Collaborative Working in Academic Research Projects

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A Socioformative Approach

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ABSTRACT

Collaborative working opens up possibilities for sharing so that, through the exchange of experience and knowledge, learning opportunities and alternative approaches can be generated, better preparing students for the future and benefitting society. In the present book, collaborative working with a socioformative approach is presented as a shared way of working; it is treated as an essential component of the development of formative projects, as well as the establishment of an ethical life project grounded in the educational field. This work has been generated through the development of an investigative competence into promoting the integrated scientific formation of students. Documentary analysis was performed using a conceptual cartography with the intention of constructing knowledge about the concept of collaborative working. In addition, collaborative working is differentiated from "cooperative working" or "teamwork" in terms of its concepts and methodology, making clear that these two ways of working should not be confused as synonyms. The review makes it clear that the concept of collaborative working should be differentiated from cooperative work, group work, and working in groups, as the first step in training professors so that they can both teach by example and guide collaborative working.

Keywords: collaborative working, formative projects, research competence, socioformation, team work.
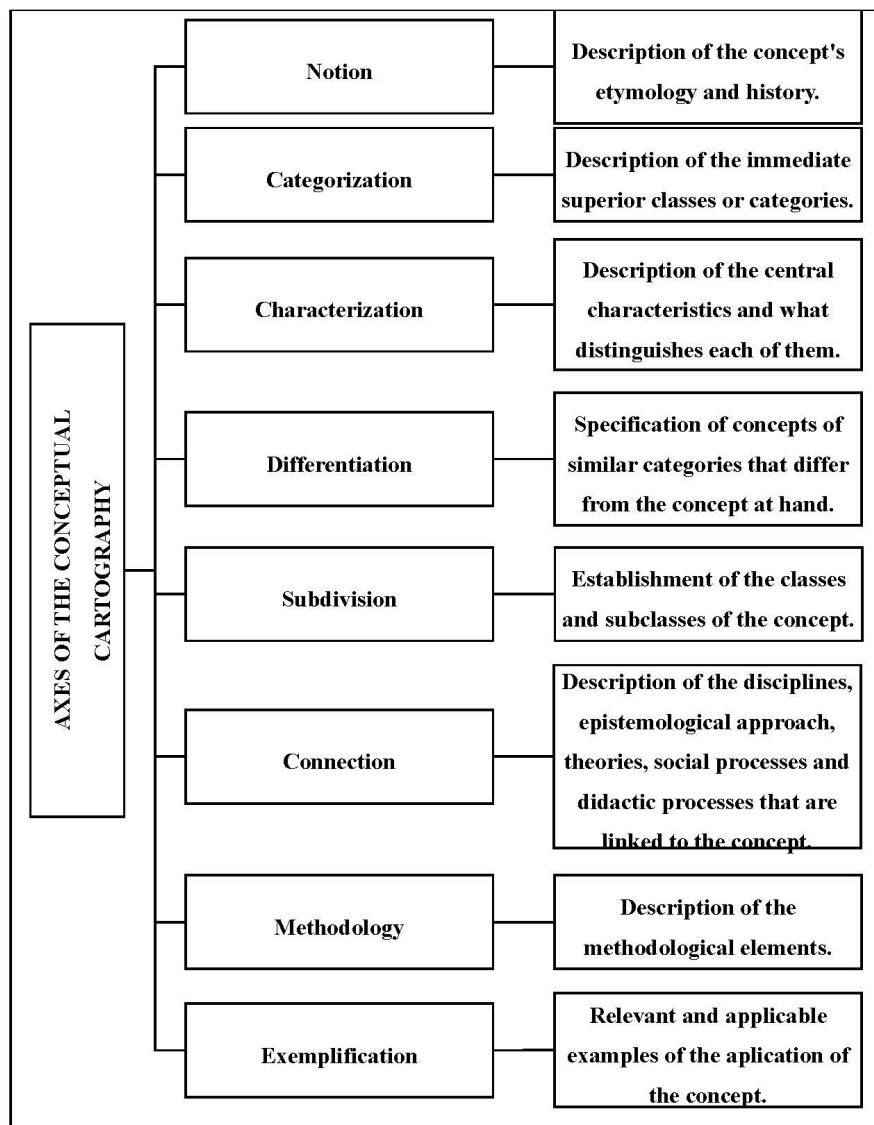
Figure 1. Axes of Analysis of the Conceptual Cartography. The axes of analysis of the conceptual cartography proposed by Tobón (2012) in support of appropriate information management and construction of knowledge.

