The research project

PID_00260210

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Recommended minimum time required: 6 hours

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The review of this UOC Learning Resource has been coordinated by the lecturer: Julio Meneses (2019)

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Introduction

Unlike what happens in other social sciences, research in education, as will be seen in this text, is clearly conditioned, not only by the type of groups to which it will or should be aimed at (for example, students, teachers, managers of educational institutions, families, psycho-pedagogical teams, socio-educational agents and educational policy makers, among others), but also by people who can provide information on the educational reality under study.

Educational research, from an applied perspective such as the one we will address here, should constitute the basis of the educational intervention. The results of educational research should not only serve to support, justify or support the decisions made in the design and development of any intervention, but also provide you with valuable information on the success and adequacy of these interventions.

As an initial approach to research in education, and without being exhaustive, these materials offer, in the first place, some basic guidelines on the development of the research question and the formulation of the problem based on a critical analysis of the educational reality. Secondly, in order to facilitate the choice of research methodology, the basic characteristics of the most common research methods in the educational field are summarised (quantitative, qualitative and mixed). Finally, the last section of these materials is intended to help education professionals in planning research fieldwork, providing some notions about the main research techniques (i.e. the questionnaire, the interview, the discussion group and participant and non-participant observation), sampling typologies and some key operational logistical aspects that should be considered during the development of the fieldwork.

These materials are intended to help future education professionals to be able to develop research processes that provide them with the necessary evidence to base and evaluate their educational interventions in the formal, socio-community or labour fields.

Objectives

Specifically, the objectives that are intended to be achieved are:

1. To identify and formulate the research problem based on a critical evaluation of the educational reality and a critical review of the specific literature that deals with the field of educational interventions.

2. To select on an informed basis the most appropriate research methodology.

3. To design and manage fieldwork based on the methodology, research techniques and socio-educational agents involved.

1. Development of the research question

In this first section you will see some proposals very briefly that will help you to identify the problem and formulate the research question based on a stance and a critical analysis of the educational reality. Likewise, some basic ideas that help to formulate the research purpose are collated. Secondly, the importance of the bibliographic review as part of the research process is established and some clues that can help you both to systematise the documentary research and to elaborate the theoretical framework of your study are suggested.

1.1. Evaluation of the situation before the educational intervention

The socio-educational and school contexts (for example, social groups, families, peer groups, leisure spaces, educational communities, school organisations), from their normative and social frameworks as well as from the institutional ones, are very diverse, complex and highly dynamic realities that require education professionals not only master the theoretical and practical knowledge of their field, but also be able to recognise and analyse the different factors involved in educational events. In this way, rigorous interventions based on empirical evidence will be facilitated.

> The definition of the problem is the effective starting point of any research design. The need to research is linked to the need to respond to a specific problem. Defining the problem area is already part of the entire status of a scientific activity.

You must first pay attention to the source of the research problem. This problem can originate from the theory or can arise from a practical situation. The essence of the research problem lies in the fact of being able to answer the question "what is it about?"

All research begins with a question that must be resolved. This initial question and the delimitation of the research problem will condition the formulation of the purposes and objectives of the design, and vice versa, since the same conceptualisation and the same approach to the problem, from a given perspective and context, condition the interpretation. In the words of Martin Heidegger (2006, p. 28):

"Every question is a search. Every search is guided by what is sought. To ask is to search for, to find out the entity in which it refers to what it is and to it being that way".

It could be said that the research follows the dialogic formula of the question-answer binomial, in other words that each answer corresponds to each type of question. Each way of asking implies a what, which is our object of study, and forgets many others. As is well known, correctly formulating a question does not ensure a good response (this depends on the method used to find it), but it is the first step in achieving it.

Defining the problem is usually carried out by taking the following steps:

1) Identification and delimitation of the problem and the research area: this identification may be motivated by factors such as interest and personal experience, new social trends or literature review, among others.

2) Assessment of the problem: to assess the problem, the researcher can ask questions like these: is the problem real? Is it of interest? Is it relevant? Is it feasible? Is it current?

3) Formulation of the problem: as indicated by Kerlinger and Lee (2002), we can distinguish three criteria to correctly formulate the research problem:

a) The problem must express a relationship between two or more variables (although in qualitative studies this is not a requirement).

b) The problem must be formulated correctly, without ambiguities, by means of one or several questions that guide towards the answers that are sought in the research.

c) The approach to the problem must involve the possibility of performing an empirical test that confirms or disproves the hypotheses—the proposed solutions to the problem must be able to be verified in practice—or via data collection—whereby with the characteristic inductive approach of qualitative research, data collection and analysis can be used to find out the most relevant research problem.

Bryman (2012), on the other hand, proposes a much simpler process that leads directly to the research questions (see Figure 1):

Figure 1. Phases for the selection of the research question

```
┌─────────────────────────────────────────────┐
│      You identify the general research area   │
│   Use of mobile devices in educational centres│
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────┐
│           You select specific aspects         │
│             of the research area               │
│           Problematic aspects in the use       │
│     of mobile devices in educational centres   │
└─────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────────────────────┐
│          You formulate possible research questions            │
│    What are the problematic uses of mobile devices in schools?│
│  Do they depend on age, family characteristics or student     │
│                          performance?                          │
│  Do the centre's organizational factors condition the         │
│                       problematic uses?                        │
│  What is the concern of family members regarding problematic  │
│                             uses?                              │
│              What role do teachers play?                       │
│ Can the study be approached from non-psychopathological        │
│                         approaches?                            │
└─────────────────────────────────────────────────────────────┘
                       │
                       ▼
┌─────────────────────────────────────────────────────────────┐
│   You choose the research questions that you want to answer   │
│                                                               │
│  Do they depend on age, family characteristics or student     │
│                        performance?                            │
│                                                               │
│  Do the centre's organizational factors condition the         │
│                    problematic uses?                           │
└─────────────────────────────────────────────────────────────┘
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Source: from Bryman (2012)

The type of problem and the way to approach it differ slightly between quantitative and qualitative studies. Morse (1991) points out that the characteristics of a research problem from a qualitative perspective are the following:

- The concept is immature due to a clear lack of theory and previous research.

- The available theory is likely to be inaccurate, inappropriate, incorrect or biased.

- There is a need to explore and describe the phenomenon and develop a theory.

- The nature of the phenomenon does not fit with quantitative measures.

From the quantitative point of view, the problem is clearly aimed at defining and understanding the factors or variables that influence a given result (Creswell, 2018). Regarding the objectives of the research, they are closely related to the problem posed. The mission of the objectives is to indicate the direction, the purposes and the expectations of the process. Some authors (for example, Hernández *et al*., 2003; Sabariego and Bisquerra, 2004), among

whom we include ourselves, identify the objectives of the research as an aspect that must be considered in the definition phase of the problem. According to Sabariego and Bisquerra (2004, p. 95):

> "The objectives of the research are to indicate what is intended and what is sought in the research".

For Creswell (2018), formulating the purpose is the most important part of any research, since it determines why you want to carry out the study and what you intend to achieve.

Figure 2. Fundamental types of research depending on the objective
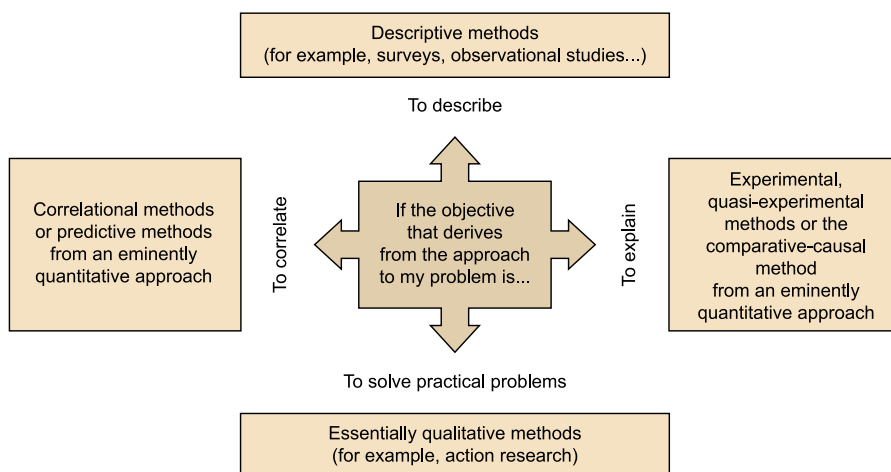
Source: Sabariego and Bisquerra, 2004, p. 199

The objectives of any research are formulated, formally, in the infinitive.

Example 1

> "To identify the factors that contribute to better skills acquisition during the period of curricular practices in the Master's Degree in Early Childhood Education and Master's in Primary Education Teaching". (Rodríguez, Meneses, and Armengol, 2017, p. 231)

> "[To examine] some of the factors that determine the re-entry of students (be it *stop-out* or transfer) in the particular case of the Catalan public university system". (Rodríguez *et al.*, 2016, p. 816)

> "To examine the gender differences in the stereotyped occupations that high school students associate with ICT. [This study] looks at the use that high school students make of male references in their descriptions of ICT jobs". (Sáinz, Meneses, Fàbregues, and López, 2016, p. 185)

We can classify the objectives in different taxonomies:

- objectives to explain
- objectives to describe
- correlation objectives
- objectives to understand
- objectives to "solve practical problems"

In Figure 2, Sabariego and Bisquerra (2004) relate the research objectives to the main types of research. Apart from what has already been commented on the importance, characteristics and generic formulation of the research objectives, in the following table you can see some features of the three possible methodological approaches.

Table 1. Formulation of objectives

Qualitative proposal	- They use words like purpose, objective or intention, among others, to emphasise their importance in the understanding and development of the study. - They focus on a single phenomenon, concept or idea. - They use verbs in the infinitive (for example, "to develop", "to describe", "to understand", "to examine", "to discover", etc.). - In the case of emerging designs, neutral words and phrases are used, which are neither directive nor prescriptive. So, for example, you would say "to explore online training models" and not "to explore successful models of online training". - They provide an initial definition (not a determinant) of the phenomenon that is the object of study. - They suggest the research strategy used. - They mention the study participants. - They comment on the context in which the research will be developed.

Source: Creswell (2018)

Quantitative proposal	• They use words like "purpose", "objective" or "intention", among others, to highlight the main objective of the study.
	• They identify the theoretical or conceptual framework that will be "proven" in the study.
	• They identify the variables involved in the study (dependent, independent, etc.).
	• They include expressions that relate dependent and independent variables (for example, "the relationship between", "in comparison with").
	• They order the presentation of variables in the following order: independent variable → intervening variable → dependent variable → control variable.
	• They establish the type of research strategy used in the study.
	• They refer to those involved, the units of analysis and the context in which the study is conducted.
	• They include a general definition of the key variables in the study.
Mixed methodological proposal	• They begin, as in the previous cases, by identifying keywords such as "purpose", "objective" or "intention".
	• They indicate the type of mixed methodology used (sequential, concurrent or transformational).
	• They justify the use of mixed methodology.
	• They take into account the characteristics of the formulation of qualitative objectives (they focus on a single phenomenon, they use verbs in the infinitive and a neutral language, they consider the research strategy and identify those involved and the context).
	• They include the characteristics of the formulation of quantitative objectives (they identify the basic theory and the variables involved, they establish the relationship between variables or the comparison of groups, they order the explanation of variables, they comment on the research strategy used and they specify the participants and the context).
	• They take into account additional information on the specific options for data collection, both quantitative and qualitative.

Source: Creswell (2018)

1.2. Basis of the educational intervention

Once the research problem has been defined, as explained in the previous point, it is necessary to start the bibliographic and documentary review process that will help you to outline not only the problem and the objectives, but also the subsequent construction of tools (in the event of following a deductive approach), as well as discussion of the results.

> The bibliographic and documentary review constitutes one of the main pillars on which the educational research is sustained. Creating the theoretical framework from the documentary review is essential, since it fundamentally allows you to define your object of study with more precision and verify the current state of play. This avoids reinventing the wheel, i.e. resolving a problem that has already been solved previously by other researchers. In the same way, this literature review allows the researcher to establish the importance of the study he or she seeks to develop and, later, to compare his or her results with those of other similar studies.
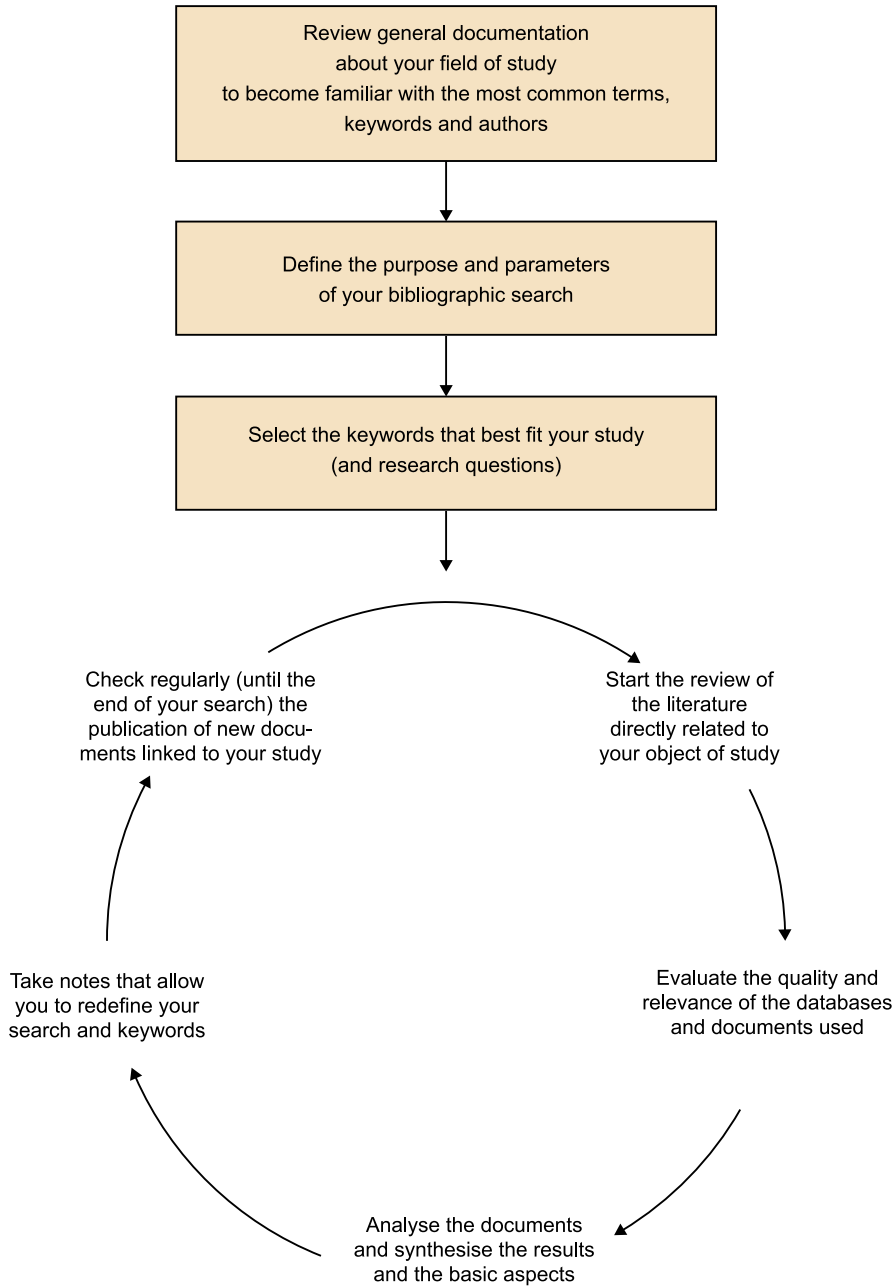
Therefore, as Bryman (2012) argues, the review of the literature should serve to answer or solve questions such as: what is already known about your object of study? What concepts and theories are relevant in this field? What are the research methods and strategies that are most used in this field? Is there any significant controversy? Are there inconsistent results in similar studies? Are there any unanswered research questions?

Due to its characteristics, the documentary review is certainly the phase of the educational research process that has been influenced before by the impact of new information and communication technologies. Thus, given the large amount of information currently available, any researcher who is valued must know the main documentary sources and master the mechanisms of access, search, collection and organisation of the aforementioned documentation.

Obviously, before starting the literature review, you must have a rough idea of the subject on which you want to work. There are several strategies that can help you in this initial definition of the topic of study; one is to formulate a tentative title (*working title*) or a short question about the subject of study and some key words that you will use in the literature search.

The process of the literature review can be summarised in the eight stages shown in Figure 3 and, ultimately, involve four major phases: establish the parameters of your review, execute the review, synthesise the information collected and determine mechanisms for monitoring the literature.

Figure 3. Phases of the documentary review

