes to get more from the respondents. It is also commonly used in collecting data from key informants because in this type of interview you can invite them to clarify their answers or give examples.
- In an *unstructured or open-ended interview* you can ask about the general topic and/or broad set of questions, and let the respondent lead the conversation. This type of interview is recommended when you are not familiar with the topic and talking to someone more knowledgeable about a subject/question of your inquiry. It can be especially useful in Step 2 when you wish to explore different aspects of the situation or problem without confining your respondents to your questions.

Observation is another powerful data collection method in applied research that is frequently neglected. Use this method when you need information that cannot be obtained from documents or people – such as the understanding of complex processes or relationship dynamics.

Survey, focus groups, and document review are thoroughly covered in the hyperlinks above, which is why they are not elaborated here.

Combining data collection methods, piloting them, and/or modifying them in advance can help to limit their downsides. When combining two or more data collection methods, sequencing them is also very important. Here are a few variations to consider depending on what you want to get out of them:

- If you review secondary sources (existing documents) before collecting primary data, you will be able to develop more nuanced questions for your interviews, surveys and focus groups while also reducing the length of the data collection instruments by eliminating unnecessary questions. Your respondents will be more likely to answer, and provide good quality information, if you are asking fewer questions.
- On the other hand, if you have to conduct a large-scale survey, conducting several interviews or even focus groups with individuals from the target population in advance can help you to

figure out which questions make more sense and how best to word them to maximize the validity and reliability of your survey.

- If you wish to involve study participants/stakeholders in the data analysis and development of recommendations, once you have the survey data, you could feed that data to focus group members and ask them to interpret the data and to make these data actionable. Involving stakeholders in data analysis can make them more receptive to the study recommendations findings while also creating more awareness and interest in the subject.

Lastly, and most importantly, avoid putting people in situations where they may be harmed. For example, asking them questions about their health problems or corruption or exposing them without their consent would make them vulnerable if their identities are revealed. Many universities and organizations that routinely conduct research have internal review boards (IRBs) in charge of reviewing research proposals from their faculty, students, and staff, to eliminate such potential harm to research subjects. Regardless of whether your institution has an IRB or not, make it a default practice to keep their answers confidential or anonymous whenever possible. Only share their answers with their explicit consent.

3.6. Design data collection instruments/forms/questionnaires and procedures corresponding to each data collection method if you plan on using an [observation](#), [focus group](#), [interview](#), [survey](#). Here are more detailed and useful [tips for designing survey instruments](#). Some of these tips also apply to designing interview instruments. Designing focus group and observation protocols and plans is also necessary in order to help you get the most relevant and useful information without getting sidetracked. See detailed tips for designing data collection instruments/forms in the hyperlinks above.

Tips: In developing questions for surveys, interviews, focus groups, and observations, ask both about problems and about successes. Make an effort to identify strengths within the system. Every system has practices and strengths that can be leveraged for sustainable change. In contrast, purely problem driven research does not invite cooperation and enthusiasm essential for both data collection and implementation of the recommendations from the research.

You need to pilot all your data collection instruments and revise them as needed. Piloting them, ideally with the help of someone outside your field, will help you to clarify your questions and eliminate confusing words and phrases. Once you send out your survey, you will not be able to change it.

3.7. Identify data analysis methods and tools for **qualitative and/or quantitative data as relevant**. Specify data collection, coding, and analysis procedures. I will not go over the details of this step here – these skills are covered sufficiently in textbooks (see Appendix #1).

3.8. Plan how you will address validity and reliability threats, and take measures to preempt them as much as possible even before you start collecting and analyzing your data. Tips and examples on this point are provided in section 1.4 above.

3.9. Develop a schedule (e.g. using a [gantt chart](#)) for carrying out the tasks listed in this step so you can stay organized. The schedule can keep you on track to meet your deadline. It also helps to share your schedule with your client.¹⁹

Step 4: Collect, Analyze, and Interpret Data

Once you have a detailed methodology, it is time for more in depth and nuanced data. Step 4 is the most demanding part of research. Collecting and analyzing information will require extensive brain capacity. Unfortunately, towards the end of the research you will have more and more information but less and less mental capacity for processing it. That is why the first piece of advice in this step is to start writing your report draft before you even start collecting primary data. This tip can prevent information overload and free up more brain space for communicating with respondents and thinking.