INTRODUCTION

Over the past five decades, education in Mexico has passed through a series of moments of change and improvement; these moments have engaged certain modifications in terms of processes of academic formation. In this sense, the concept of education has shifted from a focus on the transmission of knowledge to one of teaching based on meaningful activities. Currently, instruction is focused on the development of competences, seeking to transcend the traditionalist modality and learning by rote. The latter proposes memorizing and retaining information in a mechanical way without considering the context, appropriate objectives, and goals, nor the application of that knowledge in real-world contexts.

Meanwhile, meaningful learning has pursued the transformation of this reality through action focused on identifying prior knowledge. Additionally, the interests and attitudes that students have towards what they should learn motivates them to acquire and use new knowledge in combination with what they have previously learned and the experiences they have already lived. In such an approach, the student works on learning how to be, how to do, and how to know while being involved in the various activities to be performed (Rivera, 2004). This new approach aims to support students in dealing with new information in addition to that already acquired. This requires contributions from both students and professors and learning should have significance and meaning for everyone (Ballester, Gayoso, Payeras, & Vicens, 2001). In this way, the professor becomes the transmitter of an attitude, as, for example, a negative attitude can have an impact on the teaching-learning processes (Palacio, Villafañez, Useda, & Castañeda, 2017). In considering teaching-learning based on the development of specific competences, it is essential to contemplate attitudinal competences— knowing how to be—in forming the student so that they can face the various challenges that present themselves. This concerns not only what is going to be learned and what is important, but how these processes are carried out and how these competences are applied (Ceh, 2017).

Teaching must be oriented to the holistic formation of people so that they can do well in our modern knowledge-based society. This society can be defined as one in which "the capacity to identify, produce, handle, transform, and distribute information is developed, as well as how to use this information in the interests of creating and applying the knowledge

required for human development" (UNESCO, 2005, 29, *translated*). All these things imply that people should be academically formed with a solid ethical base to benefit their development and be able to face everyday problems on the basis of their goals and universal values (Tobón, 2017a). Entrepreneurship, collaborative working, metacognition and management, and the co-creation of knowledge make it possible to face the challenges of the evolving context in which we live. This work begins locally, but has a global vision as part of a knowledge-based society (Tobón, 2013a, 2013b; Hernández, Tobón, & Vázquez-Antonio, 2014).

In learning, it is beneficial to apply the principles of socioformation; principles which will be taken up again when developing formative projects in the collaborative working approach (see *Figure 2*). These principles can be summarized as: (1) to develop and put into practice various fields of knowledge in an articulated way. These fields should be understood as: knowing how to be; knowing how to live together; knowing how to do; and knowing how to know. (2) To resolve problems of context in the way we live today: it is not enough to have appropriate knowledge of or be able to adequately manage the theory, we need to know and be able to apply both. An excellent option is to use both theory and its applications to resolve problems that concern the individual, but in different environments. Hence, learning should have both use and applicability. (3) To seek the continuous improvement of the subject, those with whom we collaborate, and the environments in which they are developed. This is achieved by reflection, working with others in collaboration, and the setting and owning of clear goals, not just individually, but also in common. (4) To act to resolve problems of context, engaging commitment, and considering the whole of the context-problem to achieve its setting and delimitation; and (5) to act in an ethical way, applying universal values (adapted from Tobón, 2013c).

PRINCIPLES OF SOCIOFORMATION	Develop knowledge and put it into practice
	Resolve context problems
	Seek continuous improvement
	Act for the resolution of problems
	Act in an ethical way, applying universal values

Figure 2. Principles of Socioformation. The principles of socioformation work as a base for the development of formative projects through collaborative working (adapted from Tobón, 2013c).

