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Proposal of a model for collaboration between research and education actors

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Abstract

This paper presents a theoretical model describing processes involved in a collaboration between education and research actors. The epistemological nature of collaborative research is presented to set up the model. The design-based research methodology aims at achieving theoretical and pragmatic production objectives. The suggested model aims to create a better understanding of the processes at work in collaborative research by describing the contribution of each actor as a representative of his/her institution, while addressing the complex aspects of collaboration that go beyond the sum of individual contributions. The discussion focuses on the limitations of the model and on the articulation of the following concepts: boundary object, praxeologies, participation, negotiation, valuation, and brokering.

Keywords

collaboration • collaborative research • boundary object • praxeologies • participation • negotiation • valuation • brokering

Introduction

The starting point of this research is an ongoing Franco-Canadian project (FoRCE, for Training and Collaborative Research in Education¹, since 2016) whose goal is to better understand the factors and processes involved in the collaboration between practitioners and researchers in the field of education. This project draws from previous research work mobilising various frameworks, potentially useful for a better understanding of collaborative processes between actors from different institutions, and for exploring the conditions of conceptual knowledge building by practitioners (Nizet and Leroux, 2015), interactions between actors (Kerbrat-Orecchioni, 2001) or their participation in collective work (Prieur, 2016). In this paper we will use the term 'collaborative research' in a broad sense, considering that actors from different institutions (Chevallard, 1988) are working together to solve a problem with solutions that should be valuable to both communities. Usually, this concerns educational and research institutions. We rely on different research based on Meta-Didactical

Transposition (Arzarello & al. 2014; Sanchez and Monod-Ansaldi, 2015) to analyse collaborative work between teachers and researchers during training courses, but also in the context of collaborative research. Our theoretical modelling process is akin to design-based research aiming both at a theoretical objective, i.e. modelling collaborative processes, and a pragmatic objective, i.e. the design of training sessions targeting these collaborative research processes. This theoretical modelling proceeds through the gradual production of a common lexicon and the design of dynamic links connecting them together. This theoretical construction based on theoretical frameworks from various fields of research was tested to analyse collaboration in different contexts, both in the case of training and research. Our methodological posture and the resulting model are part of an epistemological and theoretical argument in favour of collaborative research in the field of education. After presenting the epistemological nature of collaborative research, we will describe the methodology used to design our model and discuss the limitations of, as well as present the articulation between the concepts of boundary object,

1 Project funded by the Auvergne Rhône Alpes region.

praxeologies, participation, negotiation, valuation, and brokering.

all actors involved in education have an equal voice to participate in our collective reflection.

Epistemological background

In the field of educational research, we assert that collaborative research specifically considers the reality of the situations and the existing complexity at stake. Referring to Germaine Tillon's ethnographic approach and Dewey's pragmatic philosophy, collaborative, participatory research or action research are all based on the need to take into account everyone's experiences in the understanding of the phenomena studied.

As the anthropologist Marcel Mauss (1923) indicates, education is a total fact, 'a fact that sets in motion the totality of society and its institutions' (p. 102). It is therefore a complex phenomenon, which, as the philosopher Edgar Morin points out, can only be understood through complex thinking (Morin, 1990): 'We can say that what is complex is, on the one hand, a matter of the empirical world, of uncertainty, of the inability to be certain of everything, to formulate a law, to conceive an absolute order. On the other hand, it is a matter of logic, i.e. the inability to avoid contradictions.' (chap. 27/57).

Educational research must therefore take this complexity into account and integrate it into its research paradigms: 'We are in an uncertain battle and we do not yet know who will win. But we can already say that if simplifying thought is based on the domination of two types of logical operation: disjunction and reduction, both of which are brutalising and mutilating, then the principles of complex thought will necessarily be principles of distinction, conjunction and implication.' (Id. chap. 33/57).

These epistemological questions concern the research positions regarding the actors and the aims of said research. In a way, they allow us to position research as tensions between antagonistic poles: on the one hand, academic research to produce new scientific knowledge or research aimed at training actors (professional development); and on the other hand, research linked to the construction of didactical material or research allowing the understanding of instructional or professional practices. In line with this perspective, collaborative research can be considered as being in tension between four poles, opening the way to the exploration of dialectic relations between research and practice in various ways. Our working hypotheses are based on the fundamental idea that in order to perceive, analyse and account for the complexity of the phenomena at stake, the theoretical model must draw on different factors and concepts from various research fields. Our second assumption is that

Methodological concerns

The modelling, or process of elaborating a theoretical model, that we have carried out is based on this epistemological grounding. Considering the need to adopt, as researchers, a distanced posture from our own frameworks in view of sharing expertise, we chose an iterative, flexible and collaborative strategy by implementing design-based research aimed at achieving theoretical and pragmatic production objectives (Sanchez and Monod-Ansaldi, 2015).

