Effects of teacher collaboration on teaching approaches: can we show some evidence?


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This paper considers two linked questions: the nature of the effects of teacher collaboration, and the research methodology that is required to prove these effects. These questions result of three issues that occur from the literature (Sawyer & Rimm-Kaufman, 2007). Firstly, schools are presumed to be the most significant places for teachers’ professional development, and teacher collaboration is often seen as a powerful learning environment. Secondly, the outcomes of such collaboration are not well known and the research results could be contradictory. Thirdly, little research exists that describes the characteristics of teacher collaboration and the factors which could spur this collaboration.

Theoretical context

Exploring the question of the effects of teacher collaboration necessitates to elicit the type of learning activities which are undertaken by this collaboration, and the nature of changes which result from. Three types of teacher collaboration are studied through the literature: an ad hoc collaboration which is mainly organized under the researchers’ responsibility, sometimes connected with the local authorities’ actions; an institutional project which is evaluated by the researchers, who sometimes could be involved within specific continuing professional development programmes; a school organization in which the researchers endeavour to figure out the critical dimensions and active factors which influence teaching; these include the available teaching resources and the social factors which characterize the school environment. With respect to each research methodology, each type of teacher collaboration causes changes either within conceptualizations or practices.

Ad hoc collaboration

This research methodology seek to involve teachers within a series of workshops. For instance, Meirink et al. (2007) organize a series of at least 5 meetings per year with teachers who are interested by working together on a topic related to “stimulating active and self-regulated learning of the students”. Then, the authors conduct deep interviews with six teachers involved within these meetings. Through such a self-reported method, they find out that the effects of this type of collaboration address mostly teachers’ conceptualizations and seldom teacher’s practices; furthermore, these effects consist frequently of the confirmation of the subject's own teaching methods.

Institutional project

The research process apply on a pre-existing professional development programme. For instance, Hansen (2008) seeks to assess the effects of a European project which initiates curriculum workshops (CW). These CWs aim to spur professional learning through deliberative inquiry. Such an inquiry consists of three phases: 1/ Perception and awareness of a conflict between what is done and what is aimed; 2/ Collecting data and looking for evidences that could tell something about overcoming the conflict; 3/ Searching the practical ways to use these data and evidences within the specific context of the CW’s actors. The CW is conceived as an on-going process focusing on professional key questions which gather the interest of all participants (e.g. What are the competencies students ought to have acquired at the end of a specific unit? How do teachers organize collectively their work in the school to allowed most pupils to acquired these competencies?). Four schools were involved within the study; data are collected by interviews and document check-lists (e.g. school curricula, protocols of teachers meetings). The questionnaires showed that CW is appreciated by the teachers as an organizational framework which support exchanges of experiences, inquiries about professional difficulties, and changes of teaching strategies. The analyse of curricular documents showed that these CWs impact directly on teachers’ practices. Nevertheless, author claims for studies overlapping one school year.

A few studies aim to follow teachers during more than a year. Trumbull, et al. (2006) examine over three years the conceptualizations and practices of two teachers with respect to inquiry based method implementation in science classroom. These teachers and their pupils are involved in a science project gathering numerous classrooms (i.e. about watching birds at feeders during winter); this project aims also to assess curriculum material. The authors showed that conceptualizations about learning and teaching strongly influence teachers’ approaches and practices. In fact, neither having experiences in a research setting nor knowing the official standards seem to be sufficient to lead to a deeper and more complex view of the nature of science teaching. The authors conclude that helping teachers to use inquiry based methods require to consider very carefully the underlying beliefs and knowledge teachers hold about science teaching and learning.
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School organization

The research methodology aims to overcome the opposition between changes in conceptualizations or practices through the consideration of the situation in which teachers are included. Following this direction, Lam and Kember (2006) note that often conceptions of teaching are supposed to shape teacher actions whereas the effects of contextual factors as school policies or external expectations are forgotten. In a study of eighteen secondary school art teachers, through open interviews, and observation in some cases, they show both the relationship between conceptions and approaches to teaching, and the influence of contextual factors including both teacher’s experience, and the climate and organization of the school. Nevertheless, this connexion occurs only when teachers face very strong contextual influences, such as external evaluation syllabi or such as high level of academic achievement expected for the school.

In line with these results, Andrews and Lewis (2002) –through interviews, focus group discussions and observations– found impacts on action in the classroom when the school organization allows teachers to share understandings through professional learning activities. Beyond the development of a professional learning community, teachers change their approaches in order to meet students learning needs and think that such a change has made an impact on student’s learning experience. The same results was founded by other researchers (Ballone-Duran, Czerniak, & Haney, 2005).

The complexity of the teacher collaboration effects question

This overview emphasizes the complexity of the study about the effects of teachers’ collaboration. On one hand, the research methodology needs to consider the diversity of both teacher collaboration modalities (ad hoc, institutional, organizational; one shot or on-going process), and sources of conceptualizations and practices (beliefs, experiences, teacher education, in-service programs, partnership projects, social and cultural contexts, teacher and school evaluations). On the other hand, one has to consider the multiplicity, and the ambivalence of teacher collaboration effects: immediate or permanent, conceptual or practical, previous state confirmation or change, surface or deep change, changes for teachers or students.

Furthermore, each way to collect data constrains the nature of the attested teacher transformation. Different data will be produced through interviews, questionnaires, focus groups, observations, and documents analysis. They could be heterogeneous and contradictory. The same kind of difficulties occurs from the time scale of the data collection: final, initial and final, immediately after the program or postponed. Finally, most of the studies are based on a few amount of teachers, so the generalization of the results could be problematic. All these difficulties claim for limited research goals and careful research conclusions. They claim also for accurate conceptual frameworks.