Collaborative working in the academic classroom learning environment, from a constructivist approach, can be perceived as involving the concatenation of a number of activities that allow students to construct knowledge. This knowledge is constructed through processes that make them determine what they need to learn, to systematize the acquired information, and to interlace it with prior knowledge. In this sense, collaborative working can be addressed from different perspectives (see *Figure 3*), including: (1) the socioformative; (2) the academic; (3) collaborative working in research; and (4) the development of competences, particularly the investigative competence. There are also a number of other perspectives, which are explained briefly as follows:
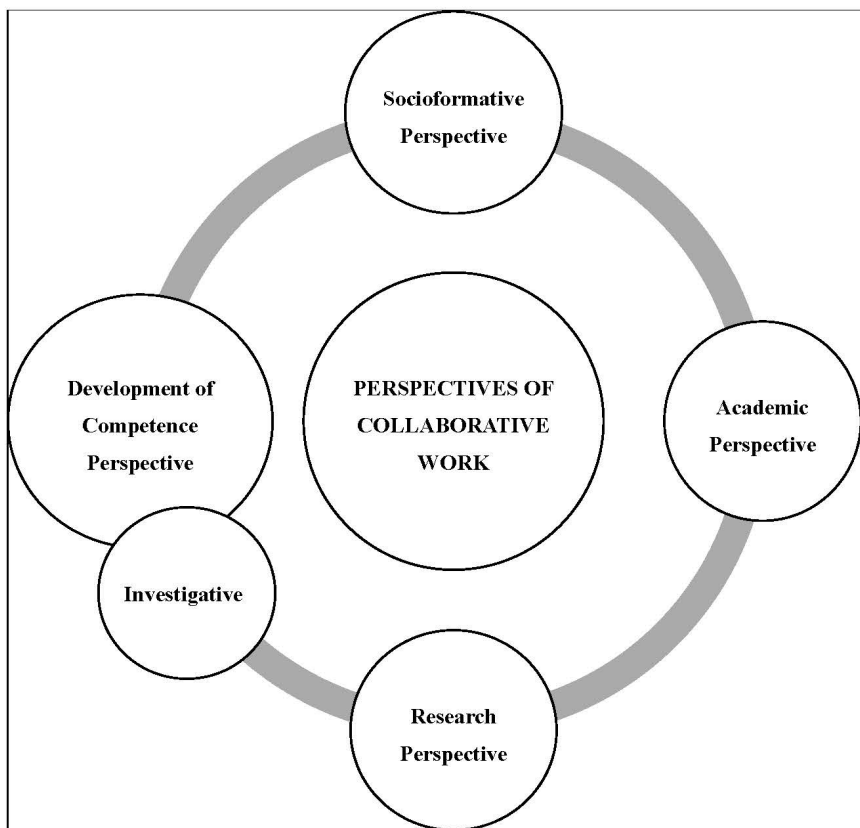
Figure 3. Perspectives of Collaborative Working. Collaborative working can be addressed from different perspectives: the socioformative, the educative, the investigative, and those that benefit the development of these competences, particularly the investigative.

The socioformative approach is an approach in which collaborative working is addressed as an articulated process for the resolution of a problem of context. It involves: living an ethical life; entrepreneurship; metacognition; and the management and co-creation of knowledge (Tobón, 2013a, 2013b, 2013e, 2013d; Becerra, 2017). All of these points are essential if the results of the project are to have an impact on the living conditions of students and the community. Likewise, this approach is intended to ensure that all the actors involved work and collaborate in an

articulated way with the same objectives and in pursuit of the same goals. In this respect, these actors become mediators of instruction (Tobón, 2013d). They attempt to take knowledge into daily life and face situations that are not conducive to fostering positive conditions. Both the institution and the professor, in response to the challenges of our knowledge-based society, should focus on integrated formation through learning to face and solve their life problems. For their own growth and improvement, the professor should take on a new role—that of a researcher into their own teaching practice—so as to stay updated, to communicate their achievements, and to be an active part of the community (Rodríguez-Peralta, Nambo-de-los-Santos, & Rodríguez-Buendía, 2017).

In addition, in the academic approach, socioformation resides in complex thought and the development of competences, which, in general, should be seen as integral to the development of all people. This all benefits the formation of those involved so that they can accomplish the challenges they face in everyday life in different and evolving contexts. In this approach, these challenges are approached from a position of creativity, suitability, and the establishment and constant improvement of our ethical life project (Tobón, 2012b). It is known that the academic field prioritizes the endeavor of developing competences; in the socioformative approach, the investigative competence is emphasized.

The investigative competence should be developed through the implementation and continuous development of a research culture among those belonging to the academic arena, as this will guide them to understand what happens inside the different circles in which they are developed as teachers and people. Considering that the teacher cannot focus exclusively on teaching or on what happens in the academic circle, they should also give time to research, through which they can favor the development of their community as well (Rodríguez, Moreno, & Rebolloso, 2017).

A third approach is the one collaborative working presents in the research field; this way of working can be considered "an intentional human act that is performed by all those involved, directly [or indirectly] to build [new] knowledge" (Vargas-Rodríguez, 2010). This new knowledge is built and lived through the development of competences as its principal component. This process is mostly conducted by means of the development of investigative competences. This process is based on the fact that the competences are coherent with the suitable performance of the individual in relation to the various activities to be carried out. Apart from this, such activities are coherent with the problems of the social context, the professional-labor context, and the research context (Tobón, Rial-Sánchez, Carretero-Díaz, & García-Fraile, 2006). These contexts allow us to identify

problems that need to be resolved, because both the investigative field, as well as the management of knowledge previously acquired, make the student a subject of change. The basis of this includes knowledge previously acquired and knowledge leading to innovation in the field of science and technology, just as it did with those who have previously encouraged social progress (Vargas-Rodríguez, 2010). A focus on building new knowledge does not disregard the need to consider prior knowledge, which has been formed from our life experiences.