```
┌─────────────────────────────────────────┐
│        Review general documentation       │
│           about your field of study        │
│  to become familiar with the most common terms, │
│            keywords and authors             │
└─────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────┐
│        Define the purpose and parameters    │
│          of your bibliographic search       │
└─────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────┐
│      Select the keywords that best fit your study │
│            (and research questions)         │
└─────────────────────────────────────────┘
```

Check regularly (until the end of your search) the publication of new documents linked to your study

Start the review of the literature directly related to your object of study

Take notes that allow you to redefine your search and keywords

Evaluate the quality and relevance of the databases and documents used

Analyse the documents and synthesise the results and the basic aspects

Although operationally the document review process can be developed independently of the methodological approach used, the same does not occur with its use, meaning and presentation. From a quantitative approach, an extensive literature review is usually presented (at the beginning, to present the problem, and at the end, to compare and discuss results) to describe the object of study and provide a framework for the research questions and the hypothesis. On the other hand, from a qualitative perspective, the review of the literature adopts a more comprehensive and much less prescriptive function. The diversity of qualitative proposals means that uses of the literature review are also varied. In the following table we provide an approach to some of the existing possibilities.

Table 2. Use of literature in qualitative studies

Use of literature	Criteria	Examples of possible studies
The literature is used to "frame" the problem in the introduction of the study.	There must be literature available.	It can be used in any kind of qualitative research.
The literature is presented in a differentiated section, such as "literature review".	It should be the most acceptable proposal for an audience familiar with the documentary reviews from a more traditional and positivist perspective.	This option is used in studies that have a powerful theoretical framework at the beginning of the study, such as ethnographies or critical theory studies.
The literature is presented at the end of the study and becomes the basis for making comparisons and contrasting the results of the qualitative study.	This proposal is the most appropriate for "inductive" processes of qualitative research.	It is susceptible to use in any kind of qualitative design, but is more popular in *grounded theory*, since the same theory is contrasted with others identified in the bibliographic and documentary review.

Source: Creswell (2018)

We differentiate between primary documentation sources (complete and original texts) and secondary documentation sources (select, reference or summarise the primary information). Normally, we access primary documentation sources through secondary sources.

As indicated, it is not practical for a researcher to use an excessive number of sources of information, but rather to be able to select the ones that best respond to the needs and interests of the research.

1.2.1. Organisation and construction of the theoretical framework

Organising and constructing a theoretical framework is, without a doubt, one of the most complex tasks in the preparation of any research project, regardless of its extent.

The first dilemma you will have to face is the structure of the theoretical framework. Although the key words used during the literature search, and even a first reading of some of the sources, can offer you clues as to which major issues you can address, the challenge is always to find an argument or thread that not only justifies the presence of the selected topics, but also accompany the reader, as if it were a good novel.

A good strategy to find this justification and this thread is by constructing a conceptual map where the main themes of your theoretical framework and the relationship established between them are explained (see Figure 4).

Sources of documentation

Some of the most common documentation sources are ERIC (https://eric.ed.gov), Google Scholar (https://scholar.google.es), REDINED (http://redined.mecd.gob.es) or TDX (http://www.tesisenred.net), among others.

Organise citations and the bibliography

With regard to organising the documents selected for the elaboration of your theoretical framework, new technologies offer us a multitude of tools that significantly facilitate the task. Three common tools that allow you to organise citations and the bibliography are Refworks (https://www.refworks.com), Mendeley (https://www.mendeley.com) or Papers (http://papersapp.com).

Figure 4. Content and structure of the theoretical framework
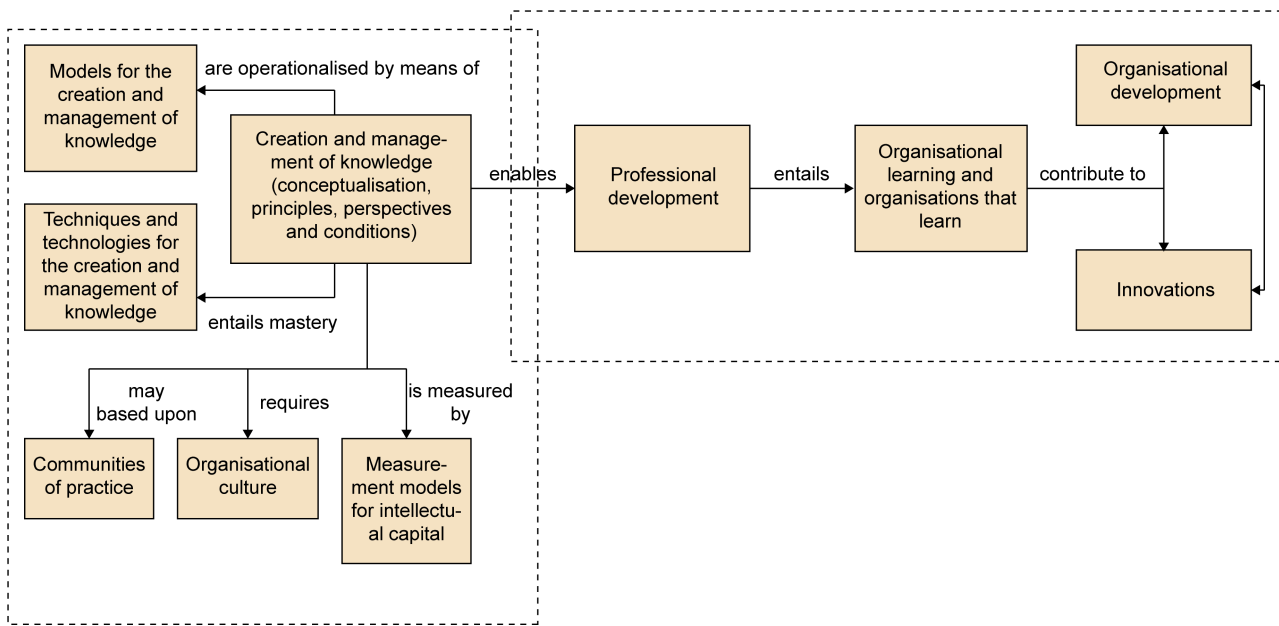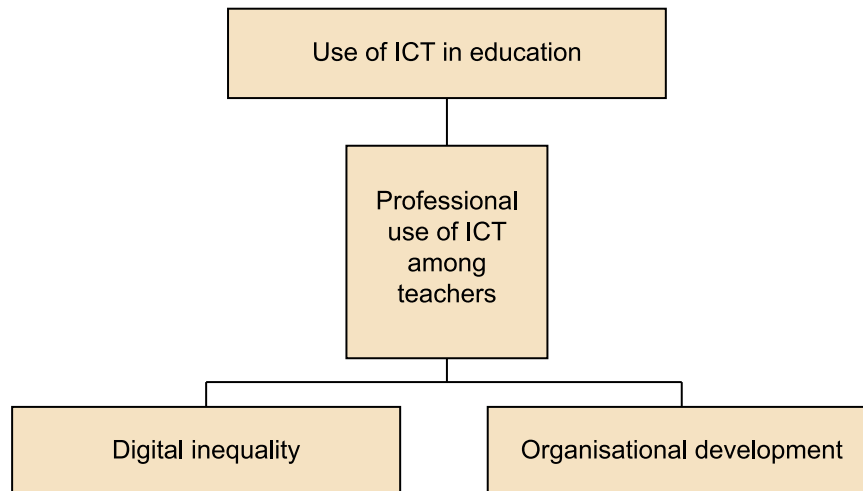

Source: Rodríguez-Gómez (2015, p. 20)

This argument can follow a narrative structure that you might consider causal, in which each element or theme presented takes you to the next one (see Figure 5), or might follow a less causal structure, in which the different themes presented will build the framework reference from which the researcher will analyse their data (see Figure 6).

Figure 5. Example of a causal structure
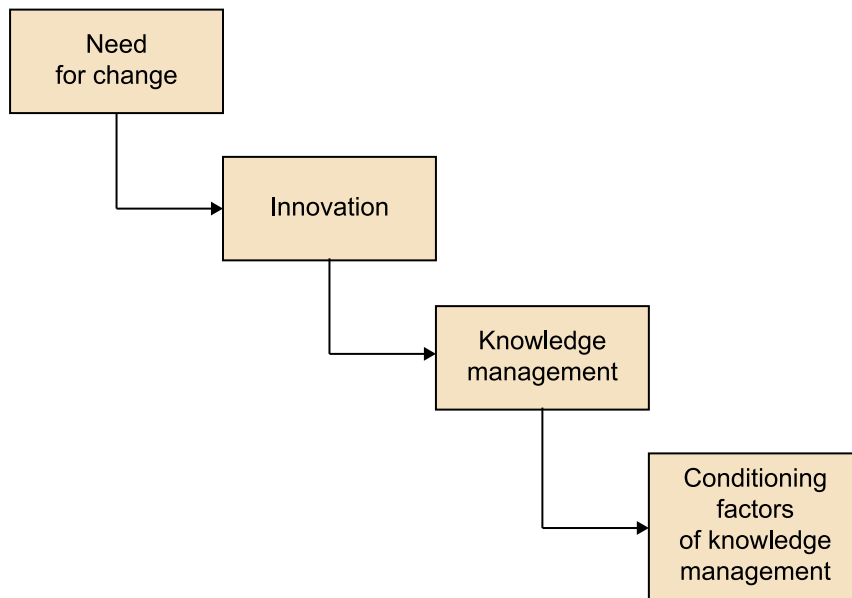
Source: Rodríguez-Gómez, D. and Gairín, J. (2015). Unravelling knowledge creation and management in educational organisations: barriers and enablers. *Knowledge management research & practice, 13*(2), 149-159

Figure 6. Example of a nuclear structure

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┌─────────────────────────────┐
│    Use of ICT in education   │
└─────────────────────────────┘
              │
      ┌───────────────┐
      │  Professional │
      │  use of ICT   │
      │    among      │
      │   teachers    │
      └───────────────┘
        │         │
┌───────────────┐ ┌──────────────────────────┐
│ Digital       │ │ Organisational development│
│ inequality    │ │                           │
└───────────────┘ └──────────────────────────┘
```

Source: Meneses, J., Fàbregues, S., Rodríguez-Gómez, D., and Ion, G. (2012). Internet in teachers' professional practice outside the classroom: Examining supportive and management uses in primary and secondary schools *Computers & education, 59* (3), 915-924.

Once you have clear the structure of your theoretical framework, the next step is to start writing it. You must always be open, if necessary, to small modifications to this structure.

Although there are a multitude of manuals that offer basic guidelines for the writing of a theoretical framework, here are some key elements summarised:

- Become familiar with scientific and professional language. To achieve this, the only alternative is to read scientific texts (for example, articles, research reports or doctoral theses).

- Choose the verb tense and the person you will use to write. If you review scientific texts you will see that the present indicative and the first person of the plural are usually used (for example, "In this research we have proposed to address one of the most important problems that affect the reception centres for minors...") or the impersonal (for example, "In this research one of the most important problems that affect the reception centres for minors has been addressed..."). Sometimes you can also find texts that use the past tense (for example, "In this research we set out to address one of the most important issues affecting childcare centres..."). In any case, whatever the verb tense and the person, you must be consistent with its use throughout the text.

- It is advisable to draw up a list of synonyms of the key concepts or topics of the study so as not to repeat yourself in excess. In any case, you must bear in mind that it is a scientific text and not a novel.

- Univocality and clarity of ideas are key aspects. You need to formulate short and simple sentences that respect the basic syntactic structure (that

Drafting of the theoretical framework

With regard to the writing of the theoretical framework, you can consult chapter 6 of O'Leary, Z. (2014). *The essential guide to doing your research project.* London: Sage Publications.

is, subject, verb and predicate) and avoid common formulas of other types of texts, such as elliptical subjects or subordinate sentences.

- Always try to accompany all statements with data or references that justify them. From time to time it may be advisable to provide a textual citation, so it may be an appropriate strategy to have a few compiled.

- You have to be prepared to write and rewrite the text more than once. Accordingly, it is highly recommended to save different versions of the text and all the notes taken about the decisions you are making regarding the structure and content of the text.

Finally, you must bear in mind that, although having a large part of the documentation in electronic format may tempt you to use the "cut and paste" function of your word processor from time to time, this is **plagiarism**, so do not do it. If you consider that a piece of text by another author adequately illustrates your ideas, you should reference it appropriately. In any case, remember that, as has been suggested along these lines, the theoretical framework should have a clear story line, and that happens by not abusing the use of textual citations that break the narrative.

1.3. Design of the educational intervention

Nowadays nobody would doubt that everything that is performed in medicine, whether highly complex and new procedures like everything carried out with stem cells or more usual interventions, such as influenza vaccination campaigns, should be based on the results of medical research. Nor can you imagine that the designs for cars, trains or aeroplanes are developed outside the studies developed from physics or research on new alloys. On the other hand, when we analyse the field of education, we see that this tradition of grounding and evaluating our decisions and actions in research, based on the evidence from studies, is far from being a reality. Despite national and international efforts to bring research closer to educational practice (an example is the creation of the Centre for Educational Research and Innovation of the Organisation for Economic Cooperation and Development) there is a clear separation between research in education and educational practice.

As indicated by Hempenstall (2006, p. 83):

> "[...] Historically, education has adopted new ideas periodically, but it has done so without a large-scale evaluation and without the scientific research necessary to distinguish effective from ineffective reforms. This lack of a scientific perspective has prevented the systematic improvement of the educational system and, for a long time, growth in the teaching profession".

The complexity, the uncertainty, the dynamism of the professional practice, as well as the changing demands towards educational centres and the different socio-educational and training fields (for example, incorporation of mobile technologies in schools, informal learning in the workplace, generation

Copying and academic plagiarism

If you have doubts about the implications of copying and academic plagiarism or how to identify if you are engaging in such unethical practices, you should read: Cooper, H. (2016). *Principles of good writing: avoiding plagiarism*. Retrieved from https://bit.ly/2NWPVkk.

Organisation for Economic Cooperation and Development

Check out their website at http://www.oecd.org/edu/ceri/.

The use of evidence in education
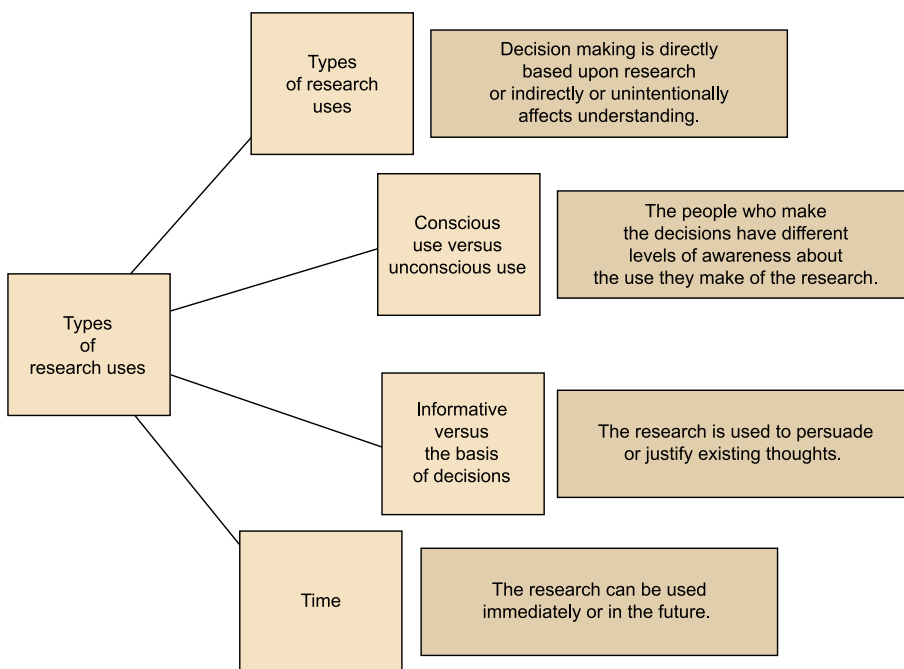
Read through the following two contributions:

Centre for Educational Research and Innovation. (2007). *Evidence in education: linking research and policy*. Paris: Organisation for Economic Cooperation and Development.