4.1. Organize the information using a sample report outline to free your brain for heavy lifting

By now you will have accrued a significant amount of information just from Steps 1-3 even before you start collecting primary data. Most beginners delay writing their report until they have completed the collection of all information. But by then they will have too much information, which could hinder their thinking capacity. Organizing information starts early – long before you analyze the information you have collected. Otherwise you will have too much information to keep track of, which will overwhelm you and delay your work. Moreover, not all insights on different aspects of the research come in linear order. For example, you may get ideas for recommendations while doing a quick scan of existing information early on. I recommend promptly writing it down in the “recommendations” section of your draft before you forget or lose it in your pile of notes.

A typical report usually includes the following sections:

- Executive summary with key points on what you did and what you found.
- Introduction explaining what this research does and why.
- Background providing relevant and necessary information for the reader
- Findings and recommendations usually organized by questions and answering key questions
- Appendices (methodology, references, etc.)

The “Sample Table of Contents and a Checklist for Writing a Consultancy Reports” provided in appendix #3 contains guiding questions for each section of your report. Use this checklist to develop a working draft of your report. Every time information becomes available, make a habit of putting it in relevant sections of your working draft. This habit will help you to organize your information, avoid information overload, and identify and focus on the gaps that will become more evident as you progress. Working simultaneously on different sections of your deliverable using such an outline/draft can also help you to work more efficiently and produce a coherent draft without getting stuck on one section.

¹⁹ If you are preparing formal research proposals, besides items in Steps 1-3, you will also add an indicative budget (if applying for funding) and required team qualifications.

If you follow this advice, you will be pleasantly surprised that by Step 4 you have generated at least half of your report's content. Specifically, your notes from Step 1 will form the crux of your report's "Introduction" section. Step 2 will usually inform the "Background" section, although it may also generate some content for the "Findings" and "Recommendations" sections. Then, Step 3 – your research plan - will turn into the "Methodology" appendix.

4.2. Collect Data: Here are some valuable tips for data collection if you are using an [observation](#), [focus group](#), [interview](#), or [survey](#). Click [here](#) for more details on each of these data collection methods. Collecting data from these primary sources is usually referred to as "field research" or "field work."

The success of your field work depends on how diligent and thorough you have been in the previous steps. Nevertheless, treat your plans as a stepping stone for meeting your research goal, and adapt them as needed. Sometimes you will find that some of the methods you had planned are not workable in a specific situation. If this happens, find out why this is the case, and change your data collection method or questions if possible. Since step 4.2 is close to step 2.1 (preliminary data collection), much of the advice provided in that section applies here as well.

Once you start collecting more and more data, you will be asking yourself a number of questions such as: How do I make sense of the data? How do I draw practical recommendations for the client? Here are a few tips regarding both questions.

4.3. Analyze the data

By now you should have a working draft of your report. In the "Findings" section of your draft you will share *what* information you found and *why* this is useful for the client in light of the research goals and questions. In contrast, "Recommendations" section contains answers to *now what* questions, explaining how the client should act on your findings.

The data you have collected can be either qualitative or quantitative. Quantitative data refers to numerical data such as ages of respondents or the number of "yes" answers. Qualitative data includes text (e.g. job postings), stories (e.g. from alumni about their best achievements in their job), open-ended responses in surveys and interviews (e.g. suggestions for improving the school's curriculum), audio and video materials (e.g. recordings of a typical classroom instruction), and images (e.g. photos of the award recipients at an annual alumni gathering). Most applied research projects use qualitative data or a mix of qualitative and quantitative data.

Analyzing data means converting quantitative and qualitative data into information that has meaning and value for the client in light of the research questions and goals. The data analysis process can involve the following tasks:

1. *Identify patterns in your findings:* We usually do this by ordering findings. Ordering can be done in a number of ways. We could use a basic logic – for example by creating a list of top employers ordered in terms of their prestige. We could also use new conceptual framework or the one we had used in step 2. For example, we might order all findings from a job posting using the four components of core competencies – knowledge, skills, experiences and attitudes. The same could be done with alumni responses as well as with the school's database

of courses. It would be also helpful to count how frequently each component has been mentioned and to show these in percentages for each source.