The development of investigative competences offers higher education students the possibility of resolving problems of the environment in which they live. Such a resolution can be achieved through the incorporation of previously gained knowledge with knowledge built during the process, benefitting meaningful learning in a variety of contexts (Furió & Vilches, 1997; Ossa-Londoño, 2006. As cited in Gayol, Montenegro, Tarrés, & D'Ottavio, 2008). These contexts are developed and delimited in regards to the problems to be solved and the scope the investigation will have. Development is achieved, not only by means of the integration of prior and new knowledge, but also through the abilities, attitudes, and personal qualities of everyone involved. These elements play a leading role in the effective and appropriate fulfillment of tasks (Irigoin & Vargas, 2002. As cited in Gayol, Montenegro, Tarrés, & D'Ottavio, 2008).

Any development of competences has, as a base, the appropriate know-how—the "knowing how to know", the "knowing how to do", and the "knowing how to be"—which not only leads to knowledge, but also helps form the person. Thinking about the improvement of the investigative competence through collaborative working does not allow us to separate these know-hows—they should be added to the values, the ethical life project, and the resolution of problems from a perspective of total collaboration, inside and outside the academic field. In "knowing how to do", the student will focus on the techniques, methodologies, and procedures that the practice of the acquired knowledge requires, while "knowing how to be" will guide them in terms of the appropriate attitudes that should be adopted to solve problems in their community (de-Franco, de-Torre & Vallejo, 2017).

The student's attitude when carrying out research has a fundamental role, as it will establish to what extent the student agrees or disagrees with what they have to do. As such, the attitude can be: (1) positive or favorable, benefiting understanding of and commitment to the procedure and the research to be carried out, as well as facilitating detailed differentiation of the problems of context to be solved; (2) neutral or uninterested when dealing with processes that are not totally clear; and (3) negative or in

opposition to the tasks that must be carried out (Fraser, 1977; Gauld, 1980; Iliffe & Zwi, 1994. As cited in Plazas-Vargas, Gómez-Suárez, & Castro-Moreno, 2013). A positive attitude attracts the student's attention and focuses it on the search for information, encouraging a greater understanding of the different perspectives a single problem may have (Fraser, 1977; Gauld, 1980; Cook & Selltiz, 1963; Nay & Croker, 1970. As cited in Plazas-Vargas, Gómez-Suárez, & Castro-Moreno, 2013). The attitude a student assumes will motivate them to search for information, rather than just relying on the information they receive at first hand or are given.

The last of the approaches mentioned is one that centers attention on the development of competences. The procedures and developments previously commented on allow us to consider project-based learning as part of a strategy that supports the development of the investigative competence. It happens in this manner because the process favors the acquisition of knowledge, the progress of collaborative working, and an increase in the capacity for reflection among the students (Vilà-Baños, Rubio-Hurtado, & Berlanga-Silvente, 2014). This strategy, from the teaching point of view and coupled with a socioformative approach, refers to "the development of projects that seek to prepare the ground [of and for all those involved] for the knowledge society, conversely, it is also multidisciplinarity that integrates different knowledges for the resolution of problems in context" (Hernández-Mosqueda, Tobón-Tobón, & Vázquez-Antonio, 2014, 64).

The development of competences in students goes hand-in-hand with collaborative working and with the understanding that those who have reached a higher level of development, when engaging in interaction, provide a model for those who are still in process, guaranteeing the achievement of the agreed goal (Vázquez-Antonio, Hernández-Mosqueda, Vázquez-Antonio, Juárez-Hernández, & Guzmán-Calderón, 2017). In light of what has been said, the duty of the transmission of knowledge in the classroom does not just remain in the hands of a professor seen as the absolute holder of knowledge; it also becomes an exchange, not only of knowledge, but also of experiences, relevant information, and alternatives that contextualize the students' and the professor's work. The intention of this exchange is to find resolutions to problems of all types—in the academic, work, and social fields, as well as on the personal level. This exchange supports the need to develop the investigative competence in students, so that the contributions they make to understanding a problem are duly reasoned, relevant, current, feasible, and properly sustained. Through this process of development, it is hoped that students can come to apply these competences to everyday life.

In particular, an approach aimed at perfecting the mentioned competences implies more than just consideration of them. People need to apply, in a real way, the various bodies of knowledge they have already acquired, as well as the knowledge, abilities, capabilities, attitudes, and values that are to be acquired (Barbón, López, & Figueredo, 2014). Such application ought to be carried out in the management of situations in the surrounding environment through systemic thinking. All this will be evident in the construction of the final product achieved, which provides the resolution of the considered situation.