Brown, C. (2015). *Leading the use of Research & Evidence in Schools*. London: IOE Press.

of knowledge management systems, new spaces and school times, etc.) advise to base our decisions and, therefore, our interventions, on empirical evidence that researchers, and even the practical professionals themselves, are contributing. This reconciliation between educational practice and educational research requires close cooperation between all stakeholders involved, in addition to the development of applied educational research based on the needs expressed by hands-on professionals, and the training of these hands-on professionals in the use and generation of evidence.

As highlighted from the EIPEE network, the evidence can be used in very different ways during educational practice (see Figure 7).

Evidence Informed Policy and Practice in Education in Europe (EIPEE)

You can check their web page here: http://www.eippee.eu.

Figure 7. Research uses in educational practice

Source: http://www.eippee.eu/cms/Default.aspx?tabid=3206

Finally, so that the evidence can be used during educational practice, it should not only be free and easy to access, but it should also meet basic standards of quality, clarity, relevance and timeliness.

Example 2

Within the framework of growth initiatives to promote more flexible and free access to research results and innovation proposals financed with public funds, the Erasmus + program of the European Union publishes the results of financed projects to all citizens: http://ec.europa.eu/programmes/erasmus-plus/projects.

In this exercise of trying to base your decisions on evidence, you must be very aware that the approach you make to the educational reality, both for its analysis and for the design of intervention proposals, is never aseptic. You must bear in mind the different frameworks and models that, in each historic moment, mark the trends in your context. Although this subject does not

address the different models and theoretical positions of each professional area, you must remember, as already anticipated in the introduction, the main characteristics of the three major areas of educational intervention:

1) Educational intervention for the improvement of educational practice: own field of those professionals who carry out their work in diagnosis, advice and guidance in the formal contexts of any educational stage.

2) Educational intervention in the socio-community sphere: it includes the design, development and evaluation of programmes, as well as guidance, advice and supervision of teams in the area of non-formal education (for example, day centres, prisons, families at social risk or digital literacy projects, among others).

3) Educational intervention in the workplace: focused on the field of organisations, professionals specialised in this field analyse and intervene (for example, guidance and employment, professional development) from a socio-labour perspective to try to make organisations more effective, more efficient and more human work spaces.

2. Choice of research methodology

The choice of research methodology is a key and essential element of any research process. Trying to give a general overview of the whole range of research methodologies in education in a few pages is a highly complex task. However, this is precisely the objective of this third section: to offer an introductory review of the most common research methods (quantitative, qualitative and mixed) in the educational field. Therefore, once we have given an initial general introduction with cross-cutting aspects of research in education, we will go into more detail in the review of quantitative research methods, focusing especially on experimental, survey and observational methodologies. Second, we will approach some methodologies of qualitative research in social sciences, such as narrative research, phenomenology, grounded theory, ethnography, case studies, action research and design-based research. Finally, we will provide some essential notes on mixed methods, offering some brush strokes on sequential, concurrent and transformative procedures.

2.1. Introduction to research methods

The complexity of the educational universe reminds us of the inherent limitations and potential of the different ways of approaching the educational phenomenon. There is no single valid method *per se*. Also, as suggested at the beginning of this module, the necessary practical implications of educational research greatly influence the design of research.

The choice of the method by which we approach "reality" determines the conceptualisation, the questions formulated, the theoretical-practical approaches put in place and, therefore, the conclusions reached in the aforementioned approach. The choice of method is, therefore, a fundamental issue for all scientific activity, although it often responds to arbitrary and ideological criteria. However, you must never forget that the research methodology must always serve the objectives of your study.

> The first questions that arise when faced with the diversity of research methods are not banal: which method should you use to develop your research? Which methodology is most appropriate and why? The essence of the question regarding the method lies not in the nature of the methodologies (quantitative/qualitative) nor in the objects of study (natural/social), as has often been said, but in the objectives and purposes of the research.

Therefore, you should not seek the answer to these questions beyond the research framework, since the objectives set are those that should be consistent with the methodology of the research process.

Example 3

If the objective of my study is "to understand the meanings and practices with addictive behaviours towards technologies", it is likely that I will have to resort to an ethnographic study that will allow me to approach the biographical and narrative trajectories of the young people in question.

On the other hand, if the objective of my study were "to know the ages when the abusive use of social networks starts", it would surely be more appropriate to design research *ex post facto*.
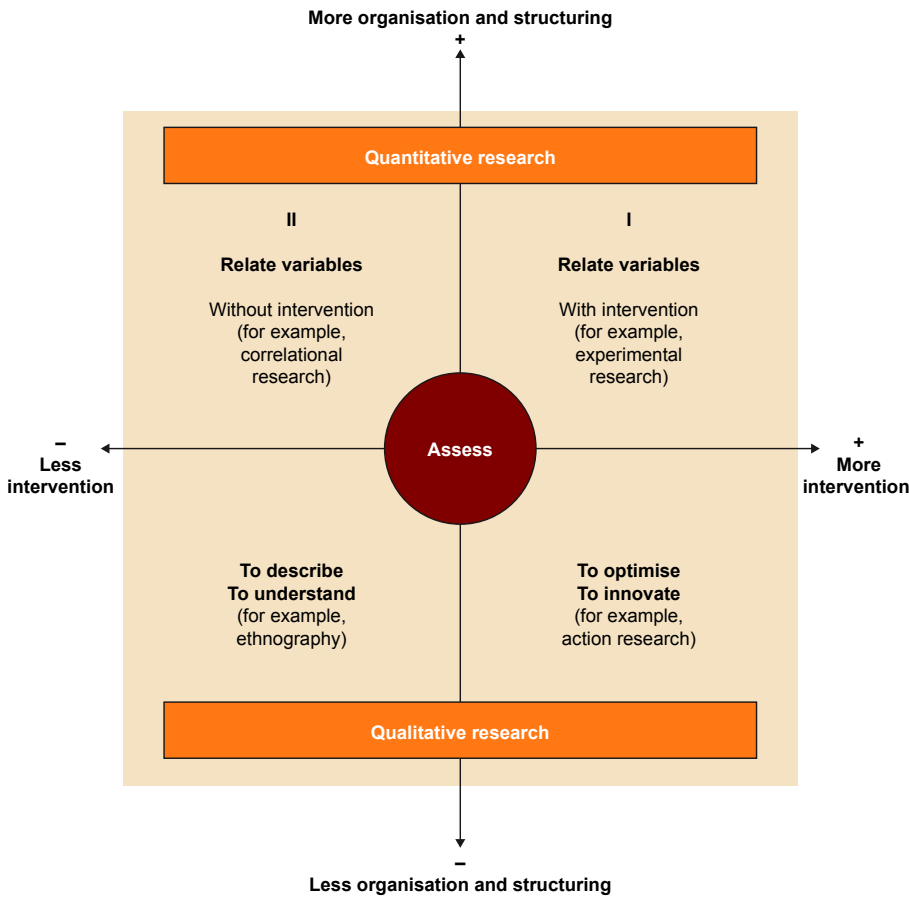
Therefore, beyond falling into ideological positions as unconditional as they are sterile, the researcher must rigorously investigate what the most relevant research method is for each situation, and very often will be forced to combine the mentioned methodologies.

Often, the dilemma of quantitative research and qualitative research has been posed in terms of an unnecessary and unproductive comparison. The debate on quantitative and qualitative research methodologies has been a constant in the world of social sciences and education. This debate has its roots in the scientific, epistemological and philosophical traditions of Western thought. Beyond starting a discourse on the history of science, it should be noted that this methodological pluralism, rather than confusing the researcher, must provide a methodological diversity that allows them to expand, optimise and perfect the research activity.

In the field of research in social sciences and, specifically, in the field of education, there is a wide range of types of research that respond to very varied criteria, often arbitrary. In the following lines, without intending to make an exhaustive review of all existing classifications or methodological typologies, you are given those that may be useful in your research work.

As indicated by Moya, Rincón, Valcárcel, Escudero, and Benito (2005) the main modalities of research in education can be described and analysed by means of some classification criteria, such as, among others, the organisation and structuring of research (more conceptualisation and operationalisation of the variables), the degree of intervention or involvement (by the researcher) and the nature of the objectives (contrast, describe, assess, improve) (see Figure 8).

Figure 8. Research classification criteria

More organisation and structuring
+

Quantitative research

II

Relate variables

Without intervention
(for example,
correlational
research)

I

Relate variables

With intervention
(for example,
experimental
research)

−
**Less
intervention**

Assess

+
**More
intervention**

**To describe
To understand**
(for example,
ethnography)

**To optimise
To innovate**
(for example,
action research)

Qualitative research

−
Less organisation and structuring

Source: Moya *et al.* (2005, p. 127)

The location of the various research modalities in one of the quadrants of
Figure 8 is not exclusive, but rather has a certain flexibility. Thus, for example,
evaluative research might be located in any of the four quadrants presented.

In order to guide the reader in this methodological sea, we present a summary
table (see Table 3) in which we distinguish some of the methodological options
that are developed throughout the text.

Table 3. Methodological perspectives and type of research

Methodologies	Type of research
Empirical-analytical (quantitative)	Experimental Quasi-experimental *Ex post facto*
Constructivist (qualitative)	Phenomenological Symbolic interactionism Ethnography Grounded theory Ethnomethodology Phenomenography Case study Biographical narrative Hermeneutics Historical

Source: Manion (2002); Rincón *et al.* (1995)

Methodologies	Type of research
Socio-critical (qualitative)	Research action Participatory Collaborative Feminist Evaluative Research based on the design

Source: Manion (2002); Rincón *et al.* (1995)

However, a decision prior to the methodological choice must focus on the type of data you want, or can be used in your studies: will you generate your own data or will you resort to secondary data? It is common in the educational field to resort to the use of secondary data (usually generated by a public authority, NGO or foundation), due to lack of time or resources.

It is likely that the data you will find is not structured or collated in the way you would like, but it will be your task to try to adapt it. You must move away from the idea that the only valid data is that which you collate. In fact, it is operationally impossible or very complicated for a single researcher or a small institution to collect data from samples as broad as some of the bodies suggested above.

If you choose to collect the data yourself, regardless of your methodological option, you must consider a series of standards that guarantee the quality, authenticity and validity of the research process. According to Lincoln and Guba (1985), there are four regulatory standards (see Table 4): veracity, applicability, consistency and neutrality:

> **Use of data**
>
> You can find numerous studies that use the data generated by the Organisation for Economic Cooperation and Development (OECD) within the framework of various programmes and initiatives, such as PISA (http://www.oecd.org/pisa/aboutpisa), *Education at a Glance* (http://www.oecd.org/edu/education-at-a-glance-19991487.htm) or TALIS (http://www.oecd.org/edu/school/talis.htm).
> The Spanish Ministry of Education (http://www.mecd.gob.es/servicios-al-ciudadano-mecd/estadisticas/educacion.html) or the statistics service of the Government of Catalonia (https://www.idescat.cat/tema/educa) also have data open to analysis by researchers.

Table 4. Quality standards for research methodologies

Standards	Empirical-analytical/quantitative methodology	Constructivist/qualitative methodology
Truth value. Isomorphism that exists between the collected data and reality.	Internal validity	Credibility
Applicability. Possibility of applying findings to other contexts.	External validity	Transferability
Consistency. Degree to which the results would be repeated if the research were replicated again.	Reliability	Dependability
Neutrality. Security of knowing that the results are not biased.	Objectivity	Confirmability

Source: Rincón *et al.* (1995, p. 216)

- Truth value. It refers to the rigour of the results and the procedures used. It corresponds to the criteria of internal validity and credibility of empirical-analytical and socio-critical methodologies, respectively.

- Applicability criteria. It seeks to ensure the relevance and generalisation of research results in other contexts. Since an empirical-analytical methodol-

ogy would correspond with external validity and a socio-critical method-
ology would correspond with the criteria for transferability.

- Consistency criteria. It refers to the stability of the results, i.e. the extent
  to which the results will be repeated if you re-perform the study in a sim-
  ilar context. Stability criteria is called reliability from the empirical-ana-
  lytical perspective, and is conceived as dependency from the socio-critical
  approach.

- Neutrality criteria. Better known as objectivity (empirical-analytical ap-
  proach). This last criterion, although it cannot be fully assured, is reflected
  in the use of inter-subjective techniques and procedures.

2.2. Quantitative research methods

As seen previously, the complexity inherent with educational reality makes
methodological pluralism the most appropriate option for its study. Howev-
er, in the section that concerns us we will focus on the characteristics of the
quantitative or empirical-analytical methodology, based on the positivist par-
adigm, which adopts as its own methods those from the physical and natural
sciences. The generation of knowledge from this perspective follows a hypo-
thetical-deductive process: a review of existing theories, proposal of hypothe-
ses, and testing of hypotheses by designing appropriate research. The results
can confirm the hypothesis, or refute it, and oblige you to look for new expla-
nations or working hypotheses or ultimately reject the theory.

We identified three types of empirical-analytical methodologies (Mateo, 2000;
Portell, Vives, and Boixadós, 2003; Sans, 2004):

1) **Experimental**. Also known as true experimental (from the English "true
experimental design") this is basically characterised by the intentional manip-
ulation of one or more independent variables, to observe or measure the in-
fluence on one or more dependent variables, and for the random assignment
of subjects.

2) **Quasi-experimental**. Although this type of research also involves manip-
ulation of independent variable(s) to observe or measure its effect on depen-
dent variable(s), its internal validity is seriously reduced when non-equivalent
groups are used (randomly unassigned groups) and the difficulty of control-
ling all variables in real contexts. By contrast, the fact that this type of research
takes place in real situations, is precisely why this makes its external validity
far superior to purely experimental proposals. As you can see in the following
table, the quasi-experimental methodology is characterised by a level of con-
trol inferior to the experimental methodology, which entails a decrease in in-

ternal validity, but an increase in external validity, since the results obtained are more representative, i.e. there are more possibilities for generalising the results for other subjects, groups or real situations.

3) ***Ex post facto*** **or non-experimental**. This is research where the person carrying it out has no control of the independent variables, because the phenomenon studied has already passed or because it is not possible to control this variable. In the same way, it is not possible to assign participants at random. As indicated by Mateo (2000), *ex post facto* methodologies are most used in the educational field and provide you with techniques to describe reality, analyse relationships, categorise, simplify and organise the variables that make up the object of study.

You can divide up *ex post facto* methodologies as follows:

- **descriptive studies** (studies by survey and observational studies);
- **development studies** (longitudinal studies, cross-sectional studies and cohort studies);
- **comparative-causal studies**;
- **correlational studies** (relationship studies, predictive studies, factor analysis, causal models or structural equation models).

Based on the aforementioned characteristics of the three methodologies, you can obtain some criteria that will guide you in choosing one or the other (see Table 5):

- degree of control of independent variables and foreign variables
- internal and external validity
- nature of the research situation (real or artificial)
- research objectives (describe relationships between phenomena, predict their values or explain causality relationships between them)

Table 5. Indicative criteria to select the most appropriate methodology

Method-ology	Internal validity	External validity	Control	Location	Objectives
Experimental	Major	Minor	Major	Artificial	Predict and explain
Quasi-experimental	Mean	Major	Medium	Natural	Predict and explain
Ex post facto	Minor	Major	Minor	Natural	To describe

Source: Latorre, Rincón, and Arnal (2003)

Regardless of the design you choose, when you detail your empirical-analytical research proposal you must pay attention to some basic questions that Creswell (2018) reminds us of in the following table (see Table 6).

Table 6. Checklist for designing experimental research proposals

Who are the participants in the study? What locality do they come from?
How have the participants been selected? Was a random procedure used to select them?
How did the random assignment take place?
How many participants are expected to be in the experimental and control groups?
What is the DV? How will it be measured? How many times will it be measured?
What will be the treatment, stimulus or experimental condition applied? How will it be operationalised?
Will the variables be covariate in the experimentation? How will they be measured?
Which experimental design will be used?
What tools will be used to measure the results of the study? Why have they been selected? Who develops them? Have they been validated and made viable? In your case, have you obtained permission for its use?
What is the procedure to be followed (for example, selection of participants, administration of a pre-test, administration of a treatment, administration of a post-test)?
What are the possible threats to internal and external validity? How will you approach them?
Will a pilot application of the experiment be carried out?
What statistical procedures will be used to analyse the data?

Source: Creswell (2018)

2.2.1. Experimental methodology

The research design is the plan or strategy designed to respond to the objectives set out in the study, validate or reject the hypotheses and thus solve the defined research problem. All research designs have their own possibilities and limitations, and choosing one or the other will depend on the initial approaches of your research proposal. Although our intention is not to detail each and every one of the possible quantitative research designs, we consider it advisable to demonstrate some to exemplify the types of changes in research design that allow us to improve internal validity to the detriment of external validity. In the graphic representation of the designs, standard annotations in such cases have been used:

- R: randomisation
- O: observation, recorded measure
- X: treatment, stimulus

Post-test design with a non-equivalent group. Often, in education, you find situations where the random assignment of subjects is not possible, so you are forced to use groups of already established subjects.