2. *Compare patterns across different categories (or from different questions) to find interesting insights.* For example, we could show how patterns in job postings compare with patterns identified in the school's course offerings. This could help you to identify overlaps or discrepancies between what the school offers and what employers actually need (assuming their job postings accurately reflect their actual needs).
3. *Interpret your findings in light of your key questions* – i.e. answer “so what” questions delving into what these findings mean for your client in terms of the project goals/questions. For example, you may also find that few of the skills employers look for are currently offered by the school and show this in a compelling visual with the share of overlaps and discrepancies presented. Your interviews may contain explanations for such discrepancies. If not, you will probably need to go back for additional key informant interviews (assuming this question is within the scope of your research). These findings will, in turn, serve as a basis for your recommendations.

Tip: In collecting and analyzing information do not get carried away with only looking for problems and challenges. Keep an eye on what works and on the strengths within the system. Building on strengths is a more effective change strategy especially compared to the one that is purely problem focused.

Analyzing [qualitative](#) and [quantitative](#) data requires special skills (the links provided in this sentence have useful information for beginners) and usually a specialized software. If you are working with a relatively small amount of data you will be able to use the tips provided [here](#) for analyzing qualitative information, and Microsoft Excel for analyzing quantitative information. For large and complex qualitative and quantitative data, you may need relevant classes and obtain specialized software, or you may need to contract out such tasks to people with complex data analysis skills.

Tips:

Sometimes I see researchers simply posting their raw data in the “findings” section of the final report. Posting the basic summary or even transcripts of all interviews in the body of the report will not be particularly useful for your client. Instead, you need to *analyze it by converting data into meaningful information*. Information is meaningful if it answers the questions your research is asking and if it is relevant to the goals of your research. You will attach the raw data in the appendix.

Moreover, avoid organizing the “findings” section according to data collection methods or even according to the sequence of questions in your interview/survey.

You need to write the report from client's perspective, not your own. I recommend organizing the “findings” section of your report according to objectives/sub-questions from steps 1-2.

A common mistake many novice researchers make at this stage of research is to start asking new questions and collecting data that has no relationship to research questions or objectives. Similarly, the inferences are often based on assumptions rather than data.

Such mistakes are not surprising. Our brains have a limited capacity to process information. Beyond this capacity our cognitive abilities are impaired.

To preempt these problems, in addition to keeping a working draft of the report and entering every new piece of information in relevant sections of the report as mentioned above, I also recommend to keep the objectives and questions of the research in a visible place. It also helps to ask the following two questions: What does this data tell me about the questions I am asking? How can I answer those questions using the information I have collected? You also need to check whether your findings *and* analysis are sufficient to answer your question and/or meeting your goal and objectives stated in the introduction. If not, provide a clear justification for changing your original questions.

4.4. Draw practical recommendations for the client

The recommendations answer “*now what*” questions and specify how a client should act on the research findings. You will draw recommendations from your analysis of findings to answer your questions. It is helpful to draw appropriate recommendations from *each* key finding for your client, and then group the recommendations in logical order.

For each recommendation, clearly explain:

- i. What this recommendation involves in some detail: What should your client/organization do based on your research findings?
- ii. Why it is important: provide a rationale for your recommendation by referring to: (1) the original problem and its consequences that prompted the research project; and (2) challenges, opportunities, and strengths you have identified through this research. Use robust evidence and make your reasoning explicit. This information can motivate the client to act on your recommendations.
- iii. How might the recommendation be implemented (and what should the client be wary of). Such implementation details can help your client to get started and make it easier to act accordingly. Otherwise, recommendations may stay only on paper.

As mentioned before, whenever possible, build your recommendations on the strengths of the client. Try to pair findings about problems with findings on what works well. Harsh criticism alone usually fuels defensiveness and negative dynamics, while drawing out and building on what works creates a more favorable foundation for the recommended changes.