The formation of students in the research and development of the investigative competence cannot be based on rote learning. Neither can the student remain within the framework of meaningful action, but rather they must navigate further and go beyond. It is necessary to insert this formation and development into the socioformative line of thinking. Additionally, it is important to center it in the articulation of knowledge to resolve scientific problems, which leads to the improvement of the life of the community within the framework of the knowledge-based society, transcending the global level (Jaik, 2013).

Any formation through research activity must be relevant and generate an impact on the environment; additionally, it must be based on valid and current publications (Estrada, 2014). This implies that the development of research must be presented in a transversal way, directly or indirectly, to all the areas and professionals involved; thus, the focus has to be on the improvement of our living conditions. This is why using a socioformative approach centered in the development of the investigative competence concentrates the activity of the professor and proposes an inclusive form of teaching (see *Figure 4*). This supports the development of the following competences (Acosta, Tobón, & Loya, 2015): (1) to develop a desire for learning among the students; (2) to influence the academic environment so that students can learn how to learn; (3) to stimulate those involved so that they leave their comfort zone and take risks in the search for excellence; (4) to promote investigative working in the classroom through the development of projects; (5) to design projects that invite collaborative working; and (6) to work within established norms.

DEVELOPMENT OF THE INVESTIGATIVE COMPETENCE	Develop a desire for learning in students
	Influence the academic environment
	Leave one's comfort zone and seek excellence
	Promote investigative working through the development of projects
	Design projects that invite collaborative work
	Work within established norms

Figure 4. Development of the Investigative Competence. Teaching from a socioformative perspective allows the development of the investigative competence by paying special attention to what professors do and what they suggest to build inclusive teaching (taken from Acosta, Tobón, & Loya, 2015).

Currently, research is seen as being oriented to collaborative project working. This is reflected in the awarding of the Nobel Prizes where those studies that won tend to have been carried out through collaboration by different researchers and centers to achieve high impact results. This can be seen in one of the most recent examples—the British American professor Angus Deaton (2015 winner of the Nobel Memorial Prize in Economic Sciences). In an interview in the Spanish newspaper *Noticias de Gipuzkoa* (2015), Deaton expressed his opinion regarding the importance of collaborative working. His perspective was generated based on the progress of his research. Part of the interview is presented below:

> Thanks to observations and contributions apparently so simple and natural, beyond theoretical or academic tuning, the world is seeing multiple initiatives and an increasing numbers of authors and movements in favor of inclusive principles for the development of innovative models of growth and innovative entrepreneurial strategies that start by redefining their own visions and objectives, redefining products and resolutions, mending their value chains and their roles, generating collaborative and shared working

spaces, emphasizing the entrepreneurial and social value, and allowing themselves to deviate from a simplistic way of thinking (...) This is quite a challenge: to grow (richness, employment, welfare, opportunities) in an inclusive way in the service of people, especially of those less favored, through real collaborative processes of enterprise-government-society with new ideas, roles and businesses models and a unique strategy of economic and social development (Azua, 2015).

The collaborative approach in work was also emphasized during the Annual Reunion with Young People, entitled *Café con los Nobel: un regalo para jóvenes científicos* (2014). During this event—held in Lindau, Germany in 2014—Françoise Barré-Sinoussi (winner of the Nobel Prize in Medicine, 2008) encouraged students to work in a collaborative way in the development of research projects. This way of working is not new and has been used for some time now. Barré-Sinoussi said "we were and will be stronger if we work together, as in previous times" (Bär, 2014). A more recent example is provided by Rainer Weiss, Barry C. Barish, and Kip S. Thorne—American scientists and winners of the Nobel Prize in Physics for their contributions to the LIGO detector and the observation of gravitational waves. This was a collaborative project involving more than twenty countries and more than a thousand researchers (EcoDiario.es, 2017).

Collaborative working is the basis for the development of a purpose and for the accomplishment of specified goals. Similarly, it is evident that the need to work on concrete projects and seek to transcend isolated activity is unquestionable. The methodological proposal for project working by Kilpatrick supports the argument that students should learn from experience, in direct connection to the way they live and to what is useful. To this end, they should visualize subjects holistically and not in an isolated way (Kilpatric, 1967. As cited in de Sosaga, Gorostiza, Miñanbres, & Martínez, 2015).