The objectives of the theoretical production are based on the understanding of the frameworks and theories that each of the authors contributed. From the cross-analysis of corpora from various research and teacher education contexts, mostly verbatim from research meetings or discussions between partners, we highlighted concepts that allow for the analysis of the collaboration function at micro, meso and macro levels. These analyses were then presented in debriefing sessions to allow the researchers and practitioners involved in the meetings in question to hear the analysis of collaboration generated by the theoretical model and to discuss it with the team members.

The objective of pragmatic production led us to propose workshops as part of the network of associated educational sites at the French Institute for Education². From these experiences we offered, both in France and Québec, three training sessions including researchers, teachers, teacher trainers, aiming at spreading the theoretical model, as well as helping participants to enhance their skills in conducting collaborative research in education. All these experiences were reinvested through reflexive feedback on practices, which contributed to an external test of the theoretical model produced in the different iterations of our approach.

Theoretical model in three figures

Boundary objects

The first figure (Figure 1) introduces the initial situation where actors of different institutions (two on the drawing, e.g. research-teaching) choose to work together on an object, imposed or chosen, in any case accepted at a certain moment as a common work object. As Susan Leigh Star (2010, p. 604) wrote: 'The object (remember, to read this as a set of work arrangements that are at once material and

² <http://ife.ens-lyon.fr/lea> and <http://ife.ens-lyon.fr/lea/lea-english-version>

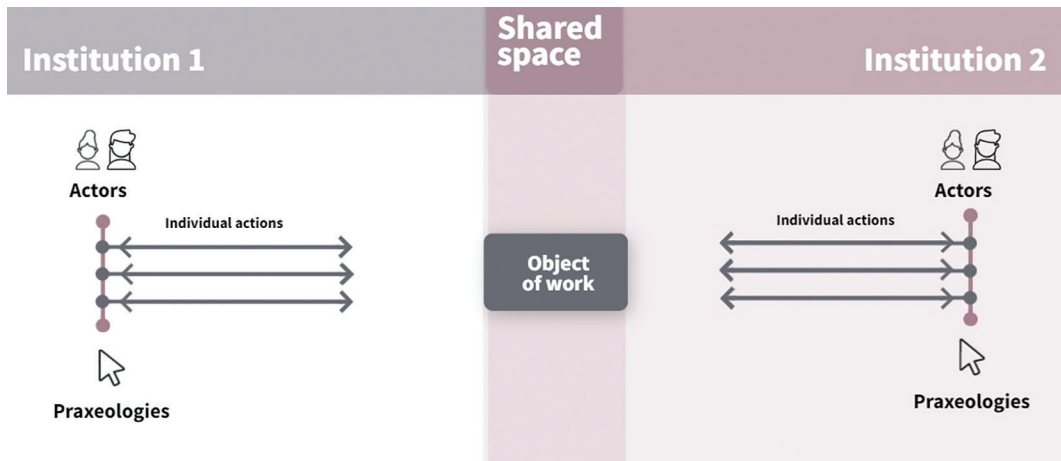


Figure 1. The starting point of a collaboration.

processual) resides between social worlds (or communities of practice) where it is ill structured.’ This object is recognised by actors as problematic, which is a precondition for them to act on it, and each of them acts according to their objective linked to their institutional affiliation. The actors’ activities, that is to say the set of individual actions, are modelled by the concept of praxeology (Chevallard, 1989) which distinguishes the ‘how to’ (praxis) and the ‘why’ (logos). Indeed, faced with a task, actors use a technique to solve this task and justify the action in question through discourse and references to theories which are accepted and disseminated within their institutions.

Collaborative work starts effectively when this collective activity makes sense from the different viewpoints: the object of work becomes a boundary object (BO in the following), in the sense of Star and Griesemer (1989), that is to say when ‘the objects [...] come to form a common boundary between worlds by inhabiting them both simultaneously’ (page 412).

So, BOs are the core of the collaboration and are ‘at once temporal, based in action, subject to reflection and local tailoring, and distributed throughout all of these dimensions. In this sense, they are n-dimensional.’ (Star, 2010, p. 603).