Step 5: Revise, Polish, and Share Your Work

The most common end-products of applied research are the presentation²⁰ and full report. As mentioned above, you need to clarify in advance what kind of end-product your client wants to receive so that you do not waste time and effort on the wrong deliverable.

²⁰ Sometimes presentation slides are all the client gets without an accompanying report. This is a common practice for some management consultancy companies such as McKinsey.

5.1. The **final presentation**²¹ of your work is ideally conducted before you turn your final report over to the client because this can be a good opportunity to obtain in-person feedback from the client on key findings and recommendations, and to adjust as needed. The client's feedback should be integrated or addressed before you submit your final report.

In terms of the presentation content, try to curb an urge to include *all* information you have collected even if you think all of it is important. You need to trim the content of your presentation as much as possible to leave only the information that the client absolutely needs. But at this stage of your work, you will be very close to the information and will have difficulty distinguishing essential information from nonessential. Get help from a neutral friend or colleague if you can. At the very least leave the work untouched for one day, and come back to trim it with a fresh perspective. Try to present for a maximum of 20 minutes if you want to keep your audience's attention. Most people have a rather short attention span and can retain a very limited amount of information. If they need more information, they will ask a question during the Q&A.

Here is a basic sample presentation outline I recommend:

1. **Opening:** Start your presentation with a powerful "hook" that can grab and hold your audience's attention. The hook can be anything, as long as it is directly related to the research goal/question and provides some hints as to the outcome(s) without giving away all the answers. The hook can be an interesting/surprising statistic, an intriguing image, a proverb, a physical object or anything else that can intrigue and interest your audience and keep its attention.
2. **Project focus:** Briefly and clearly convey your project goal, objectives and key questions.
3. **Methodology:** In one or two sentences, very briefly outline the sources of your information and how you collected it. This will be the shortest part of your presentation.
4. **Key findings and recommendations:** State what you recommend that the client should do based on your findings (sometimes, the findings and recommendations sections can be separated). Try to tie your recommendations to the questions you had stated in the project focus. Make sure to use compelling, clear, and easy-to-see visuals.
5. **Closure:** Make sure the presentation has a powerful finale – i.e. a resolution or an answer to the "hook" you started your presentation with.

5.2. Written report is the most common form of deliverable for the client. It is usually accompanied and preceded by a presentation. As mentioned above, the "Sample Table of Contents and a Checklist for Writing a Consultancy Reports" provided in appendix #3 can help you to organize your report.

Content wise, similar to when preparing the presentation, you will be tempted to include everything you did and found in the body of the report. Curb this urge. The body of the report needs to contain only the information your client wants and needs – i.e. the information provided has to be relevant to the key goals/questions of the research. Everything else can be provided in appendices. Note that the "methodology" section belongs in the appendix because it is a means of getting the information the client needs. Do not leave the methodology out of the appendix as the client may use it to assess the integrity of your data collection methods and processes.

²¹ I recommend Chris Anderson's book "TED Talks: The Official TED Guide to Public Speaking" (Mariner Books, 2017) for improving your presentation content and skills.

By now you realize that the applied research process is less like a direct path from a research question to an answer, and more like the work at an archaeological site. In applied research the treasure you are after is usually (1) a more objective and clearer view of the situation your client is in, (2) and practical and creative solutions which may be currently invisible. Applied research has a lot of unknowns, and yet requires some planning which will be adjusted as you move forward. It is therefore not a linear but a reiterative process – i.e. subsequent steps will often force you to revisit the previous steps. It requires connecting the dots and yet not all dots will be found in the limited time you have. You may dig out a lot of data trying to gain depth and clarity on the issue, but not all of that data will be equally useful or relevant. Not all of the data you collect will be self-evident, and much of it will require careful interpretation. Sometimes you will be frustrated with the lack of progress, and sometimes you will be overwhelmed with the vast amount of data to process. To find your treasure you will need the right tools, process, support, resilience and creativity.

This guide attempted to provide you with such tools, process, and guidance for working on applied research. I hope this guide will help you to design and deliver high-quality and rewarding work you will be proud of. I wish you the best of luck in your research journey.