Group	Assignment	Pre-test	Treatment	Post-test
A	not R	-	X	O

Pre-test/post-test design with non-equivalent control group. Some small improvements with regards the internal validity that can be introduced in the previous design include, on the one hand, the introduction of a control group that does not receive the treatment (and that makes it possible to assess whether the changes in the group are due to treatment or not) and, on the other hand, a pre-treatment measure (pre-test) that allows you to assess the change produced in the group before and after treatment.

Group	Assignment	Pre-test	Treatment	Post-test
A	not R	O	X	O
B	not R	O	-	O

In this type of design, the main threat to internal validity is the non-random allocation of groups (non-equivalent groups). The initial differences in the groups can influence the dependent variable and, therefore, the post-test results.

Pre-test/post-test design with control group. If you bear in mind what has been discussed so far, it seems clear that, if you want to improve internal validity, the only way to do it is by assigning the groups in a random way, which gives rise to properly experimental designs ("true experimental design").

Group	Assignment	Pre-test	Treatment	Post-test
A	R	O	X	O
B	R	O	-	O

As has already been mentioned, this type of design requires maximum control of all variables, and thus ensures that all conditions, except treatment, are equivalent in both groups. This control should make it possible to ensure that the changes observed in group A are due, unequivocally, to the treatment offered. The researcher must assess in each case the need or convenience of employing a pre-test (Bisquerra, 2004):

1) If the group is equal to or larger than fifteen individuals, it will not be necessary.

2) If the pre-test can directly influence the results or effects of the treatment, it is not advisable.

Solomon Design. Finally, the design devised by Solomon is presented, which seeks to ensure the required control in experimental designs and counteract the possible bias and inconveniences that the application of a pre-test entails, which would make this design one of the most recommendable in experimental approaches.

Group	Assignment	Pre-test	Treatment	Post-test
A	R	O	X	O
B	R	O	-	O
C	R		X	O
D	R		-	O

As can be seen in the graphic representation of Solomon's design, four groups are proposed (two experimental and two control groups). The pre-test is carried out on two of the groups (one of each), but not with the other two.

2.2.2.   Survey methodology

Often, one of the common objectives of studies developed in the field of social sciences and, specifically, in the educational field, is to describe and understand the behaviour, attitudes, perceptions or practices of a given population in relation to the selected study object (for example, homework, the use of school time or the involvement of families in the education of their children, among others). To approach this type of study you can resort to existing secondary data, as already explained in section 2.1, or you can generate your own data. With the latter, a survey methodology is the most common and appropriate option.

Within the framework of a survey methodology you can use questionnaires or tests that can be self-administered by each individual or administered by an interviewer. In both cases, the objective is the same: to collect information from a large number of individuals who answer exactly the same questions and who allow the researcher to describe, compare or relate factors.

Not all survey studies are the same. Three major types can be identified depending on when you collect the data and the variability of people or groups that provide them:

1) Longitudinal or panel studies. In this first type of survey, study data is collected from the same group of individuals at different times. Therefore, this type of research is appropriate when you want to identify changes that occur in the units of analysis over time (for example, analyse how student perfor-

mance evolves or how the assessment of teacher quality varies). These repeated observations of the same group of individuals turn them into more complex and powerful studies than cross-sectional studies, since, among others, they enable the elimination of the so-called cohort effects.

2) Cross-sectional studies. These are the most common type of survey research, from which data is collected at a specific time and from the same group of individuals. Thus, for example, unlike longitudinal studies, where you might decide to study the performance of the same group of students throughout schooling, in this case you might also decide to study their performance throughout schooling, but collect data at a single time about students of different ages and courses.

3) Time series or time-trend studies. Unlike longitudinal studies, in this case, although the data is collected at different times, it does not always come from the same group or sample. The objective of this type of study is to find trends or changes in a specific population or group. So, for example, it is a type of study that is appropriate when you want to learn how the use of language has varied in schools or how the perception of public schools has changed over the last few years. In order to really discover a trend, you need to collect data over a long period of time and this means that researchers cannot often use their own data, but have to resort to secondary data collected by public or private organisations (for example, the Statistical Institute of Catalonia, the National Institute of Statistics, the OECD, etc.).

Whatever the type of survey study you use, all share some basic elements when it comes to the researcher who must collect the data:

- Define the population from which you want to gather information. For example, a school community (families, students, teachers, managers, etc.), teachers from a specific municipality or from different municipalities, but from the same stage, new school directors, students from sophisticated schools, etc.

- Selection of the sample: as explained below (see section 3.2), except in cases where you work with small populations (for example, a school) and in which, therefore, you can survey all the individuals of this population

---

What would happen if...

... as a preliminary phase of a plan to improve the ongoing training of your company's employees, you would like to study how the perception of these employees has changed in relation to the training received during the last fifteen years? What kind of survey study might you carry out? What would be its advantages in relation to other survey studies?

Research techniques and tools

In relation to the construction of questionnaires and tests you can consult the materials on research techniques and tools: Fàbregues Feijóo, S., Meneses Naranjo, J., Rodríguez Gómez, D., and Paré, M. H. (2016). *Técnicas de investigación social y educativa*. Oberta UOC Publishing, S.L.

(teachers, students, families), you must usually select a sample (or part of the population) with whom you will work.

- Another fundamental step is to build the tool (questionnaire or test), adapt an existing one or directly adopt it as other researchers have used it.

- Once you have the tool, you can only apply it to collect the data and, finally, analyse it.

Although this type of technique has some obvious advantages, such as, for example, the possibility of accessing a large number of people at a relatively low cost and being able to generate standardised and quantifiable data, you must also be aware of some of its problems or challenges: you can only collect data on what the researcher initially planned if you have difficulties in accessing representative samples or the same informants, if you require more information on their part or if you have difficulty in building a valid and reliable tool, among others.

2.2.3. Observational methodology

An observational methodology is often associated with qualitative approaches. In addition, it is assumed that participant observation is the only possible modality. At other times, it is simply ignored as a research methodology, compared to other more prestigious proposals in the field, such as a survey methodology for example. However, it is advisable to not forget what an observational study can provide you in the framework of quantitative research. O'Leary (2014) offers us some arguments that allow us to restore the importance of observational studies:

- In some cases it is important to "see things for ourselves" and not merely depend on the explanations or interpretations given by others.

- We must be aware that there can be a big difference between what people tell us and what they really are.

- The data collected in the framework of an observational methodology always comes from the "real world", and not from a "constructed world" for our research.

Additionally, you must consider that observation allows you to collect information from individuals who cannot always verbally explain what interests the researcher (for example, children or people with certain degrees of autism).

Unlike other methodologies, such as experimental or quasi-experimental, observational studies do not involve manipulating behaviour, since they are limited to recording, controlling possible extraneous variables, the behaviours of

individuals in natural or laboratory environments (where they try to emulate natural environments, but with more control over the situation and, therefore, over possible strange variables).

There are many different possibilities for developing observational research, but here we will only focus on those located at the more structured or quantitative end, leaving aside participant observations, typical of ethnographic approaches. In Figure 9, O'Leary (2014) shows us the four main types of observational studies.

Figure 9. Four major types of observational studies

Observational studies

Sincere/transparent	
Non-participatory: The observed individuals are aware that the researcher is observing them. Usually the observations are structured.	**Participant:** The observed individuals are aware that the researcher is observing them. Likewise, the researcher can also participate in the usual dynamics of the group or of the individual. Observations can be structured, semi-structured or unstructured.

Concealed	
Non-participatory: The observed individuals are not aware of this fact. The interactions between the people observed and the observer are minimal (for example, registration of exchanges in a forum of a Moodle classroom). Anonymity and confidentiality should be protected. The degree of observation structure can be variable.	**Participant:** The observer is introduced in the context in a covert way to be able to make observations without being identified. This type of observation has obvious ethical dilemmas (for example, there is no informed consent), but they make great contributions towards understanding the behaviour of certain groups. Normally observations are not structured.

Source: O'Leary (2014, p. 232)

Beyond the researcher's level of participation or the level of transparency of the observation, the researcher must also decide on the level of structuring of the process:

- Structured observation: researchers use predetermined criteria (deductive process) on the elements that will be observed. This involves the use of check-lists and observation guidelines that allow the observer to be as objective and neutral as possible, minimising personal interaction. These observation patterns take into account elements such as: frequency of certain behaviours, time between a stimulus and response (latency), duration of behaviours, number of elements or individuals involved (for example, in the resolution of a conflict in the classroom), background and consequent conditions, facial expressions, body movements, intensity, tone and timbre of the voice, etc.

- Semi-structured observation: the researchers use, as in the previous case, predetermined criteria and observation guidelines, but only as an element

that should guide the observation and that, in no case, should limit or condition them. In other words, if during the observation some element appears that is not taken into account in the guidelines, but that is important for the object of study, the researcher can record it.

- Unstructured observation: the researcher faces the observation without any predetermined criteria or guidelines. In this type of observation, the researchers record all the observations and then try to (inductively) find possible emerging patterns.

The observational methodology, like any other scientific methodology, necessarily requires planning and systematisation of the entire process: contemplate possible contingencies, decide how to record the observations and, finally, carry out analysis on the collected data.

As mentioned at the beginning, the main advantage of an observational methodology is the disappearance of intermediaries when accessing data. It is the observer-researcher who directly collates the data in relation to the object of study. Paradoxically, the main problem with this methodology is precisely the observer. The validity and reliability of the data collected will depend to a large extent on the skills of the observer in understanding the information collected and making the corresponding inferences.

Some of the characteristics that a good observer should have include:

- orientation and knowledge of what you want to see
- objectivity and scepticism
- mental maturity, discretion and controlled imagination
- active attitude and alertness
- ability to listen and hear, see and perceive
- ability to consider the interrelationships of the observational framework with the sociocultural context

2.3. Qualitative research methods

At the beginning of the 20th century, with cultural anthropology first and sociology later, so-called qualitative methodologies appeared (some authors speak of comprehensive or constructivist methodologies), oriented to the understanding and emic interpretation of human phenomena (ideographic science).

Qualitative methodologies are oriented towards the understanding of unique and particular situations, focusing on the search for meaning and meaning that the agents themselves confer to the facts and on how individuals or social

groups live and experience certain phenomena or experiences that are under research. These epistemological approaches come from the field of phenomenology and hermeneutics.

> Qualitative methodologies are interested in specific experiences in a natural context and an historical context, by the interpretations and meanings attributed to a particular culture (or subculture), by the values and feelings arising from them. In other words, they are interested in "reality" as interpreted by the subjects, respecting the context in which this "social reality" is constructed.

Throughout the qualitative research process, special attention must be paid to the social function that language has for understanding and constructing the "world" in a specific space-time context. When coming into contact with the people or groups under study (sample), the researcher must suspend and question the value of the knowledge he has about the phenomenon being studied to progressively build upon new, more accurate, deep and faithful knowledge.

According to van Manen (2003), the criteria that will govern the work of the researcher who uses a comprehensive methodology are the following:

- Focus on the phenomenon that truly interests you and engages you with the world.

- Research the experience as you are living it, and not as you conceptualise it so much.

- Reflect on the essential aspects that characterise the phenomenon.

- Describe the phenomenon through the art of writing and rewriting.

- Maintain a firm pedagogical relationship with the phenomenon and be oriented towards it.

- Balance the context of the research, always bearing in mind the parts and the whole.

Constructivist methodologies provide a comprehensive, holistic and deep look at the different cultural manifestations, individual and social conduct and behaviours in time and space, and are interested in everything that is single and unique. They seek to understand social phenomena in the natural situation in which they occur in depth (for example, school failure at a specific

public centre, the use of new technologies in rural areas, racism on football fields, family education in Thailand, the employability of people with reduced mobility, interpersonal relationships and online communication...).

There are several existing qualitative methods, and there are numerous classifications that different authors have set out throughout history: ethnographic research, symbolic interactionism, phenomenological research, hermeneutic research, ethnomethodology, case studies, action research, etc.

In this section we focus on our own designs of narrative research, phenomenological research, grounded theory, ethnography, case studies, action research and design-based research, since they are some of those most commonly used in educational research (this selection should not disregard the potential of the other designs that an education professional should know and for which an extensive bibliography is offered).

Although qualitative research methods resemble and share many aspects (data collection techniques, sampling techniques, entry scenarios, qualitative data analysis...), they differ unequivocally in the goals they pursue (see Table 7).

Table 7. Comparison of the characteristics of five qualitative approaches

	Narrative research	Phenomenology	Grounded theory	Ethnography	Case study
Focus	Exploring the life of an individual	Understanding the essence of the experience	Development of a theory based on data from fieldwork	Description and interpretation of a group	Development of an in-depth description and analysis of one or multiple cases
Type of problem that is most appropriate	The need to tell stories about individual experiences	The need to describe the essence of a living phenomenon	Foundation of a theory from the perspective of participants	Description and interpretation of the common patterns in a group's culture	In-depth understanding of one or several cases
Discipline, background	Humanities, anthropology, literature, history, psychology and sociology	Philosophy, psychology and education	Sociology	Anthropology and sociology	Psychology, law, political science and medicine
Unit of analysis	One or more individuals	Several individuals who have shared an experience	Processes, actions or interactions involving several individuals	A group that shares the same culture	Event, programme, activity, more than one individual

Source: Creswell (2007, p. 78)

2.3.1. Narrative research

The use of stories or narrations, whether oral or written, as a source of knowledge or a mechanism for its transmission is not new. Nowadays, words like "storytelling" are common in the field of organisations and refer to strategies

that allow the transmission of knowledge, not always explicit, as well as promoting enculturation processes. In any case, from a scientific point of view, the first question that arises is how we can use a story or narrative to generate valid conclusions in a research context.

Narrative research or the methodology of narrative productions bases its origins in the perspective of knowledge in that of Haraway (1991), which defends the bias and local nature of knowledge. Thus, from these approaches, the knowledge produced in the framework of narrative research will never represent an unalterable external reality, but will be clearly mediated by the researchers themselves.

As indicated by Balasch and Montenegro (2003, p. 45):

> "The understanding gained by means of these epistemological principles does not pretend to represent reality, i.e. to produce a reflection or a replica of an external fact, but instead opts for diffraction as an opening for other spaces of understanding and production of meanings in which the emphasis is placed on the effects that come, in political terms, from the knowledge gained".

Gudmundsdottir (1996) tells us that the narrative is both the phenomenon studied and the method itself. It is the phenomenon by which the words of our informants are often organised in a narrative, and us, in our attempts to understand them, "listen" to narratives. It is the method by which the entire research process—data collection, interpretation and writing—is essentially a process that takes on meaning. The narratives (the text), as the main product, arise from the interaction that researchers and participants have in relation to the phenomenon studied.

Thus, the procedure for creating narratives is complex and iterative. Below are summarised some main ideas from the proposal by Balasch and Montenegro (2003):

• The start of narrative research begins with the selection of the participants and with the programming of a series of sessions, between two and three sessions as a minimum, during which researchers and participants comment on essential aspects of the phenomenon under investigation.

• After each session, the researchers textualise what has been discussed and highlight the main ideas.

• Next, the report prepared by the researcher is presented to the participant to correct or broaden the vision of the phenomenon, incorporating, if necessary, questions and clarifications for the researcher. As we see, narrative research guarantees the possibility that participants know the researcher's vision (perspective of situated knowledge) and that they can even rethink or reconsider their own contributions. It is important to be clear that the

narratives do not include the participant's literal words, but rather the way in which they want their vision of the studied phenomenon to be read.

• After several cycles of additions, clarifications, corrections and restatements, the closing of the narrative is reached with the participant's express acceptance.

The texts from the narratives will be used as a base material to elaborate interpretations about the phenomenon that is the object of study, which will be enriched with the literature consulted. In the analysis of narratives, unlike the more traditional analyses of content and discourse, the text is not subjected to previous categories derived from the reviewed literature (deductive approach), but rather a much more inductive and dialogical process is followed between literature and narratives.

Narrative research involves the usual problems of any other methodology based on the use of interviews. These problems or difficulties are clearly increased when the researcher is a novice or has very little experience in the use of narrative research, since the boundary between what is purely professional and personal is not always evident, and here the ethical implications of your research come into play.