Boundaries are not seen as delimitations between two opposing and conflicting conceptions but rather as a space where it is possible to meet and learn from one another, by ‘crossing them’ (Akkerman and Baker, 2011). They are ‘temporal’ because they are not intended to remain BOs, but to become shared objects, internalised in praxeologies, useful and used in both communities. They are ‘subject to reflection and local tailoring’ which places collaborative research around BOs in ecologically valid conditions. And their multi-dimensional nature implies a structure, the BO seen as a container whose components inherit from its properties:

‘In the term “boundary object”, I use the term object in both its computer science and pragmatist senses, as well as in the material sense.’ (Star, 2010, p. 603).

The dynamics of collaboration are highlighted at a macro level through the concept of activity on boundary objects or, more precisely, on the components of the boundary object whose structure is put to the test by this collective activity.

At a meso level, we return to a closer observation of what is at stake through the actions on the BO and in particular on this common space in which interactions can take place. Indeed, the boundary is not fixed and may involve different forms of interaction which are different approaches to sharing and understanding knowledge at the boundary. We consider, after Carlile (2004), that these individual actions are situated at three levels:

- The activity of transfer refers to all actions regarding the BO or one of its components using a syntactic register that expresses a defining relationship with the object or the component of the object, whether or not this definition is collectively shared: ‘the object for me is...’
- The activity of translation designates the set of actions regarding the BO or one of its components in a semantic register that favours the clarification of the meaning of the use of the object in their reality, whether this meaning is mutually recognised or not: with, on, for this object ‘I am... using’.
- The activity of transformation refers to all the actions concerning the BO or one of its components in a pragmatic register likely to produce new knowledge, whether this perspective is pooled or not. Transformation is a pragmatic action on the boundary object: with this object ‘we...+ use’.

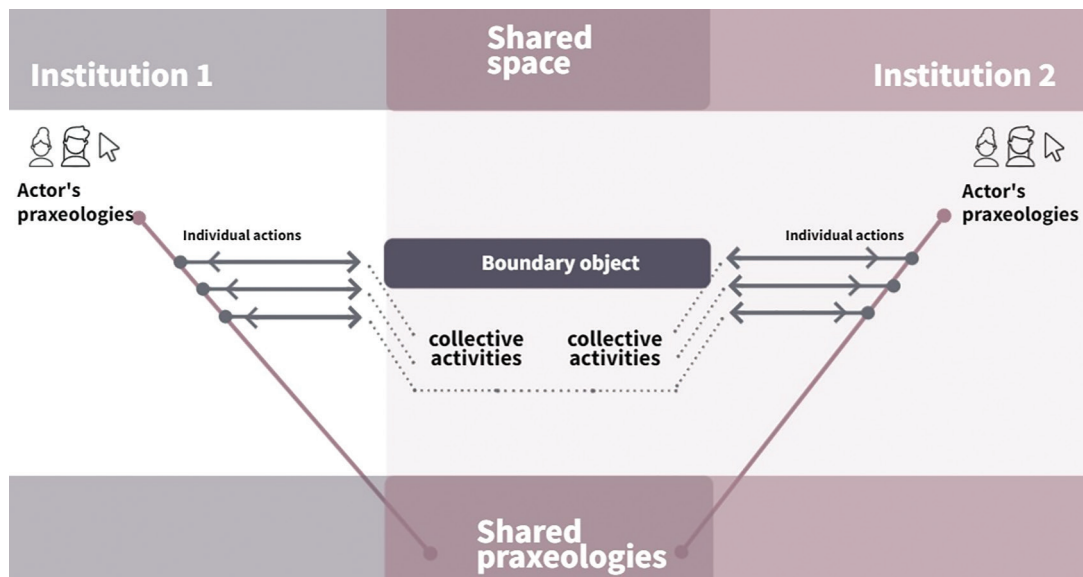


Figure 2. Actions and activities on BO.

So, collaborative work is modelled as a set of interaction situations on a BO aiming at enlarging the shared space between actors of involved institutions, in a common structure built on the long term. Individual actions are governed by the goals that each actor sets within his own institution; they refer to individual praxeologies and make them evolve in order to contribute to an activity of the collective that sheds light on the BO by highlighting differences, dependencies, and agreements in the syntactic (transfer), semantic (translation), and pragmatic (transformation) registers (Figure 2).

This schematisation helps understand and analyse the collaboration processes at a macro and meso level but is not sufficient to understand the driving force of the dynamics. Hence, to refine the model, it is necessary to look at the different drivers of this dynamic at a micro level.