Appendix #1

Recommended Sources which have Informed this Guide

Applied research textbooks mostly geared toward more advanced users:

1. Terry E. Hedrick, Leonard Bickman, and Debra J. Rog. *Applied Research Design: A Practical Guide*. Sage Publications, Newbury Park, 1993.
2. Leonard Bickman and Debra J. Rog. *The Sage Handbook of Applied Social Research Methods* (2nd ed.) Sage Publications. Thousand Oaks, 2009.
3. J. Fred Springer and Peter J. Haas. *Applied Policy Research: Concepts and Cases*. Routledge. 1998.

Research methods textbooks for basic/academic research:

1. Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams. *The Craft of Research*, Third Edition, (3rd ed.) University of Chicago Press, 2015
2. John W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.), **Sage Publications, 2014.**
3. Norman K. Denzin (Ed) and Yvonna S. Lincoln (Ed.). *The SAGE Handbook of Qualitative Research*. 4th ed. Sage Publications, 2011.
4. Kenneth Hoover and Todd Donovan. "The Elements of Social Scientific Thinking" (8th ed.). Wadsworth/Thompson Learning, Belmont, 2004.
5. Michael Quinn Patton. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. (4th ed.). Sage Publications. 2014.
6. William M.K. Trochim. *Research Methods Knowledge Base*, a free online research methods book: <http://www.socialresearchmethods.net/kb/contents.php> Copyright ©2006
7. Robert K. Yin. *Case Study Research: Design and Methods*. (6th ed.). SAGE Publications, 2017

Appendix #2

Applied Research Process Guidelines in Brief

Criteria for good applied research design:

1. **Validity** (construct, statistical, internal, and external): is your study free of biases, distortions, and unsupported assumptions and conclusions?
2. **Reliability**: if someone else did this study would they arrive at similar findings?
3. **Effectiveness**: does your study meet its stated goals?
4. **Efficiency**: does this study use as little time, resources, and effort as possible to meet your goals and objectives?
5. **Feasibility**: is your study feasible for the time, expertise, and resources within which you would operate?
6. **Relevance**: is the information collected relevant for answering your key questions?
7. **Sufficiency**: is the information collected sufficient to answer your key questions?

Step 1: Clarify Your Research Focus

- 1.1. Identify the problem/opportunity the research project will address
- 1.2. Define the goal(s) and objectives of the research project
- 1.3. Clarify logistics including by asking the following questions:
 1. How much time, resources, and access to information will you have for your project?
 2. What format will your deliverable follow: will you submit a report or a presentation or both? Will you build a website or another deliverable? Which format will best suit the project goal?
 3. Will you only report findings or will you also develop recommendations and/or an implementation plan?

Step 2: Scan Existing Information

- 2.1. Conduct preliminary review of relevant information, including consulting relevant documents, academic literature, and key informants/experts. If needed, also visit relevant sites to observe the phenomenon in question.
- 2.2. Define key terms.
- 2.3. Articulate your conceptual framework/model specifying what might be happening with the phenomenon in question.
- 2.4. Revisit Step 1's research focus elements including the problem, goals, and objectives, if needed.
- 2.5. Articulate (or revisit) research questions typically corresponding to the goal and objectives respectively.
- 2.6. Define the scope and boundaries of the research (time, space, group, and other boundaries) articulating what is within and beyond your research.
- 2.7. Run items #1-6 by your client one more time to make sure you are on the same page.

Step 3: Plan Your Research Tasks and Methods

- 3.1. Select the research design framework (experimental or descriptive).
- 3.2. Specify the information needed to answer each research question.
- 3.3. Identify data sources for each piece of information needed.
- 3.4. Specify how you will sample your data sources.
- 3.5. (specify variables and measurements if doing a quantitative study).
- 3.6. Select data collection methods.
- 3.7. Design data collection instruments/forms/questionnaires and procedures corresponding to each data collection method if you plan on using interviews, surveys, focus groups, or observations. Pilot your data collection instruments and revise them as needed.
- 3.8. Identify data analysis methods and tools for qualitative and/or quantitative data as relevant. Specify data collection, coding, and analysis procedures.
- 3.9. Plan how you will address validity and reliability issues.
- 3.10. Develop schedule (e.g. using a gantt chart) for carrying out the tasks listed in this step.
- 3.11. (If doing formal proposal add a budget and information about the research team's qualifications.)