2.3.2. Phenomenological research

Phenomenological research is, without a doubt, the most characteristic methodological option of qualitative research. It is a type of strategy widely used in education (as well as in the field of health and business organisations), not only because of its obvious humanistic connotations, but because, far from statistical measures, far from the relationships of cause-effect, it helps us to understand from the perspective and personal experiences (i.e., perceptions, attitudes, beliefs, feelings and emotions), certain educational phenomena: how does that student feel who always sits at the back of the classroom? What is the experience and feelings of those people who have failed during all of their compulsory schooling? Is it worthwhile understanding the experience of those students who have been diagnosed with attention deficit hyperactivity disorder? Is it necessary to understand a bully's feelings, emotions and experiences in bullying cases?

If you want to encourage real changes in education, you cannot do it only from reports or statistics, but you have to understand, intellectually and emotionally, the experiences and feelings of those people involved in the educational process. Thus, for example, beyond the statistics on the use that young people make of technology (for example, mobile phones, tablets, video games, social media, etc.), inside and outside the classroom, it would be fundamental,

among other reasons, to be able to understand how young people are experiencing the incorporation of these technologies in the classrooms or to what extent they consider that this technology is conditioning their daily life.

Phenomenological studies, therefore, in contrast to more quantitative or positivist proposals, are more concerned with some aspects than others (Descombe, 2014):

- more for subjectivity than for objectivity;
- more by the description than by the analysis;
- more for interpreting than for measuring;
- more for the agency than for the structure.

Within the framework of a phenomenological study we are interested in emphasising the subjective aspects of educational phenomena, and in hearing the voices, experiences, stories, feelings and concerns of its protagonists. We do not have to worry about the causes, the reality or the truth, since everything depends on individual perceptions.

O'Leary (2014, p. 138) defines phenomenology in the following way:

> "The study of a phenomenon as it occurs in the consciousness and direct experience of individuals. The perception, rather than the socio-historical context or even the supposed 'reality' of an object, is the focus of the research".

Although phenomenological approaches can be very different and in practice tend to mix, two major typologies or schools can be identified: European and North American or "new phenomenology" (Descombe, 2010).

1) European tradition: it has its origins in philosophy and, specifically, in the concern of knowing the essence of human experience that is derived from the "transcendental phenomenology" of Husserl (1931), the "existential phenomenology" of Sartre (1956) and the "phenomenology hermeneutics" of Heidegger (1962). From this European tradition, although it focuses on individuals, the essence of human experience goes beyond individual and personal experiences in specific situations. It is about understanding the experience from a general perspective and not reducing it to a specific moment.

2) American tradition: unlike the European tradition, the American one derives directly from the "social phenomenology" of Schutz (1962) and is therefore more linked to disciplines of the social sciences, such as sociology, psychology and education, among others. From this tradition, interest is more focused on describing how people give meaning to our experiences than discovering the essence of the experience itself. In other words, it focuses more on the interpretation that individuals make of social phenomena.

Agency and structure

In the field of social sciences, the concepts of agency and structure are often contrasted. While agency relates to the ability of people to decide freely, structure represents the guidelines and dynamics that limit people's choices.

Regardless of your phenomenological approach, the procedure will always be inductive and will begin with a descriptive phase. The most common strategy for collecting the data that should allow you to build these descriptions will be the in-depth interview. Unlike other methodological approaches where the phases of data collection, analysis and report preparation can be clearly identified and isolated, in phenomenological studies, the limits between these phases are diffuse and not very rational, since the analysis and interpretation of data occurs simultaneously with the collection of data.

Thus, phenomenological descriptions are the main result of phenomenological studies. The objective is to create very precise descriptions of the phenomena in order to try to reflect the experience and feelings of the individuals interviewed as accurately as possible, so that anyone who reads the description can understand how the phenomenon in question is being experienced.

The number of people interviewed in order to obtain this description may vary, so the criterion that is usually followed is that of "saturation". In other words, you stop conducting interviews when you see that they are not contributing anything new to what you already have. Once this "saturation" point is reached, the next step will be to try to build a summary of all the interviews where the common and different aspects that the interviewed people have about the same phenomenon are evidenced.

Phenomenological studies, like any other approach, have their advantages and disadvantages (see Table 8).

Deepen the phases of phenomenology
You can find more information about the phases of phenomenological methodology via the following link: https://bit.ly/2POLA4G

Table 8. Advantages and disadvantages of phenomenological studies

Advantages	Disadvantages
• They are suitable for small-scale research projects.	• There is a danger of them lacking scientific rigour.
• The description of the experiences can tell an interesting story.	• They tend to be associated with descriptions, but not with analysis.
• They offer the perspective of authentic elements of complex phenomena.	• There is little generalisation of the results from phenomenological studies.
• They have a humanistic research style.	

Source: Descombe (2010, pp. 102-103)

2.3.3. Grounded theory

The founded or *grounded theory* has its origins in symbolic interactionism and was explicitly presented for the first time by sociologists Barney G. Glaser and Anselm L. Strauss in the book *The discovery of grounded theory* (1967).

The defining and differential factor of grounded theory in relation to any other type of qualitative method is the interest in generating theories that explain, confirm or develop the social phenomena under study (Rodríguez, Gil, and García, 1999). Thus, the concept of grounded theory refers to both the action and the effect of the research (it is process and product), although normally it is only referred to as a research methodology (Charmaz, 2005). It must be clarified that these theories are not formulated at the beginning of the research process, as would happen in more experimental approaches, but emerge from the data itself, once collated and analysed. In this framework, we consider the theory as a plausible relationship between concepts and a series of concepts (Strauss and Corbin, 1994).

From grounded theory, data collection and analysis is carried out simultaneously and interactively. Data analysis should help you to improve and focus the data collection and, in turn, the data collection should help you to profile new analyses. Researchers in grounded theory describe understandings of the meanings and actions of research participants, offer abstract interpretations of empirical relationships, and generate conditional statements about the implications of their analyses (Charmaz, 2005).

Charmaz (2005) opts for a constructivist founded theory away from the positivist and objectivist origins that he describes as a perspective with the following characteristics:

- It emphasises the study of the phenomenon more than the methods to approach it.

- It adopts a reflexive attitude in the way it knows and represents the reality studied.

- It pays more attention to empirical realities.

- It does not assume that the data waits to be discovered in the real world, nor that the methodological procedures will correct the limited view of the reality studied.

- It considers that the observers are not impartial, but that what they can grasp will depend on their previous frame of reference (experiences, biography, relationships, procedures used, etc.).

> **Grounded theory**
>
> As Strauss and Corbin state (1994, p. 273):
> "Grounded theory is a general methodology for developing a theory that is based on the systematic collection and analysis of data. The theory is developed during the research, and this is done through continuous questioning between the analysis and the data collection".

- The conceptual categories emerge from the interpretation made of the data, but do not "emanate" from them or from your methodological practices.

Glaser and Strauss (1967) propose two basic strategies for the development of grounded theory: the constant comparative method and theoretical sampling.

In fact, grounded theory is a comparative method in essence, with which you compare data with data, data with categories, categories with categories, categories with theories and theories with theories. The constant comparative method is used to keep a continuous check on the categories that emerge from the data and, if applicable, to unpick or reconstruct some category. According to Coolican (2014), comparisons can be made between the contributions of different participants, between the participant's own contributions or, directly, between existing data and categories. The constant comparative procedure is developed in four stages:

1) comparison of the data;

2) definition of the emerging categories and integration of each category within their properties;

3) definition of the theory that begins to develop;

4) writing of the theory when data saturation begins to occur in each category.

Theoretical sampling consists, very briefly, of the selection of new case studies based on the potential to contribute to the development and understanding of the existing theory.

The grounded theory, as happens with the case study, uses data of all kinds (quantitative, qualitative or both) and the main strategies used for the collection and recording of data are interviews, observations and any type of document, including audiovisuals.

Finally, the importance of establishing evaluation criteria that help you to assess the studies developed through grounded theory is key. Glaser and Strauss (1967) already proposed some criteria (appropriateness, functionality, relevance and flexibility), but we turned again to Charmaz (2005) to make a much more exhaustive review of the evaluation criteria in grounded theory (see Table 9).

Table 9. Evaluation criteria for studies that use grounded theory

Credibility	Originality	Resonance	Usefulness
Has the researcher become intimately familiar with the topic or the context? Is it enough with the data we have to reach the conclusions shown? Have systematic comparisons been made between observations and between categories? Do the categories cover a wide range of empirical observations? Are there consistent links between the data collected and the researcher's arguments and analyses? Has enough evidence been provided about the conclusions so that the reader can make an independent assessment?	Are there new categories? Is new evidence offered? Does the analysis provide a new conceptual interpretation of the data? What is the social and theoretical relevance of the work? How do the existing ideas, concepts and practices question, extend or redefine the work?	Do the categories represent the totality of the experience studied? Have known and emerging meanings been revealed? Have connections been established between groups and individuals when the data suggested it? Do interpretations make sense to members and offer them more knowledge about their lives and realities?	Does the analysis offer interpretations that people can use in their daily lives? Do the analytical categories explain generic processes? Can the analysis promote other research in other substantive areas? How does work contribute to generating a better society?

Source: Charmaz (2005, p. 528)

2.3.4. Ethnography

Ethnography does not seek the truth in classical terms (what it means for the researcher) nor morality (what it should be) in a given human phenomenon. Ethnography rather focuses on providing a detailed understanding of the different perspectives of other people or groups.

Ethnographic research, unlike quantitative research, does not follow a linear process (see Figure 10).

In this sense, for example, Bickman and Rog (2016, pages 572-576) affirm the following:

> "Ethnographic analysis is iterative, to the extent that it constructs the ideas through the study itself. Data analysis in the fieldwork allows the ethnographer to know precisely which methods he should use next, and when and how he will use them. Through analysis, the ethnographer tests hypotheses and perceptions to construct a precise conceptual framework about what is happening [...]. The analysis is iterative and often cyclical in ethnography".

Figure 10. Cyclic process of ethnographic research
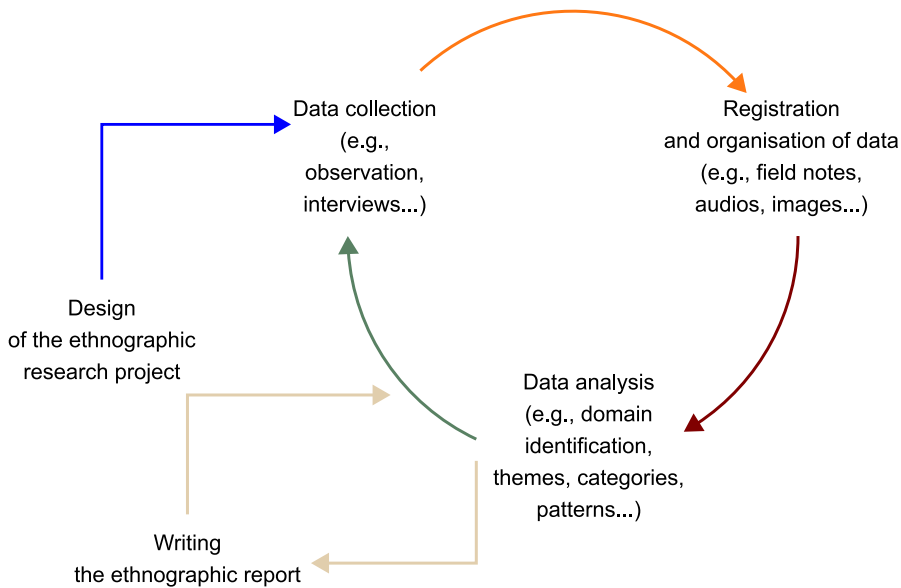
Despite the lack of pre-established rules and despite the fact that the researcher is not a "slave" to any procedure, six phases can be identified in ethnographic research:

1) Exploratory phase of reflection. This is the initial phase of the research. In this phase, the problematic area is (provisionally) defined and initial contact is made with the object of study. In this phase, a first draft of the research project is usually made. Perhaps the most important aspect of this phase is the revision of scientific literature, which will help you to know what has been said so far about your object of study.

2) Planning phase. In this phase the researcher (provisionally) plans the research. The resources that are available must be evaluated, insisting above all on timing. It is often said that ethnographies are known when they are started but not when they end, however it is good to rationalise the time available to you: when are you going to enter on the scene? When and how will you collect the information? How much time do you anticipate investing in the collection and analysis of data? In this phase, an initial trial and approach to the phase is made to identify the terrain.

3) Stage of entry on the scene (start of the study). Once the trial phase is over, the research itself begins. The sample that will be part of your research is intentionally selected. In a qualitative design, the researcher decides which people should be interviewed or observed without resorting to random sampling techniques. In this case, the size of the sample depends more on the quality of the information collected than on the quantity. However, when the information collected is redundant and is repeated without providing anything new you have to conclude the sample. To select the individuals participating in your research you have to look for key informants: agents who have good information, good communicative ability and credibility within the group or

community you are studying. These agents can act as protectors, provide contacts and guide you. One technique that is often used in ethnographic studies is what is known as the snowball technique or chain sampling: one informant brings you one and this in turn provides another.

4) Information collection and analysis phase. This is an essential phase for the development of your activity, since the collection and analysis of the information will allow you to obtain some results, as well as some conclusions. To collect the data and the appropriate and pertinent information, the researcher must select which techniques or tools he will use. The most common, and that constitute the basis of ethnographic research, are interviews, participant observation and a document review. The triangulation of tools becomes necessary in all ethnographic research, since it provides more reliability and validity. The data collection and analysis phase occurs simultaneously. Remember that a qualitative research process is cyclical and that data analysis is not postponed to the final phase, rather an initial analysis is made *in situ*. Therefore, this is the most interactive phase and requires more effort on the part of the researcher.

5) Phase of withdrawal from the scene. The main characteristic of this phase is that data collection is concluded. The main symptom that indicates the time has come to withdraw from the scene appears when the researcher has become one of the group researched. From there, finding new and relevant information will be increasingly difficult. Once out of the scene, a second analysis of the information is made more exhaustively than the previous one in which all the collected data is integrated (interviews, observations, field notes, document review...).

6) Research report preparation phase. One of the most important aspects of scientific activity is to communicate the results obtained. There is no single model of a research report, but all must methodically present the citations used and the bibliography used, as well as remain faithful to the object of study and the context.

Keith (2005) tells us some key questions for the interpretation and evaluation of an ethnography:

- Substantive contribution: does it contribute to our understanding of social life? Does the researcher demonstrate a deep understanding and foundation of reality?

- Reflexivity: how does the author write the text? How was the information gathered? How subjective has the producing author and production of the text been? Is there a self-awareness and an adequate self-exposure to the audience to make judgements about the adopted perspective?

- Expression of a reality: does the text develop the lived experience in all its magnitude? Does it seem true or real?

- Aesthetic merit/form: is it aesthetic? Does the use of a creative analytical practice open up to the text and invite interpretative answers? Has the text been "artistically"? worked Is it satisfactory, complex and enjoyable?

- Impact: how does ethnography affect those involved (emotionally, intellectually and politically)? How does ethnography affect the audience (emotionally, intellectually and politically)? What new issues have been generated? Has it involved the audience in seeking or trying new ways of seeing the world, specific cultures, research practices and ways of knowing the world?

2.3.5. Case study

The case study is not qualitative by nature, but can be approached from different perspectives (analytical or holistic, organic or cultural, or mixed methodologies, among others), since it is not distinguished by the research methods used, but because it is interested in a particular case, or several if it is a multiple case study (Cohen and Manion, 2002; Stake, 2005; Yin, 2009). However, considering that we are in the section on qualitative methodologies, we will highlight the most qualitative aspect of a case study as a research methodology.

Case studies are often underestimated, because they are not as important as other studies aimed at generalising results or, at best, only allow us to conduct initial exploration to develop more complex and ambitious studies that contribute to the construction of theories (Denzin, 1989; Glaser and Strauss, 1967). Likewise, some authors (Rodríguez, Gil, and García, 1999) do not consider that case studies are a method, rather a strategy for the design of research.

Rodríguez, Gil, and García (1999, p. 92), after analysing several attempts in the conceptualisation of case studies, agree that:

> "Case studies involve a process of inquiry that is characterised by detailed, comprehensive, systematic and in-depth examination of the case that is the object of interest".

The case may be simpler or more complex, depending on the interests, objectives and possibilities of the study. It can be a person, a group or an organisation, an event, a curriculum or a specific action, among others. Stake (2005) considers that there are three main types of case studies:

1) Intrinsic. We develop the study because we want to get a better understanding of a specific case. We do not opt for a specific case because it represents other cases or because it is illustrative of a certain problem or phenomenon, but because it interests us by itself.