Participation

The concept of *participation* will give us a first attempt to look deeply into the phenomena at stake in the dynamics of collaborative work. Introduced by Zask (2011), participation is articulated around three arrangements: 'being involved', 'giving a part', and 'receiving a part'. 'Joining in the work' is a personal and voluntary approach that involves the person in the common work. The fundamental issue here is the construction of individuality through the participation of individuals in the elaboration of collective goals. The work conditions and the recognition of participants' work and personal experiences contribute to the acceptance of the common work and must be renewed throughout the collaborative process. 'Giving a part' consists in a personal investment which leads the individual

to commit to the actions on and within the BO. This is linked to personal investment in the issues at stake in collective work and, as a result, contributes to the collective activity of transfer, translation, and transformation. The contribution is therefore an individual intervention in the service of the collective. 'Receiving a part' is about profiting from others, i.e. benefiting from the collective to improve one's own interests and it participates in the evolution of one's own praxeologies. Analysing activities from this point of view helps to understand collaborative processes in terms of a dialectic between the individual and the collective.

Valuation

The socio-cognitive space which is built around the BO is structured by cognitive action on BOs and their evaluation by the participants from their institutional viewpoints (Carlile 2004). The concept of *valuation* (Dewey, 2008, 2011) provides elements for a better understanding of the values that each person places on the actions carried out on the BO. According to Dewey, valuation is a theory that makes it possible to account for the mechanisms by which a subject attributes, in the course of an activity, a value to objects that he/she selects or that are proposed to him/her so that the situation in which these activities take place retains a coherence and a unity for him/her in relation to the goals that the subject has set for him/herself or are set by the subject's institution. In that sense, valuations, whether positive or negative, direct individual action sequences by taking into account the individual aims of the participants. These valuations would influence the course of collective activities of transfer, translation, and

transformation. For example, positive valuations of terms relating to the designation of a component of the BO are indications that a transfer or translation activity is in progress. In collaborative work, it is important to have the possibility to intercept and to provoke a discussion around positive or negative individual valuations; this is a way to harmonise, in collective work, individual aims and collective ones or, at least, to better understand each participant's position regarding his/her understanding or conception of BOs.

Negotiation

The third concept that participates to the micro analysis of interactions comes from the sciences of language. The *negotiation*, introduced by Kerbrat-Orechioni (2001) is a process which may appear when protagonists disagree and want to solve the disagreement. The negotiation process involves at least two negotiators directly concerned by the disagreement over the subject matter to be negotiated (with third parties involved) and a possible mediator. We observed that negotiations emerge when an activity is blocked by contradictory valuations on a component of the BO, the negotiation process seeming more decisive than its outcome. Negotiation thus appears to be a space for maintaining the commitment of the actors in favour of a mutual understanding that is essential to collaborative work.

In our theoretical model (Figure 3), the phenomena of participation, valuation, and negotiation, although distinct, are interrelated and form the basis of the dynamics of collective activities on the boundary object. Thus, valuations bear witness to the participation of actors and regulate it;

negotiations are initiated by contradictory valuations; the intention of negotiation is to maintain commitment, which is itself dependent on institutional and organisational conditions.

Brokers and brokering

Originating mainly in the field of health, the concept of broker is considered in the literature as a facilitator of relationships between producers and users of knowledge (Munerol et al., 2013, Ridde and Dagenais, 2013, Mallidou et al., 2017). Our analysis first shows that, in the field of collaborative educational research, it is better to talk of *brokering* rather than *broker*, as this role is often and successively taken on by different actors (Nizet and Monod-Ansaldi, 2017, Aldon and Panero, 2017). However, brokering holds the model presented above together and it intervenes at the micro, meso, and macro level of analysis, as shown in Figure 3. In this way, the person who exercises brokering raises the actors' awareness concerning an interpretation, knowledge, technique or justification that is different from their own, identifies components of the BO that are not shared, or establishes links between several components of the BO. Brokering is directly linked to the BO and the knowledge at stake.

At the participation level, the new knowledge that actors benefit from in the processes of 'receiving a part' and 'giving a part' contributes to their commitment.