Step 4: Collect, analyze, and interpret the data

- 4.1. Organize the information using a sample report outline in appendix #3 to free your brain for heavy lifting.
- 4.2. Collect data.
- 4.3. Analyze the data.
- 4.4. Draw practical recommendations for the client.

Step 5: Revise, Polish, and Share Your Work

- 5.1. Deliver final presentation.
- 5.2. Submit your written report.

Appendix #3

Sample Table of Contents and a Checklist for Writing Consultancy Reports

Throughout the document

- Did you use a reader-friendly format in organizing and formatting your report?
- Did you build key points/sentences into the titles, headings, and sub-headings throughout the document?
- Did you break down large chunks of text into logical sub-sections with clear sub-headings?
- Did you use simple and clear language?
- Did you use effective visuals to capture and communicate complex ideas?
- Did you strike a good balance between being brief and comprehensive?
- Did you focus on the client's information and actual needs?

Executive summary

- a. Did you include only the most important information (what you did, why and how, and key practical inferences/recommendations based on your findings)?
- b. Did you keep it succinct (i.e. using approximately one sentence for each key component or recommendation)?

Introduction

- a. Did you clearly state the goal and objectives (and/or questions) of your project?
- b. Did you explain the significance of your project?
- c. Did you place your project in broader policy/programmatic context (e.g. how will your project contribute to your client's broader initiative/programs/policies; what problem or opportunity it would address)?
- d. Did you state who the client is for your project and how the client intends to use/benefit from your research? Who else will benefit from your project?
- e. Did you move extensive secondary/background information to the background section?

Background

- a. Did you provide the basic information on what your audience has to know to understand your research question or objective (if relevant)?
- b. Did you avoid summarizing all your findings in this section, and only include the most relevant and important contextual information?

Findings and analysis (answer "what" and "so what" questions respectively)

- a. Did you clearly report your key findings? (i.e. what did you find in relation to your questions/goals)
 - Findings from the review of existing information and/or best practices (did you distinguish between a description and summary of others' work, and views from your own analysis?)

- Findings from interviews, surveys, focus groups, and observations.
- b. Did you logically analyze your findings (i.e. “so what” questions - what these findings mean for your client in terms of the project goals/questions):
 - Did you identify patterns?
 - Did you order your findings using logical categories?
 - Did you synthesize them by identifying how they are related?
 - Did you interpret your findings?
- c. Did you present/organize your findings according to key objectives/questions? Avoid simply reporting raw answers from your interviews/surveys. Instead, provide proper analysis and synthesis of your findings that address your questions/objectives.
- d. Does your synthesis of findings rely on, and flow from, the data/information you found?
- e. Are your findings and analysis sufficient to answer your question and/or to meet your goal and objectives stated in the introduction?

Conclusion, implications, and recommendations (answering “now what” question)

- a. Did you draw appropriate implications on each key finding for your client?
- b. In your recommendations, did you clearly explain:
 - i. What this recommendation means for this organization in some detail;
 - ii. Why each recommendation is important by referring to tasks, concerns and strengths you identified in the analysis section and using robust evidence and explicit criteria; and
 - iii. How the recommendation should be implemented (and what the client should be wary of).

(Note: findings, analysis and recommendations could all be combined in one section if you are providing a relevant recommendation after each finding)

References

- a. Did you provide a comprehensive list of primary and secondary sources used, including the names of the interviewees?
- b. Did you cite all your sources according to citation guidelines?
- c. Did you consistently apply one style (APA, MLA, Chicago, etc.) throughout the paper?

Appendices

Methodology or research design (most reports provide this section in an appendix): Did you clearly describe your data collection and analysis methods and include all your data collection instruments?

For your other appendices:

- d. Did you include titles of your appendices?
- e. Did you number your appendices?
- f. Did you indicate the sources of your appendices?