2) Instrumental. We examine a particular case to provide more information about a topic or to reformulate a generalisation. The case adopts a secondary role and its utility lies in the contribution of data to understand another phenomenon.

3) Multiple or group of cases. We study a group of cases together to research a certain phenomenon, a population or a general condition. In reality, it is an instrumental study that has been extended to several cases. The cases can be similar or not, since it is necessary to know in advance if they have any characteristics in common.

By contrast, Rodríguez, Gil, and García (1999), based on Yin's proposal (2009), propose their own classification (see Table 10) depending on the number of cases under study (single or multiple), the unit of analysis (global or inclusive) and the objectives of the research (exploratory, descriptive, explanatory, transformative and evaluative).

Table 10. Typology of case studies

		Ex-ploratory	De-scrip-tive	Ex-plana-tory	Trans-for-ma-tive	Evaluative
Single case	Global (simple unit of analysis)	Type 1	Type 5	Type 9	Type 13	Type 17
	Inclusive (multiple units of analysis)	Type 2	Type 6	Type 10	Type 14	Type 18
Multiple cases	Global (simple unit of analysis)	Type 3	Type 7	Type 11	Type 15	Type 19
	Inclusive (multiple units of analysis)	Type 4	Type 8	Type 12	Type 16	Type 20

Source: Rodríguez, Gil y García (1999, p. 95)

Regardless of the type of study you develop, you must bear in mind that, as Yin (2009) points out, the case study is a "linear but iterative process" (see Figure 11).

Figure 11. Action research process
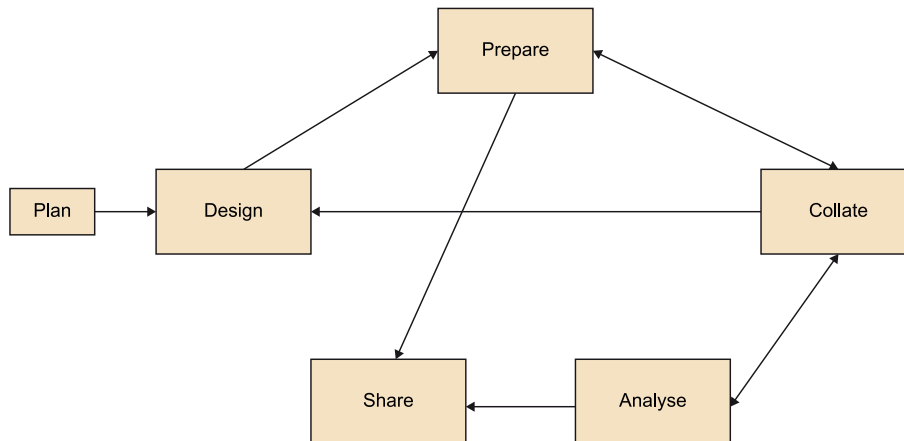
Source: Yin (2009)

Below, some of the key points are specified for the planning and design of a case study: relevance of the method, objectives, number of cases, case(s) selection and unit of analysis.

When can you use the case study as a research methodology? Although there are no irrevocable criteria, when you want to address a particular current circumstance or make an extensive and profound description about some present social phenomenon without having extreme control over the intervening variables, the case study is presented as one of the most appropriate methodologies. According to Durán (2002), and after an analysis of the contributions of key authors in the field, the objectives of a case study can be:

• To discover new concepts and relationships between concepts.
• To understand the phenomenon that is studied from the point of view of the people who star in it.
• To provide information on the phenomenon under study.
• To confirm what you already know.
• To find out about situations or facts.
• To obtain substantial or theoretical conclusions.
• To analyse in an intensive and profound way a reduced number of phenomena, situations, people, etc.

The case study foresees both the study of single cases and the study of multiple cases (Yin, 2009). On the one hand, according to Yin (2009), there are five reasons that justify choosing a single case study:

1) The case is critical in the confirmation, modification or extension of a theory or some available knowledge about the object of study.

2) It represents a unique or extreme case, i.e. it is an unrepeatable or peculiar case.

3) It is a typical or representative case that enables the collection of data on a common phenomenon, place or circumstance.

4) It is a revealing case that allows the researcher to observe a phenomenon, a situation, a subject or a fact that until now was inaccessible for social research.

5) It is longitudinal in nature, allowing the researcher to study the same case at different times and observe how certain circumstances change over time.

On the other hand, the design of multiple cases, more and more frequently, is justified ahead of designs of unique cases because "often the evidence is considered more convincing from multiple cases, and an overall study is therefore considered more robust" (Yin, 2009, p. 53).

Although we have already commented on some of the most relevant aspects that help us justify a case as an object of study, other criteria should be considered at the time of selecting cases (Rodríguez, Gil, and García, 1999; Yin, 2009):

- You must have easy access to the case (data, people, documents, etc.).
- There is a high probability of mixing processes, programmes, people, interactions or structures related to research issues.
- You can establish a good relationship with the informants.
- The researcher can develop his task as necessary.
- The quality and credibility of the study are assured.

Finally, another of the fundamental aspects that must be considered in the design of a research based on case studies is the unit of analysis. Defining the units of analysis will be based on the research questions. If these questions do not direct you towards the units of analysis, they are most likely badly formulated, ambiguous or vague questions.

Depending on the number of units of analysis planned in each case, you will be looking at either an overall or inclusive design. When you are ready to study a certain reality, you can consider it as whole, unique, indivisible (overall design) or you may be interested in studying some units or sub-units of this reality in a differentiated way (inclusive design). Thus, for example, although a single organisation has been selected as a case, it is formed by departments, people, processes, etc. that can be studied in parts (or units) of a single case.

> **What would happen if...**
>
> ... So, to conduct a study on the leisure habits among young people in my municipality, where informants from five of the main groups, centres or open centres in my municipality will be selected? Would you use a multiple case study design?
>
> It is common to confuse a multiple case study with studies that use a sampling procedure that is not probabilistic, causal, intentional or even by quotas. This case would be one of those instances that causes confusion.

2.3.6. Other research methods in education

Beyond the methodologies reviewed so far, there are other common methodological proposals in the field of education, such as action research and design-based research. Beyond possible discussions about the adequacy or oth-

erwise of these methodologies for the scientific method, this section offers some basic elements that can help you to assess to what extent they may be more or less useful for your interests.

Action research

The origins of action research (from now on "A-R") are attributed to the social psychologist Kurt Lewin. It is a research method that, unlike the ethnographic method framed in the interpretive paradigm, is part of the socio-critical paradigm.

In this sense, the main objective of A-R is to transform reality, i.e. it deliberately focuses on educational change and social transformation. That is why it is oriented towards the resolution of problems through a cyclical process that goes from a reflective activity to a transforming activity. The terms "action" and "research" emphasise the essential features of this method: from the same practice they develop knowledge that improves the educational intervention.

As Elliott (1978) comments, like other qualitative methodologies, A-R seeks to study educational practice as it develops in its natural scenario, deepening the understanding of situations where teachers are involved and that are experienced as being problematic and, therefore, prime for improvement (Carr and Kemmins, 1988). Regardless of theoretical approaches, A-R seeks to offer practical answers to real situations, and therefore interprets what happens from the point of view of those who act or interact in the situation of the problem, such as teachers and students, teachers and directors.

Another of the outstanding and distinctive features of A-R is that researchers, with a few exceptions, are the people involved in the reality under study. In other words, the teaching staff, in addition to teaching tasks, develop research, by exploring, reflecting and acting on their own practice.

Thus, from this perspective, it could be said that it is more desirable for the teacher, committed to his task, to investigate the teaching-learning process within his classroom to improve teaching practice and try to improve the quality of education.

According to Bartolomé (2000), the five major features that allow us to distinguish action research from any other research activity or educational experience are the following:

1) The object of action research is to transform educational or social practice, which at the same time seeks to understand them better.

2) There is an ongoing relationship between research, action and training throughout the entire process.

3) There is a particular way of approaching reality: linking knowledge and transformation.

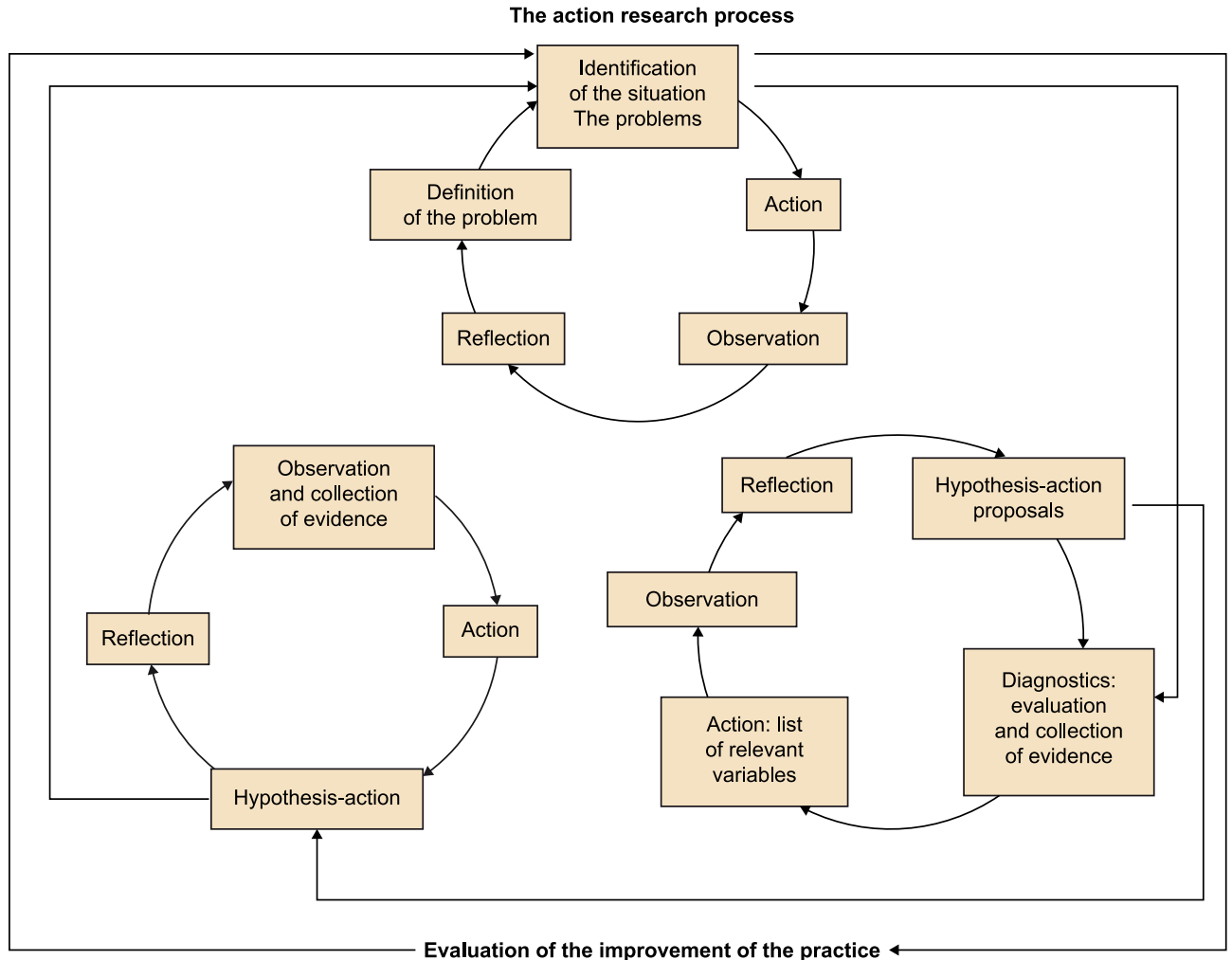**4)** The leading role is played by educators-researchers.

5) There is questioning by the group.

In addition, Kemmis and McTaggart (2005) specify some of the characteristics of what they call "critical and participatory action research":

- **Social process**: study the relationship between the individual and the social sphere.

- **Participatory**: it encourages people to examine their knowledge and the way they must interpret themselves and their actions in the social and material context. It is participatory in the sense that we can only do A-R on ourselves, whether we are an individual or a group.

- **Practical and collaborative**: it encourages people to examine social practices (communication, production and social organisation) that link them with other people in social interactions.

- **Emancipatory**: it helps people recover or free themselves from the constriction that social structures represent and impose which limit self-development and self-determination.

- **Critical**: it helps people to recover or free themselves from the constraints generated by the social media they interact with.

- **Reflective**: seeks to research reality to change it and change reality to research it. In other words, it is a process in which people transform their practice through a cycle of critical and self-critical cycles, action and reflection.

- **Transforms theory and practice**: it articulates and develops the theory and practice through critical reasoning about them and the consequences that are derived thereof. A-R involves addressing daily practice based on how the people involved understand it "to explore the potential of different perspectives, theories and discourses that should help to illuminate particular practices and practical situations as a basis for the development of critical understanding and ideas about how things must be transformed".

Action research follows a continuous process, known as a research spiral, which allows reflective action and transformative action to be linked. This dynamism makes it necessary to continually link together the planning, activity and data collection and reflection phases (see Figure 12).

Figure 12. Outline of an action research process

The action research process

Identification of the situation
The problems

Definition of the problem

Action

Reflection

Observation

Observation and collection of evidence

Reflection

Hypothesis-action proposals

Reflection

Observation

Action

Action: list of relevant variables

Diagnostics: evaluation and collection of evidence

Hypothesis-action

Evaluation of the improvement of the practice

Source: Bartolomé (2000, p. 30)

In previous sections we have reviewed some experimental research designs and we have seen the difficulty involved in the approach and development of this type of design in educational contexts, due to, among other issues, artificiality, requirements for the control of variables and the poor applicability of the results in educational practice. Given this situation, and as has been shown throughout the text, research in education has opted for much more comprehensive proposals, typical of qualitative approaches, such as some of those that have been discussed so far (ethnographies, A-R, case studies or grounded theory, among others).

Research based on design

Along these same lines, at the start of the last decade of the 20th century, thanks to Ann Brown (1992) and Allan Collins (1992), the need arose to formulate methodological approaches that link research, educational design and innovation, which led to **research based on the design (*design-based research*)**, that some authors (Design Based Research Collective; Kelly, 2003) dared to consider as an emerging paradigm in educational research that explains how, when and why educational innovations work in practice.

Cobb, Confrey, DiSessa, Lehrer, and Schauble (2003, p. 9) define design-based research (hereinafter, DBR) in the following way:

> "Prototypically, the design of experiments involves both the engineering of certain forms of learning and the systematic study of these forms of learning in the context defined by the media that support them. This designed context is subject to tests and revisions, and the successive iterations that result, have a role similar to systematic variation in the experiments".

Therefore, DBR focuses on the design and exploration of all kinds of educational innovations, in the didactic and organisational sphere, including also possible artefacts (for example, software) as nuclei of these innovations, thereby contributing to an improvement in the understanding of the nature and conditions of learning (Bell, 2004).

Next, the main features are summarised that allow you to differentiate between DBR and classic and positivist experimentation:

- It is carried out in real contexts in order to avoid the distortions typical of laboratory experiments.

- It does not intend to control variables, but to identify them to characterise the situation.

- It starts with a general plan and with materials that are not necessarily totally defined at the start.

- These are adapted according to the dynamics and the context.

- It does not aim to replicate the implementations adopted, but aims to improve the implemented design and generate guidelines for the implementation of educational designs in situations with similar conditions.

- A systemic analysis of the educational implementations is carried out, in which social interactions between the participants are part of the analysis of the research.

- It does not aim to demonstrate a hypothesis, rather to develop a profile that characterises the design in practice.
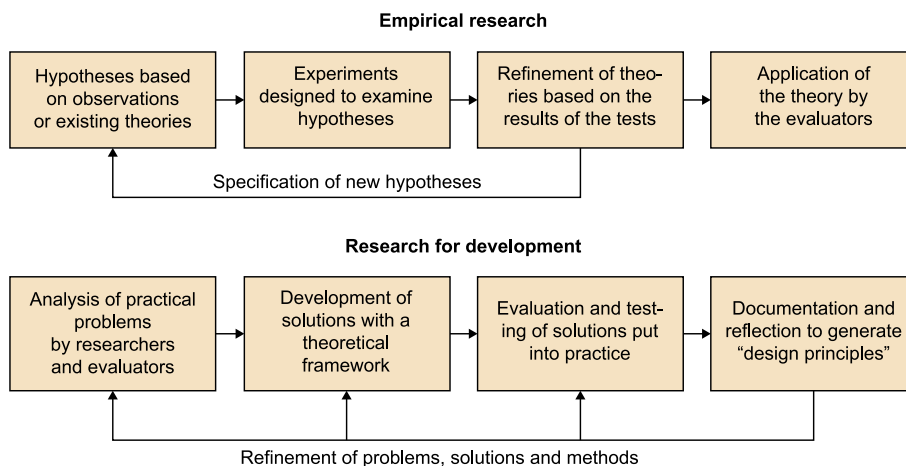

What would happen if…

… as the educational coordinator of a group of schools you decided to analyse the aesthetic aspects of the school space that affect the performance of students and, to do so, modify the aesthetics of four of the eight schools that make up the group? Would it be DBR or would it be A-R? Would it not be an experimental design used by four schools and where the space is not modified they would be classed as control groups? Or maybe it would be a multi-case study?