From the socioformative point of view, collaborative working focuses on ensuring that people work in a synergistic manner to reach certain goals. In doing this, they face the difficulties that the problem presents and have to draw on knowledge and methodologies from multiple areas. All those involved count on the support of others to ensure assertive communication and the continuous practice of metacognition (Tobón, 2010, 2011, 2013a, 2014a. As cited in Tobón, Vázquez, Cardona, & González, 2014; Vázquez-Antonio, Hernández-Mosqueda, Vázquez-Antonio, Juárez-Hernández, & Guzmán-Calderón, 2017). It is not possible to achieve significant results if those involved do not work in a collaborative way, joining forces, sharing ideas, and articulating knowledge based on inter- and transdisciplinarity.

However, formation in research continues to be a process fragmented by subject where professors work, to a great extent, in isolation because they are not yet prepared for these new ways of teaching and learning (Piñero, Rondón, & Piña, 2007). It is evident that, firstly, the professor must be trained in appropriate research approaches; it cannot be assumed that the professor will work with students in a way for which they have no experience or have not been prepared for. Later, once they are trained, the professor will be the one forming students along these lines.

Generally, as part of classroom working, professors do not develop projects with activities that allow students to realize not only the impact and significance of research, but also its professional and social saliency. This work needs to include the goals and objectives to be reached, the content of the subjects to be covered, the way assessment will be performed (for the tasks to be performed, as well for the final product), and the timeline of the activities to be performed (closely linked to the resolution of the problem in context and its application), among other aspects (Piñero, Rondón, & Piña, 2007). This situation leads to students failing to develop essential competences for approaching research in other subjects and in their professional activity, although they may undergo research formation in several isolated subjects. In this case, these competences are designed to improve the student's work, rather than improve the conditions of their life. These competences are used to improve the student's theoretical management.

Combined with the preparation and formation of this work, there is also a confusion about concepts. This frequently leads to misunderstanding and confusion of the concept of working in a collaborative way with the concept of working in groups. This mixture or confusion is described by López (2006) in a clear way when considering the goals that students ought to reach by the end of the work. Confusing one way of working with the other affects the achievement of the goals that have been set and, at the same time, leads to groups working along different paths. All this happens because students working in groups, generally, do not receive the expected impact if they do not form collaborative strategies and learn how to face uncertain situations. This consequence is because collaborative working and working in groups do not involve the same working procedures and thus the execution of the same tasks in these different approaches will lead to different endings, although both may achieve the set goal.

The development of this work is centered on the clarification of both concepts—that of collaborative working in a socioformative approach and that of cooperative working in groups—to offer clarity to those teachers who are seeking to implement collaborative working with the goal of socioformation in the classroom. This research encourages the differentiation

and definition of both forms of working, as well as presenting, in a general way, the similarities and differences of both modalities. In doing so it makes clear that these two ways of working are relevant, but should be separated according to the intended approach; at no time can they be used or seen as synonyms or equals.

On the basis of these points, our focus is on changing the traditional academic formation of classroom work to one of these research types. In parallel, it is important to implement collaborative project working with a socioformative approach as a way to acquire knowledge. Such a change will have a major impact on the integrated and scientific formation of students, as well as the formation and training of professors. Furthermore, both students and professors need to be able to respond to the growing challenges of the knowledge society (Cardona, & Tobón, 2015; Hernández, Tobón, & Vázquez, 2015a; Hernández, Tobón, & Vázquez, 2015b; Hernández, Tobón, & Vázquez, 2014; Parra, Tobón, & López, 2015; Tobón, 2013; Tobón, 2013d; Tobón, González, Nambo, & Vázquez, 2015; Tobón, Guzmán, Hernández, & Cardona, 2015; Tobón, Vázquez, Cardona, & González, 2014; Tobón, 2013e; Vázquez-Antonio, Hernández-Mosqueda, Vázquez-Antonio, Juárez-Hernández, & Guzmán-Calderón, 2017).

DOCUMENTARY STUDY GOALS	Analysis of references
	Distinction between what is collaborative and what is cooperative
	Proposal of collaborative working for the development of the investigative competence

Figure 5. Documentary Study Goals. Goals established for the realization of the documentary study of collaborative working through the use of the conceptual cartography.

The goals of this documentary study are shown in *Figure 5*. These are: (1) to analyze references to articles published in indexed journals about collaborative working with a socioformative approach, differentiating this approach from others to establish how it is defined; (2) to distinguish, from an academic point of view, teaching through collaborative working and

teaching through cooperative working—concepts that are often used as synonyms—because it is essential to see the differences between them; and (3) to approach collaborative working as a component of formative projects that promotes the development of the investigative competence.