Research questions

The previous overview suggests three central questions: What kind of conceptualization changes could result from teachers’ collaboration? What kind of practical changes could occur? What kind of changes could be assessed with respect to students achievement and attitudes? This paper is limited to the first one: teacher conceptualization change but it aims to consider a large teacher sample.

To tackle this question, Grangeat and Gray (2007) referred to frameworks based on activity theory. They concluded that professional activities are underpinned by a cognitive and operational structure – called individual operative model (IOM)– which is organized through some critical dimensions. These dimensions gather the goals, the repertoire of actions, and the professional knowledge which actors use to achieve their projects. Such IOMs change with experience. Through overcoming new problems, conducting professional discussions, and interacting with numerous partners, actors’ IOM may move to more extended and deeper modalities of organization (Grangeat, 2008). Actually, in most of vocational domains, actors’ operative models are embodied in usual actions, and are seldom made explicit (Stevenson, 2000). But teachers are accustomed to reflect and to discuss their thinking and practices. Thus, eliciting teachers’ operative models and the factors which influence them could lean to a better understanding of the means for transforming their conceptualizations and practices.

The present study will consider the nature of a large sample of teachers’ IOM. Three factors could shape it: the length of experience, the characteristics of the school environment, and the school organization. The IOM’s accuracy is supposed to be better when the span of each element (e.g. more goals reported) and their connection (e.g. diversified goals according to pupils’ differences) enhance.
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Methodology

Empirical data consist of 96 semi-structured interviews with teachers of primary and secondary schools (age 8-15). Interviews are audiotaped, transcribed and analysed with Tropes (similar to Nvivo). The nature of the individual operative model is represented by a score which considered the span of the teacher goals and actions and the relation between these items. Tropes could be configured in order to inform such a score: a first analysis of the entire corpus allows the researcher to create the categories of professional concerns included within the teachers’ interviews; then Tropes produces the amount of occurrences and co-occurrences of these categories. The score aggregates these data.

The first analysis –all the interviews taken as a whole– elicit five dimensions which organize the corpus: teaching core, learning processes, teaching time scales, teacher reflective activities, and collective professional context. Each dimension gathers a repertoire of actions: e.g. “teaching core” consists in addressing specific contents, enacting learning activities, and recognising each pupil as an individual learner; “collective professional context” consists in attending to formal and informal exchanges, interacting within department and school teams, and building projects with community partners. The second analysis –each interview taken individually– provides a score to each interview according to the way each teacher makes explicit the dimensions and actions elicit in the corpus.

Three variables could explain the differences amongst the scores. The length of experience is represented by teacher age. The characteristics of the school environment is represented by the institutional ranking which split social and cultural contexts according to three level: ordinary, difficult and very sensitive. The school organization is depicted through teacher engagement within professional exchange networks: following such an engagement, the school organization fosters or impedes teacher collective work. The results are produced by an analysis of variance.

Results

Teacher age affects the score: 35-45 years old teachers obtain significantly better scores (F=8.22; p<.0001). Thus, the length of experience affects teachers’ conceptualization: the span of teachers’ operative model (i.e. goals, repertoire of actions, professional knowledge) is more large for the mid career teachers (35-45).

Nature of school environment affects only the “collective professional context” dimension of the teachers’ operative model: teachers acting within difficult sectors reports more collective projects than their colleagues from ordinary or very sensitive sectors (F=5,11; p=.008). Thus, the nature of school context alters only the part of teachers’ conceptualisations relative to professional collaboration.

School organization is the strongest factor: regardless of age or school context, teachers who are implicated within collective projects obtain the best scores (F=11.31; p<.0001); this difference is true for the four COM dimensions (no measurable effects on “teacher reflective activities”). Thus, teachers’ conceptualisations are more extended and better organized when the school organization aims to support teachers commitment within professional exchanges, projects, and partnerships.

Discussion

The study shows, across a broad sample, that the range of teaching situation components which are considered by teachers increases when the school organization fosters teacher engagement within professional networks. In this case, the teacher’s score is better. The teacher operative model became more extended and deeper when teacher collaboration is supported: in this case teachers consider a great number of goals through teaching approaches, construct a larger repertoire of actions and use more professional knowledge to justify and underline their approaches (Grangeat, 2008).

This study is in line with other enquiries, often qualitative, or case studies which show the effects of the teacher education programmes or school organization which foster professional exchange. Such programmes or organizations could take the shape of: reciprocal peer coaching (Zwart, Wubbels, Bergen, & Bolhuis, 2007), exchange about classroom video (Wong, Yung, Cheng, K. Lam, & Hodson, 2006), cooperation between teachers and science educators about specifics learning contents (Parchmann et al., 2006), or participation in a collaborative inquiry (Tillema & Orland-Barak, 2006). Such collaborations appear useful in helping teachers to enact deeper thinking about their work in the classroom and these transformations could provoke practical changes (Parsons & Stephenson, 2005).
Conclusion
This paper explored the questions of the evidence of effects of teacher collaboration and the methodology to prove it. The concept of "individual operative model" has been built to gather teachers' goals, repertoire of actions and professional knowledge. This individual operative model has been figured by a score allowing a statistical analysis of 96 interviews with teachers. This analysis showed that the better the school organization fosters teachers collaboration, the more extended and the deeper the teachers' operative model occurs, regardless to other factors (teacher age or social context).

This study is in line with others who showed the transformation of teachers' conception with regard to their engagement within professional networks.

It contributes to improve these previous findings through a methodology allowing large scales evaluations. Nevertheless, further studies are required to explore the effects of teacher collaboration on teachers' practices and students' learning outcomes.

References