- Decision-making on the development of the different stages of the re-
search is not the sole responsibility of the researchers, but of all the par-
ticipants involved in the process.

Figure 13 compares the experimental research process from a positivist per-
spective with a research process more typical of DBR.

Figure 13. DBR vs. experimental research

Empirical research

| Hypotheses based on observations or existing theories | → | Experiments designed to examine hypotheses | → | Refinement of theo- ries based on the results of the tests | → | Application of the theory by the evaluators |

Specification of new hypotheses

Research for development

| Analysis of practical problems by researchers and evaluators | → | Development of solutions with a theoretical framework | → | Evaluation and test- ing of solutions put into practice | → | Documentation and reflection to generate "design principles" |

Refinement of problems, solutions and methods

The basic characteristics that define DBRC (Design Based Research Collective,
2003; Reeves, Herrington, and Oliver, 2005) are the following:

- The core objectives of the design of learning environments and the devel-
opment of learning theories or proto-theories are intertwined.

- Development and research are produced through continuous cycles of de-
sign, development, analysis and redesign.

- The theories generated must be shared, and it is necessary for DBR to com-
municate the most relevant implications to other practical and education-
al designers.

- It should explain how designs work in real scenarios.

- The development of these explanations is based on methods that docu-
ment and link in with publication processes for the results of interest.

- It involves a long-term commitment that implies a continuous reformu-
lation of protocols and issues.

- It is based on intensive cooperation between researchers and those in-
volved.

- It involves a commitment to the construction and explanation of theories while solving real problems.

In addition, as with most qualitative methodologies, in DBR, researchers and stakeholders (practitioners) work together to generate significant changes in the context. The implication of these two elements in the research process implies a deep reflection on one's own experiences as designers of teaching-learning processes.

One way to carry out these reflections and these positions in the scenario is through "personal narratives" (Knowlton, 2007). Research designs based on DBR can occur in contexts that vary widely in type and scope. Next, we see some examples (Cobb *et al.*, 2003):

- "One-for-one" designs (teacher-experimenter and student): training environments are reproduced on a reduced scale in order to study them in more depth and detail.

- Classroom experiments: the team of researchers collaborates with a teacher (who should be part of this team) who assumes responsibility for the instruction.

- Experiments for the development of teachers in training: the research team helps to organise and study the training of future teachers.

- Studies for the development of active teaching staff: the team of researchers collaborates with the teaching staff in the development of professional communities.

- Studies for organisational change: researchers collaborate with teaching staff, school administrators and other educational stakeholders in the promotion of organisational change.

Collins, Joseph, and Bielaczyc (2004) offer a detailed guide for the development of DBR (see Table 11):

Table 11. Guide for the development of research based on design

Implementation of a design	Identify critical elements of the design and their interaction. Characterise each element according to its implementation.
Modification of the design	If the elements of a design do not work, modify the design. Each modification involves a new phase. Characterise the critical elements for each phase. Describe the reasons for making the modifications.

Source: Colins, Joseph, and Bielaczyc (2004, p. 33)

Multiple ways of designing	Cognitive Resources Interpersonal Group or classroom School or institution
Measurement of dependent variables	Climate variables (for example, commitment, cooperation, assumption of risks, etc.) Learning variables (for example, disposition, metacognitive and learning strategies) System variables (for example, ease of adoption, sustainability, dissemination)
Measurement of independent variables	Context Characteristics of the learners Technical support Financial support Professional development Implementation
Report on the research	Objectives and design elements Context in which it is developed Description of each phase Results Lessons learnt Multimedia documentation

Source: Colins, Joseph, and Bielaczyc (2004, p. 33)

Finally, and although we have seen that DBR is shown as a more than valid methodology for generating causal explanations about learning processes that gives way to experimental designs (Brown, 1992), there are still many questions to be solved and a long way to go in its consolidation (Maxwell, 2005).

What is the difference between DBR and other methodologies aimed at obtaining applied knowledge, to understand and analyse reality in order to transform it, as is the case with action research?

2.4. Mixed methods

Gadamer (2001) warns us of the sterility of methodological discussions based on a methodical distinction (Husserl) or a distinction of the objects of study (Dilthey), and considers that the objectives pursued by the researcher are the fundamental question for the method: *erklären* (to explain), typical of quantitative research, and *verstehen* (to understand), typical of qualitative research.

Starting from this observation and considering that we can find ourselves faced with research that considers both types of objectives, it is justified that a research design can share characteristics from both quantitative and qualitative methodologies.

In this sense, mixed methodological approaches help, among other benefits, to neutralise or eliminate biases of certain methods when they are used in isolation and that the results of one method contribute to the development of others or that they can become a kind of sub-process of another method, providing data on different levels or units of analysis.

Creswell (2018) foresees three possible variations in mixed methodological approaches:

1) Sequential procedures. This is about deepening the results obtained by means of one method with the subsequent use of another. For example, it is common to start research with a small qualitative study on an exploratory scale that allows you to subsequently apply a quantitative methodology in order to generalise the results.

Figure 14. Sequential procedure
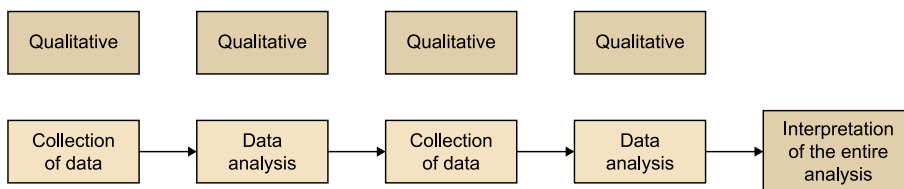
2) Concurrent procedures. Quantitative and qualitative methodologies are used in a simultaneous or convergent manner, and thus the object of study is better understood.

Figure 15. Concurrent procedure
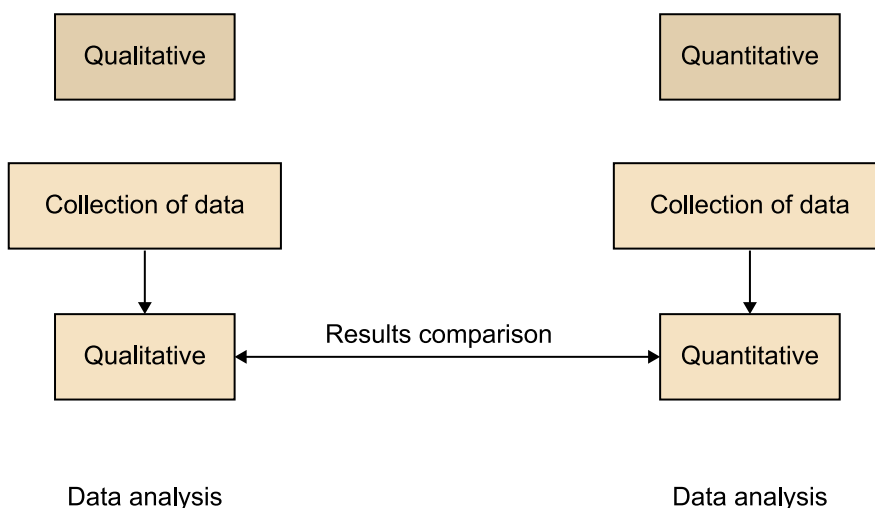
3) Transformative procedures. They use the theoretical approach as a framework for the configuration of a research design that considers both quantitative and qualitative data.

What would happen if...

... as head of the Human Resources and training department of a large company I proposed to investigate how the work environment affects the professional development of employees through an interview process and, in parallel, tried to identify to what extent the degree of professional development of employees determines the productivity of my company through a questionnaire? Would it be a concurrent mixed design or would it rather be a triangulation of data or, even, two different simultaneous studies?

According to Creswell (2018), there are four criteria that help us determine the strategy we are going to use from a mixed methodology approach (see Table 12): implementation, priority, integration and theoretical perspective.

Table 12. Criteria for determining the mixed methodological strategy

Implementation	Priority	Integration	Theoretical perspective
Concurrent	No change	In the data collection	Explicit
Sequential (first qualitative)	Qualitative	In the data collection	
Sequential (first quantitative)	Quantitative	In the interpretation of data	Implicit
		With some combination	

Source: Creswell (2003, p. 211)

3. Fieldwork planning

In this last section, as warned in the introduction, some basic elements that can help to plan the fieldwork for research are included. Thus, the essential characteristics of the main research techniques will be reviewed (the questionnaire, the interview, the discussion group and participant and non-participant observation), the typologies of sampling and some operational logistical aspects that are key and that must be considered during the development of the fieldwork.

3.1. Selection of research techniques

Once the research problem, hypothesis, objectives and research design have been defined, the next step in the research process is the planning of the data collection process and the selection of the most appropriate techniques, depending on the problem, the characteristics of the data and the methodology that will be used. Obviously, this data collection regarding reality will be essential for responding to the research problem raised in the initial phases of the process.

It is advisable to approach the object of study from different viewpoints. Therefore, you have to put into practice various techniques and tools for collecting data according to your objectives. This combination of techniques and tools for data collection, known as a triangulation strategy, allows you to compare and contrast them, and gives your research more rigour and greater quality.

> The development of these techniques and these tools must take into account two essential qualities that contribute towards ensuring the quality of the collected data: validity and reliability.

Validity refers to the homogeneity, the correspondence between the tool or the technique and the attribute that the aforementioned tool seeks to measure. In other words, it is considered that a tool or technique is valid when measuring what it has been prepared for. There are different types of validity: content, predictive, concurrent and conceptual or construct.

The second of the characteristics that must be considered is reliability, and this refers to the consistency, stability and equivalence of the results. A tool or technique is reliable when you offer similar results if you apply them in similar situations.

In the case of tools and techniques typical of the empirical-analytical methodology, objectivity must be added as a third characteristic that must be considered. The criterion of objectivity, like the criteria of reliability and validity, undergoes certain modifications in a constructivist methodology. The data and results obtained must be independent of the person applying the tool or technique. Knowledge of the different techniques for obtaining data implies an understanding of the elaboration process, regulatory criteria, applications, the advantages and the disadvantages.

Although in the book *Técnicas de investigación social y educativa* by Fàbregues *et al.* (2016) a broad description of the main research techniques is made, here are some of its main characteristics summarised.

3.1.1. Questionnaires

A questionnaire, as has already been mentioned, is the main tool used in quantitative methodological approaches (survey methodology, experimental and quasi-experimental designs). Meneses (2016, p. 24) defines questionnaires as follows:

> "The tool that allows social scientists to pose a set of questions to collect structured information about a sample of people using the quantitative and aggregate treatment of the answers to describe the population to which they belong or to statistically contrast some relationships between the measures of interest to you".

Questionnaires are the most appropriate tool when you intend to collect structured information from a large number of informants. Through questionnaires you can ask people to provide you with information about specific and verifiable facts and behaviours (factual questions) or to express their opinion, beliefs and feelings (subjective questions).

These questions, whether factual or subjective, can be formulated in an open manner, i.e. the informant has total freedom to respond, or in a closed manner, where the informant can only choose between the possibilities that the researcher provides. However, if, as already stated, this tool is characterised by providing information that can be treated quantitatively, it is evident that open questions should be avoided.

Table 13 summarises some of the main advantages and disadvantages of questionnaires.

Table 13. Advantages and disadvantages of questionnaires

Advantages	Disadvantages
• You obtain information from a large number of people. • You obtain information adjusted to the object of evaluation. • Simple data processing is carried out. • It is useful to contrast information.	• It allows little flexibility. • You obtain brief information that does not allow it to be monitored. • A low percentage of responses is obtained. • There is risk in the distribution.

3.1.2. Interviews

The interview, together with the discussion groups and some types of observation, is the technique for collecting data par excellence in the framework of qualitative methodological approaches. The objective of an interview will always be to collect information from a participant about a specific object of study based on their interpretation of reality.

It is common for studies developed in the educational field to use interviews, either because it is appropriate for the type of research objectives set or because it apparently seems a much more affordable technique, both in its approach and in subsequent data analysis. In any case, you must bear in mind that the application and analysis of an interview are very complex processes that require great communicative and scientific competence on the part of the interviewer-researcher.

There is a great range of interviews that generate different data, for different types of research and different kinds of researchers. The most common classification is established according to the degree of structuring. So, three major types of interviews can be differentiated:

- Structured: the interviewer previously organises the questions, normally closed, on the basis of a pre-established, sequenced and guided script that leaves room for the interviewee to depart from the marked script.

- Semi-structured: part of a script that predetermines the necessary information. In this case the questions are open, which allows more flexibility and nuances in the answers.

- Unstructured: unlike the previous ones, it is done without any previous script, with the only reference being the themes or areas of interest for research. This type of interview requires a lot of preparation by the interviewer before conducting interviews and a high level of knowledge of the subject addressed.

Construction and use of interviews

If you want to delve into the characteristics of the main types of interviews, face to face and remote, review the following works:

Corbetta, P. (2003). *Metodologías y técnicas de investigación social*. Madrid: McGraw-Hill.

Gillham, B. (2005). *Research interviewing. The range of techniques*. Berkshire: Open University Press.

Some of the arguments that can justify the use of interviews as a data collection technique include:

- The methodological foundation of the research suggests that the knowledge, perspectives, experiences and interactions of people are significant aspects of the social reality that is being researched.

- If we consider that knowledge is contextual, situational and interactive, we have to use interviews to evoke social situations in which this knowledge emerges.

- It is advisable to use interviews if one considers that the way in which explanations and social arguments are constructed depends on the depth, the nuances and the complexity of the data.

- The use of interviews may be appropriate for the construction of a good measuring tool, for the style of a questionnaire, or for the preparation of in-depth interviews (preparatory exploratory use).

In Table 14 some advantages and disadvantages of interviews as a research technique are presented.

Table 14. Advantages and disadvantages of interviews

Advantages	Disadvantages
• It allows you to obtain rich and contextualised information from the perspective of the interviewee. • Interactivity and flexibility that allows you to readjust and clarify questions and answers. • In the initial moments of research, it provides guidelines that allow you to specify the design or prepare other tools and techniques. • It favours the transmission of non-superficial information. • It is usually an effective complement or counterpoint to the data and information obtained through quantitative tools.	• It involves a large consumption of time, both in the development and in the subsequent processing of the data. • It provides indirect information, filtered from the perspective of the interviewees. • The presence of the researcher can bias the answers. • Not everyone expresses themselves in the same way or is equally perceptive. • In comparison with discussion groups, interviews do not produce the information resulting from the synergies and the snowball effect of the group itself.

3.1.3. Discussion groups

Discussion groups and interviews are very similar strategies based on conversation and questioning. Surely, as advanced in the previous point, beyond the number of participants (interviews are usually individual and discussion groups involve the participation of between six and ten individuals), the main

difference between interviews and discussion groups is that discussion groups allow you to generate data from the dynamics and synergies generated among a group of participants. Likewise, discussion groups take place in less artificial contexts than interviews, which increases the ecological validity of the information collected.

Fàbregues and Paré (2016, p. 162) define discussion groups as:

> "A qualitative research technique that takes the form of an open discussion based on a guide of questions in order to obtain perceptions and ideas on a topic of interest from the communication between the participants".

Typically, discussion groups are used to:

- Make a first approach to a topic of interest starting from the perspective of the participants. Unlike interviews, the use of discussion groups implies that the researcher considers that the participants' understanding of a certain phenomenon is not generated individually, but rather from interaction with the rest. This first collection of basic information can help in the construction of questionnaires, interviews or observation guidelines.

- Encourage the generation of more elaborate ideas/responses based on the group dynamics generated during the course of the session.

- Address complex, sensitive or controversial phenomena. The fact of sharing the space and experiences with other participants often reduces the degree of anxiety and discomfort and makes it easier for participants to express their experiences and beliefs about the subject in question.