Methodology

Type of Study


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STEP 1. Search

    STEP 2. Systematization

        STEP 3. Analysis

            STEP 4. Elaboration of the conceptual cartography

                STEP 5. Establishment of possible loopholes
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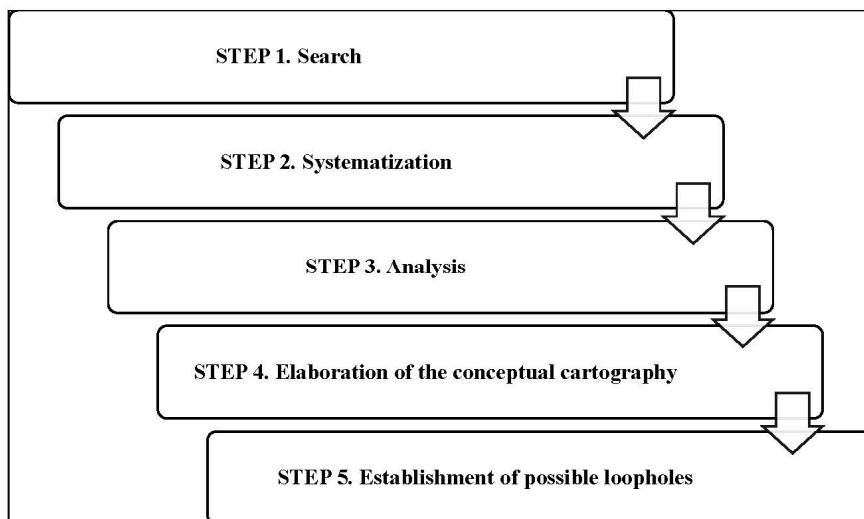
Figure 6. Documentary Analysis Procedure. Steps carried out in documentary analysis of collaborative working using the conceptual cartography and through the revision of various documents.

For the research presented in this book, a documentary analysis of collaborative working was carried out using the conceptual cartography. Documentary analysis sees the components of study fully described through research into different documents for the acquisition and study of relevant information (Arias, 2012). The procedure carried out was centered on those processes that allow the extraction of essential information, which was then arranged and stored for future revision (Ruiz-Pérez & Yunta, 1994). The steps (see *Figure 6*) conducted are summarized as follows: (1) a search for documents from various sources, with an emphasis on primary sources; (2) systematization of those documents; (3) analysis of them considering the

specific criteria previously established; (4) elaboration of the conceptual cartography considering the information gathered; and (5) the establishment of possible areas of interest that can lead to further investigation.

Technique of Analysis

The documentary study was performed using the conceptual cartography. This strategy is based on the use of conceptual "mentefacts", complex thought, and mind maps to support the management of information and the construction of knowledge about a particular concept. This strategy is composed of eight axes or key elements, which are discussed below. Some guidance questions to be solved are offered (see Table 1), with which to accomplish a detailed analysis of the concepts and theories. For this purpose, prior knowledge and updated theoretical references are used for the clear construction of relevant knowledge (Tobón, 2012).

Table 1. *Axes/Key Elements of the Conceptual Cartography*

	Analytical axes	**Guidance questions**
1.	**Notion**	**How can collaborative working be described/how is it defined in research?**
		How is collaborative working perceived in reality, taking as a starting point its etymology and trajectory through history?
2.	**Categorization**	**What are the next highest classes or categories of collaborative working in the research field?**
3.	**Characterization**	**How can the central characteristics of collaborative working be described in the research field?**
		What points distinguish each one of those characteristics mentioned?
4.	**Differentiation**	**What are those concepts, belonging to the same category, that differ from the collaborative working concept applied in research?**
		What is the difference (or differences) all the considered concepts have?

5.	**Subdivision**	**What are the classes and subclasses collaborative working has in the research field?**
		What distinguishes each of them?
6.	**Connection/Linking**	**What are the disciplines, epistemological approaches, theories, social processes, and didactic processes linked to collaborative working, which are located outside this category?**
7.	**Methodology**	**What are the methodological elements of collaborative working in research?**
8.	**Exemplification**	**What can be considered a relevant and applicable example that shows the application of collaborative working in the management of research projects in higher education?**