At the level of valuations, brokering is observed when actors cannot contribute to optimal knowledge management, which manifests through negative valuations. Brokering then consists in reformulating these negative valuations to guide the group in seeking solutions that allow the generation of

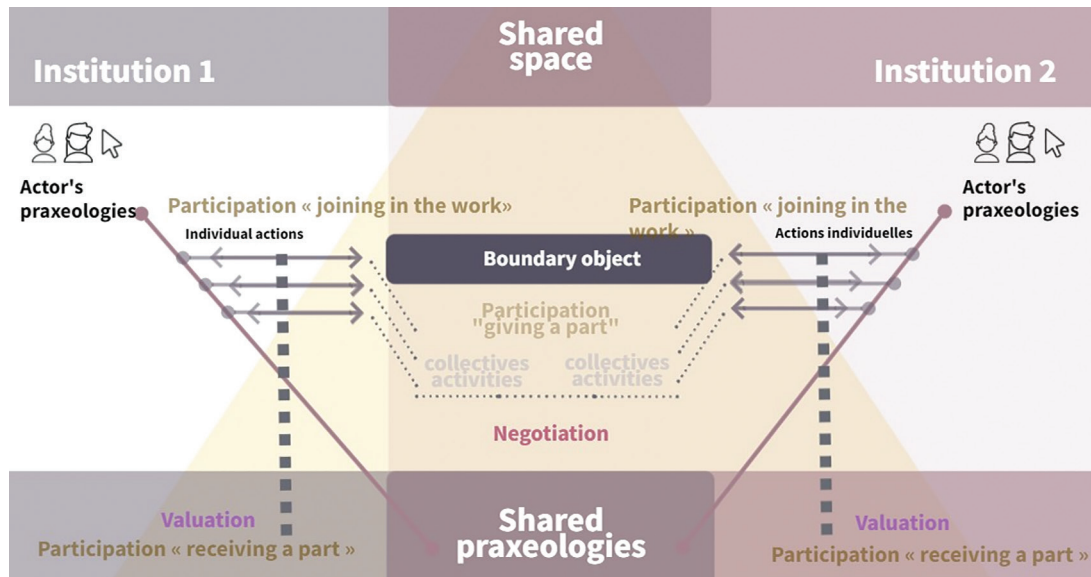


Figure 3. Schematisation of the model.

positive valuations. Thus, valuations would have the function of guaranteeing the achievement of collectively significant objectives while maintaining sufficient commitment to overcome disagreements (Nizet et al., 2019).

At the negotiation level, the person who spontaneously performs a knowledge brokering function allows the development of negotiations. Our analyses show that some participants move the discussion forward by encouraging each party to develop its arguments. Indeed, when a point of disagreement is not clearly expressed and cannot be negotiated, this can lead to a decrease in the participants' commitment, without the team being aware of this (Monod-Ansaldi, Vincent et Aldon, 2020). Wenger (1998) already based the activity of brokers on their capacity to open negotiation spaces that were made possible by their participation in the practices of the different communities involved and by the mobilisation of their own experience. The analysis of negotiations helps to identify the emergence of episodes of knowledge brokering that favour the expression and clarification of diversified positions, expectations, and objectives, and to understand those of the other participants in the activity in progress (Monod, Vincent, Aldon, 2020 ; Sanchez, Monod-Ansaldi, Vincent et Safadi 2017).

A person attentive to valuations can also exercise a regulation brokering to relaunch the activity of transfer, translation or transformation in progress, by promoting the resolution of an obstacle, by submitting to the collective a particular use of terms, explanations, solutions likely to generate more positive valuations by initiating an episode of negotiation, in order to explicate the issue to the actors. In that sense, brokering contributes to the collective activity of transfer, translation, and transformation on the BO.

Conclusion

Our theoretical model aims to create a better understanding of the processes at work in collaborative research by describing the contribution of each actor as a representative of his/her institution, while addressing the complex aspects of collaboration that go beyond the sum of individual contributions. Our methodological stance and the resulting model construction are part of an epistemological and theoretical argument in favour of collaborative research in education. This research produced a framework that enables the construction of original scientific knowledge and the comprehensibility of the phenomena studied, leading to profound changes in the professional actions of the actors involved. Methodology based on sharing conceptual frames and common analysis made it possible to identify crucial

concepts, their meanings for the participants, the links they establish between them and the levers and obstacles to their mobilisation.

This construction, tested in different collaboration contexts, and based on theoretical frameworks from various fields of research, still needs to be tested in different research contexts, especially when the founding epistemological assumptions of this construction are not met. We hypothesise, supported by various experiments, that the robustness of the construct should allow this framework to be applied to other contexts in order to highlight the knowledge constructed through the collaborative process.

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