- Compare the previously collected information with the questionnaire, the interview or the observation.

In comparison with other techniques, some of the advantages and limitations of discussion groups are those presented in Table 15.

Table 15. Advantages and disadvantages of discussion groups

Advantages	Disadvantages
• It allows you to record contrasting information from several people in an interactive way.	• If the group dynamic is does not work, interpersonal conflicts can be caused.
• The context of a discussion group is more natural than in the case of an interview.	• The task of the interviewer or moderator is complex.
• Informants may have the opportunity to express opinions beyond the script established by the interviewer.	• Often, the need for all people to participate makes the information provided superficial.

3.1.4. Participant and non-participant observation

Although observation usually tends to be associated with qualitative and, specifically, ethnographic approaches, certain types of observation (non-participant) are, in fact, more typical of quantitative methodologies.

Participant observation, typical of ethnography, is one in which the researcher participates directly and for long periods in the reality he is observing. This immersion by the researcher with participant observation allows him to learn first-hand about the phenomenon under study and to approach it as would any other person participating in that reality.

Example 4

To analyse the relationships established between the members of a faculty within a certain school, you participate throughout a school year in the daily activity of the school, collecting all the data from various situations (for example, school meetings, staff meetings, during lunch time, during break time or even in meetings outside the school) that can help you to understand what interests you.

By contrast, non-participant observation, much more common in the educational field, occurs when the researcher does not have the time or skills to participate in the daily activities of the reality under study. In these cases, the researcher collects data promptly and without interfering in the usual dynamics of the observed group.

Example 5

Following the previous case, non-participant observation would imply that the researcher, instead of being there throughout the entire school course, agreed to his presence in a staff meeting and a school meeting and, sitting in a corner of the room, would be taking note of the data that would interest them in relation to the object of study.

In any case, it must be clear that these are two extreme modalities and that in between, as Bryman (2012) indicates, there may be many other modalities.

Whatever the modality of observation you choose, we propose some phases to develop the observation based on what Creswell (2005) states:

1) Select the place of observation.

2) Initially enter the place of observation.

3) Select the people, the phenomena, the time and the observation time.

4) Determine the role you should adopt as an observer (participant versus non-participant).

5) Make previous observations that allow you to familiarise yourself with the reality under study.

Types of observations

To learn more about observation variants, check the following references:

Olabuénaga, J. I. R. (1996). *Metodología de la investigación cualitativa*. Bilbao: University of Deusto.

Spradley, J. P. (1980). *Participant observation*. New York: Holt, Rinehart and Wilson.

6) Design the observation pattern and the observation recording system.

7) Record the notes, both descriptive and reflexive.

8) Introduce the researcher to the other people (ethical aspects of observation).

9) Leave the place of observation.

Like all the other techniques that have been discussed, observations also present a number of advantages and disadvantages that must be considered when deciding whether to include them in the design of your study (see Table 16):

Table 16. Advantages and disadvantages of observations

Advantages	Disadvantages
• Information on behaviour is obtained as it happens.	• It prevents foreseeing phenomena of interest.
• Information is obtained from subjects that cannot be obtained otherwise.	• The duration of the observed events is short.
• It offers the possibility to record the observation.	• Interpretation of the information captured is subjective.
	• Categorisations in the behaviours observed are artificial.

3.1.5. Identification and selection of participants

It is common that, for purely practical reasons (time, cost and complexity), except in the case of small populations, you have to select a sample of the population during the research processes. One of the first decisions in the selection of the sample is if you want it to be representative and, therefore, allow you to generalise the results of the study with the rest of the population (external validity). In the educational field representative samples are not always used, for reasons of time and resources or, simply, because it is not necessary. In many other cases, you will work directly with the entire reference population (for example, with all the post-compulsory secondary students from a municipality).

In the case of quantitative methodologies, there are several computer applications and statistical techniques that help you to calculate the size of the sample based on the standard error or sampling error and the level of confidence expected.

Qualitative studies often require much smaller samples than quantitative ones. Although there are generally no specific rules to determine the size of the sample in qualitative research, as has already been mentioned when discussing the phenomenological methodology, the sample size could be determined by saturation, i.e. when the inclusion of more participants in the study does not provide new data or new perspectives on the object of study.

In other cases, qualitative studies resort to non-probabilistic sampling typologies such as those shown below. In any case, the size of the sample should always be explained based on the objectives of the study and the resources and time available (Patton, 1990).

> We can classify the main sampling methods according to the principle of equiprobability, according to which all subjects of the population have the same possibilities of being part of the sample. Starting from this principle, we differentiate between probabilistic samplings, which respect the commented principle, and non-probabilistic samplings, in which the selection of the sample is not based on equiprobability, but on other criteria related to research.

Table 17. Type of sampling

Probabilistic sampling	Non-probabilistic sampling
Simple random Systematic Stratified (proportional and constant) Conglomerates or groups Multistage	Causal or accessibility Intentional or opinion Quotas Snowball

Source: Latorre, Rincón, and Arnal (2003); Sierra Bravo (2003)

Next, the probabilistic and non-probabilistic types of sampling are explained very briefly:

- **Simple random:** this is about randomly selecting a certain number of individuals over the total population.

- **Stratified random:** the sample is selected according to strata, categories or subgroups present in the population and considered relevant for the objectives of your study. Thus, for example, once the sample size is determined, you could divide the population according to the educational

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Software that facilitates the task

To calculate the size of the sample you can use any of the following applications:

- G*Power (http://www.gpower.hhu.de/en.html).
- Power and sample size (https://bit.ly/2CxhtL1).
- StudySize 2.0 (http://www.studysize.com/)
- Creative research systems (https://bit.ly/2t86sYn)
- Australian National Statistical Service (https://bit.ly/2Ph2Br8)

stage, ownership of the centre or gender and select the individuals within each stratum/subgroup following a simple or systematic random process.

- **Conglomerates:** this type of sampling is quite useful and common in the educational field. Instead of selecting individuals, natural groupings of individuals are selected, such as classrooms or educational centres.

- **Causal or accessibility:** individuals are selected according to the objectives of the study and according to your ease of access.

- **Intentional:** you select those key informants that you believe can provide relevant information about your object of study. The criteria used to select them must be well justified.

- **Quotas:** this can be considered to be the non-probabilistic version of stratified random sampling. It is about choosing some variable (usually sociodemographic) that allows you to create strata or subgroups (for example, age, gender, educational stage, performance, etc.) and, once you have the strata or subgroups, establish the amount of informants. The number of informants or quotas can either be proportional to the population (if you have that information) or not. Finally, the selection of the participants within each quota will not be done randomly.

- **Snowball:** a key informant or participant is identified who, in turn, provides you with contact to another key informant. This process is repeated until the researcher considers it appropriate to stop.

Once you have decided upon the most appropriate type of sampling for your study and, if appropriate, made the appropriate calculations to obtain the sample size, the next step will be to initiate recruitment of the participants.

Obviously, the first step in their recruitment will be to contact potential participants and invite them to be part of your study or your research. In the field of education, this initial contact (by email, by telephone or in person) is often complicated, so it is advisable to locate people, organisations or entities that can provide you with access to the participants (for example, education councillors, school directors, Department of Education, managers of a service, etc.).

It is essential that you inform the participants about the following aspects:

1) the purpose and nature of your study;

2) the guarantee of anonymity;

3) the need or not to record the interview or observation in audio or video format;

4) the incentives (money, transportation, food, accommodation, feedback, etc.) that they will receive for participating.

Example 6

Título de la investigación

Objetivo del estudio

Por favor lea cuidadosamente esta información antes de decidir participar en este proyecto.

El objetivo de esta investigación, desarrollada en el marco del programa de Doctorado en Educación de la UAB y tutorizada por el Dr. David Rodríguez-Gómez, es analizar los factores que ▮▮▮▮▮ Una vez identificados y analizados dichos factores, se procederá a compararlos con modelos teóricos existentes sobre ▮▮▮▮

En primer lugar, le solicitaremos algunos datos personales, como su edad, estado civil. En segundo lugar se le solicitarán datos familiares y académicos. En tercer lugar que valore según su experiencia algunos parámetros de su antigua universidad. No se le solicitará su nombre a menos que usted desee ser contactado para otorgarle información de los resultados de la investigación.

El tiempo que le tomara llenar el cuestionario es de aproximadamente 30 minutos.

La participación en esta investigación no representa ningún riesgo para usted. Asimismo, no participar en esta investigación no tendrá ningún tipo de consecuencia, personal, académica o profesional para usted.

Se le recuerda que los datos entregados serán de uso exclusivo de la autora de la tesis y de carácter completamente anónimo y que su participación es voluntaria.

El consentimiento informado, se guardara en un lugar seguro y al cabo de 5 años, de terminada la investigación será destruido y las bases de datos generadas serán completamente anónimas.

Si tiene cualquier interrogante o desea más información a cerca de la investigación, no dude en comunicarse con la autora de esta misma (▮▮▮▮▮▮▮.

He leído la información sobre el proyecto de investigación y he tenido la oportunidad de hacer preguntas. He quedado satisfecho con la información recibida. Comprendo que mi decisión de participar es voluntaria y que la información otorgada es anónima.

Estoy de acuerdo en participar voluntariamente y he recibido una copia de este consentimiento.

Nombre, firma participante y fecha

Investigadora:

In order to guarantee that the ethical code is respected, you will have to gather all this information in a document that is called "informed consent" and that both the participants and the researcher must sign.

- https://www.uab.cat/web/human-research/informed-consent-1345735629180.html
- https://www.admin.ox.ac.uk/curec/resources/informed-consent/

In cases where it is complicated or impossible to obtain written consent, it may be processed orally provided that the same information criteria are respected.

The ethics of research

A good way to approach ethical procedures in research can be to read *The European Code of Conduct for Research Integrity* (https://bit.ly/2c5gvJV).

Also, there are some examples on the following websites that can help you write the informed consent document:

3.2. The logistics of fieldwork

Once you have the design for your finished study and you have made initial contact with potential informants, one of the most exciting parts of research can commence: the fieldwork. At this time you will have to test your ability as researchers.

Formal education centres receive increasingly more demands for participation in studies of various kinds, both by public administration and by foundations, universities and even undergraduate and graduate students. This over-saturation of demand means that they have a certain reluctance to get involved in new studies. In the field of socio-education or non-formal education, this saturation is lower, although it can often involve some administrative management or an extra bureaucratic procedure. For example, if you want to do a study in a municipal open centre, it is likely that you will have to contact the political leaders of the municipality of the population beforehand and explain what the objective of your study is. Finally, in the workplace, which is less used to this type of demand, difficulties in access will always be linked to the guarantee of anonymity or business secrecy.

As put forward in the previous point, a good knowledge of the context in which you will carry out the fieldwork or have some contact to facilitate this access will be fundamental to significantly increasing this stage's chances of success. As in any other type of planning, it is important that your plan to develop the fieldwork is flexible enough and even incorporates a forecast of possible contingencies. You must not forget that you are working with people and there may be multiple unforeseen events that force you to modify your timetable or even search for alternative informants.

If the research is developed as a team, it is essential to ensure both good coordination of all team members and a certain degree of univocal conception of the object of study. This last point is especially important in the case of qualitative research, in which the researcher (that is, the interviewer or observer) acts as a key mediating agent in the collection of data. In this previous meeting, not only the orientation of the study has to be commented upon, but also some of the critical points or main difficulties with which you can find yourself during the fieldwork can be anticipated. Likewise, it is advisable although not always possible, to plan intermediate meetings while the fieldwork is being carried out. In this way researchers can explain the real difficulties they have discovered, and even data or information they did not initially plan, and agree among all team members how to reorient the fieldwork, if necessary.

Once this initial meeting has taken place, whenever possible and, above all, if you are new researchers and you are developing a qualitative study, you should perform a fieldwork test to see, for example, how the interview script works or how much time to dedicate to each interview. Although it is an initial pilot test, this data does not need to be excluded from subsequent analyses.

It is important that, as part of good fieldwork planning, you have prepared all the materials and resources necessary to develop it correctly. So, for example:

• If you use a face-to-face questionnaire, you should carry extra copies as it is common for someone to ask you for one.

- The same logic should be applied to the informed consent document.

- If you are conducting interviews and you want to record them, you will have to make sure that the device you use (for example, audio recorder, video camera, mobile phone, etc.) works correctly, that it has enough battery (it is always good to carry a spare battery or extra batteries) and that the audio or video file format is exportable to the data analysis software that you will use.

Finally, it is always advisable to have a research journal to record key events of this fieldwork. Although this research journal or the field notes are more typical of ethnographic methodologies, they can provide you with fundamental elements to contextualise the subsequent data analysis or, even, to systematise the recording of some limitations of your study.

As has been pointed out when describing the recruitment of informants, it is fundamental that you always retain a responsible and ethical attitude throughout the fieldwork. Blaxter, Hughes, and Tight (2010, p. 164) consider that:

> "Ethical research involves obtaining informed consent from those people you will interview, question, observe and from whom you will request materials. It implies agreeing on the use you will make of the data and your way of reporting and disseminating the analyses. It also means keeping the agreements reached".

Therefore, it will be necessary that, as social researchers, you are aware of aspects related to privacy, anonymity, informed consent, sincerity, transparency and the benefits of your research. At all times, you must be responsible on behalf of yourselves, other researchers and the informants themselves, for the design of your study, fieldwork, data analysis and the dissemination of results.

As highlighted by Blaxter *et al.* (2010), the ethics of research should not focus only on the protection of informants, but also on the safety and welfare of the researchers themselves.

This brief approach to the importance of research ethics is concluded with a checklist proposed by Bell and Waters (2014) on the subject, as shown in Table 18.

Ethics in research

For more information, consult this book: Cooper, H. (2016). *Ethical choices in research: managing data, writing reports*. Washington: American Psychological Association.

Associations that safeguard research ethics

To delve into practical proposals on ethical research in education and social sciences, we recommend consulting the following associations' websites:
- European Educational Research Association (https://bit.ly/2yXu1rY)
- Social Research Association (SRA): *Guidelines ethics* (http://the-sra.org.uk/research-ethics)
- Social Policy Association (SPA): *Guidelines on research ethics* (https://bit.ly/2Cv3SUF)

Table 18. Ethics and integrity in research

1) It is your responsibility to find out if there are any restrictions or legal requirements in relation to your research.	If you or your supervisor have any doubts about the integrity of your proposal, do not continue.
2) Currently, many organisations have ethical guidelines, codes of good practice or protocols.	Make sure you know these documents and check that you adapt to their requirements.
3) Always be sure of the informed consent of your participants.	Remember that informants should not sign any protocol if they have not had enough time to read it and consider its implications.

Source: Bell and Waters (2014, p. 60)

4) If all the research proposals have to be reviewed by the ethics committee at your institution, make sure that the proposal is consistent. Try to find out when this committee meets and send them the proposal well in advance so they can take it into account.	Show the proposal to your supervisor, your colleagues or students who have already sent a proposal to the ethics committee, whether they have approved or rejected it.
5) Usually, informants are promised confidentiality and anonymity.	However, make sure that everyone is clear about what you mean by each concept exactly.
6) You should never break any promises made to participants. Therefore, be careful and never make promises that you cannot fulfil.	So, if you promise anonymity, you will never be able to send follow-up messages. Do not cheat!
7) If you use a computer, be careful and check who should or who could see the text, especially if the text shows the name of the participants at any time.	Consult the Data Protection Law; especially, the sections related to the right of people to privacy in relation to the processing of personal data.
8) Beyond the requirements of your supervisor or your institution, the study will always be yours.	Even if you are not required to comply with the codes of good practice or the requirements of the ethics and research committees, make sure that the research is carried out in accordance with your own ethical principles.
9) If you are developing research in your own institution or organisation, always try to let your colleagues know what you intend to do and how you expect them to collaborate.	Do not be ambiguous. You have to take into account how much time you have to finish the research in the foreseen time.
10) If you intend to publish the results of your study at some point, you have to make sure you get permission from all the people and institutions involved.	Also, make sure that you have had access to all codes of good practice, protocols and guides, especially the ethical guidelines on informed consent and intellectual property formulated by all your organisations and professions.
11) You may believe that everything you have written is yours and that, therefore, you can do what you want with any report, article or book.	Sometimes it may be the case, but not always. You have to check beforehand.
12) Good practice codes, protocols, guidelines or policies on ethical research will not help you to solve all the problems, but they will help you.	As a minimum, these documents clarify some of the most common problems.

Source: Bell and Waters (2014, p. 60)

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