Axes of the conceptual cartography (taken from Tobón, 2012) and key questions for the development of the concept of collaborative working.
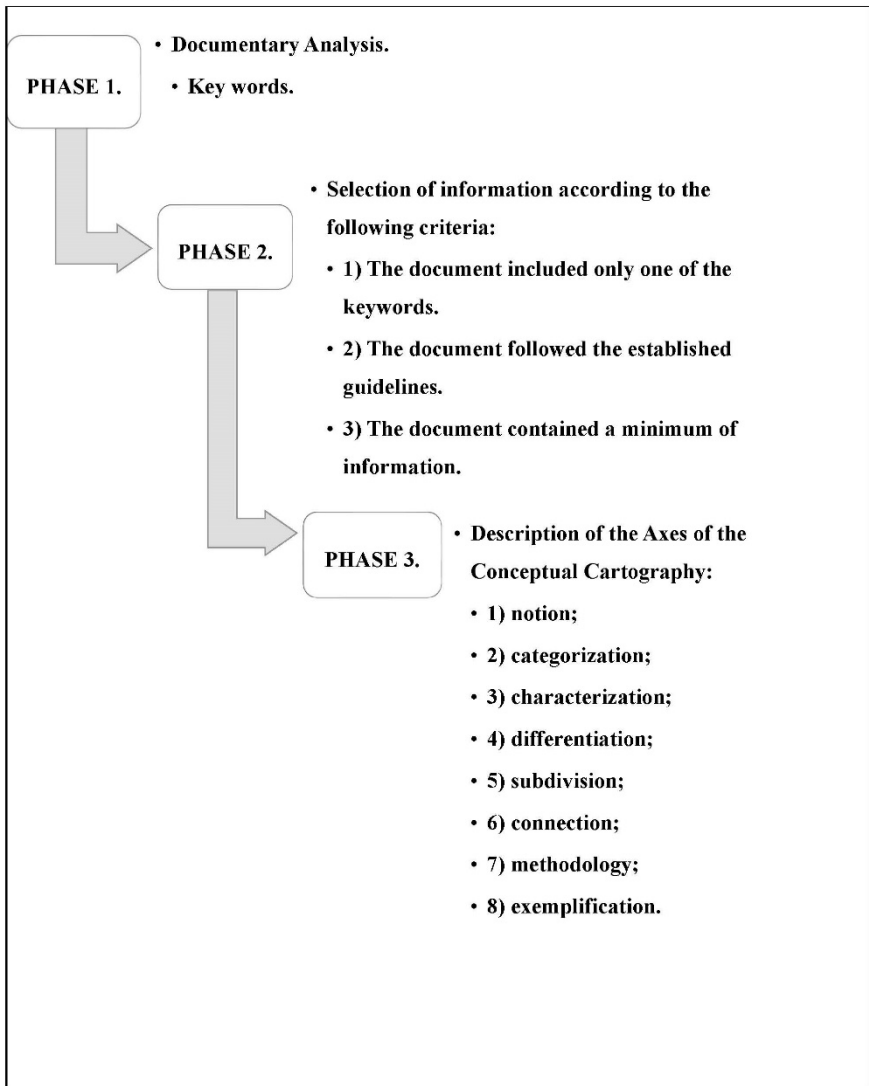
Phases of the Study

Figure 7. Documentary Study Phases.

The phases of the study are summarized as follows (see *Figure 7*):

Phase 1. A documentary analysis was carried out over a period of approximately six months. The keywords used were "collaborative working", "socioformation", and "research". More attention was paid to those articles in which these words appear, preferably focusing on the original source, such as a digital platform, rather than a PDF file. They were used to establish a search of sources and indexed journals with the objective of starting the documentary registration of primary sources using Google Scholar. SciELO, Dialnet, Redalyc, and Academia.edu were also used.

Phase 2. From the results, a first selection was performed according to the following: (1) the document included only one of the keywords; (2) the document followed guidelines established using socioformative and academic viewpoints; and (3) the document presented a minimum of information (author, year and editorial, indexed journal, institution or research center, validating the content).

Phase 3. The information collected was used to describe the eight axes or structural elements that constitute the conceptual cartography proposed by Tobón (2012) (see *Figure 1*): (1) notion; (2) categorization; (3) characterization; (4) differentiation; (5) subdivision; (6) connection; (7) methodology; and (8) exemplification. The questions in Table 1 were used to give clarity and order to the approach and allowed the presentation of the guidance questions to determine and delimit the information to be presented for each one of the axes. In the second phase, these questions were developed in more detail.

Analyzed Documents

In Table 2 of this section, the references are listed and detailed. Indexed journals, academic books, dictionaries, newspapers, manuals, and other documents are all included. The content of these documents was analyzed for references to collaborative working, socioformation, and collaborative working in research. The presented documents include those that served to support, as well as those that complemented this study, allowing us to clarify the concepts and to establish the context.

Table 2. *Documents Analyzed for the Study*

Documents	About the topic	Contextualization or complement	Latin American	From other contexts
Theoretical article	33	26	42	17
Empirical article	8	16	13	10
Books	14	6	14	6
Manuals	14	2	15	1
Newspapers	0	5	0	5
Doctoral thesis	1	2	1	2
Others (reports, presentations, Web portals, memoirs, bachelor theses)	6	11	8	9

Results

The results from the analysis of the concept of collaborative working in research in the development of formative projects from different approaches are presented; one of these approaches is the socioformative one. The theoretical analysis followed the conceptual cartography (see *Figure 8*).