Research paper

Assisting teacher collaborative discourse in professional development: An analysis of a facilitator's discourse strategies

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HIGHLIGHTS

- We identified 10 discourse strategies that the facilitator used to enhance teacher collaborative discourse.
- The facilitator used the discourse strategies in a combined manner.
- We found three combinations of discourse strategies (CDS) that served different purposes.
- Through the CDS the facilitator assisted teachers to describe and critically analyse their practices.
- Our results illustrate how a facilitator can use the language to promote teachers' autonomy.

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ABSTRACT

This study aims to deepen the knowledge of how to assist the emergence of productive teacher collaborative discourse in professional development (PD) processes. We analysed a facilitator's discourse in a one-year PD process carried out with a group of in-service teachers in a secondary school. Data analysis followed a three-step procedure designed to analyse the facilitator's discourse within the joint activity in which it appeared. We identified ten discourse strategies and three combinations of discourse strategies that the facilitator used to promote and scaffold teacher collaborative discourse throughout the PD process.

In a context of increasing complexity and new demands for education systems, schools and teachers must face the challenge of constantly improving their teaching practices. Teachers' professional development can contribute to responding to this challenge. It is widely recognized, however, that professional development must have certain characteristics to be able to improve the teaching practice and student learning effectively (Bates & Morgan, 2018; Darling-Hammond, Hyler, & Gardner, 2017; Desimone, 2009; Desimone & Pak, 2017; Dunst, Bruder, & Hamby, 2015). Two of these characteristics are active teacher learning, and collective participation in teams with peers, in which teachers build an interactive learning community together. It is about teachers having opportunities to observe, receive feedback and analyse students' work, engaging in processes of analysis and reflection on their own practice (Kintz, Lane, Gotwals, & Cisterna, 2015; Moore-Russo & Wilsey, 2014; Schön, 1987), and doing it collaboratively, developing forms of interaction and discourse that can enhance professional learning among participants.

Discourse plays a critical role in professional learning (Crafton & Kaiser, 2011; Knight & van Nieuwerburgh, 2012; Lefstein, Louie, Segal, & Becher, 2020; Zhang, Lundeberg, & Eberhardt, 2011). Discourse is constitutive of the teachers' professional vision, it is a mediator of thinking and learning and central to both of these (Lefstein et al., 2020). The key, then, is to get the participants in professional development to construct forms of quality teacher collaborative discourse that is able to promote their professional learning and develop more elaborated representations of their teaching practices. These forms of quality teacher collaborative discourse have been described as productive (Vrikki, Warwick, Vermunt, Mercer, & Van Halen, 2017; Zhang et al., 2011),

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generative (Lafferty & Kopcha, 2016; Lefstein et al., 2020), reflective (Soysal, 2020) or dialogic (Bansal, 2018): forms of conversation based on a genuine dialogue in search of permanent improvement in ideas, interanimation (Bakhtin, 1981) or interthinking (Littleton & Mercer, 2013).

However, engaging teachers in this kind of productive discourse in professional development is not easy. The specific characteristics of this productive discourse hardly ever appear spontaneously in conversation, but rather this kind of discourse requires specific support and learning (Lefstein et al., 2020; Perry & Lewis, 2009). Understanding how to create "dialogic spaces" (Vrikki, Warwick, Vermunt, Mercer, & Van Halem, 2017) in which productive discourse appears is thus pivotal for increasing our theoretical understanding of how and why teachers learn individually and collectively (Bjuland & Helgevold, 2018). It seems necessary, therefore, to gain a better understanding of how to promote productive discourse in professional development processes.

One of the factors that has been identified as crucial is the intervention of those who act as facilitators of these processes, as well as their use of language to promote productive teacher collaborative discourse (Kuusisaari, 2013; Lefstein et al., 2020; Philpott & Oates, 2017). The present study focuses on this issue. In particular, we analysed the discourse of an external expert facilitator when he interacted with in-service, secondary education teachers in the context of a professional development process. This professional development process aimed to support the introduction of cooperative learning practices in the teachers' classrooms, and it was specifically designed to promote teachers' reflection on these new practices. Our analysis focused on the discourse strategies used by the facilitator to promote productive teacher collaborative discourse.

1. Theoretical framework

1.1. Productive discourse

In a systematic review of empirical studies about teacher team discourse and interaction, Lefstein et al. (2020) identified an emerging consensus on the characteristics of productive teacher collaborative discourse. These characteristics relate to certain discourse practices, social norms, and discourse topics.

First, five *discourse practices* are pivotal to productive discourse:

(i) Revealing and probing problems of practice: sharing and investigating challenges that the teachers faced in their classrooms, making them accessible to elaboration and reflection (Horn & Little, 2010).
(ii) Providing concrete evidence and explicit reasoning for claims (e.g., Horn, Garnier, Kane, & Brasel, 2017; Vrikki et al., 2017).
(iii) Making connections to general principles, connecting specific instances of classroom practice to general principles and concepts, and extending these connections to other contexts and situations and to the teachers' future work (Horn, Kane, & Wilson, 2015; Kintz et al., 2015).
(iv) Building on others' ideas (as opposed to the serial presentation of ideas without responding to one another's' contributions), and promoting the elaboration of ideas and the construction, over time, of shared frames of reference (Dobie & Anderson, 2015; Horn & Little, 2010).
(v) Offering different perspectives, both presenting diverse and competing perspectives and making contrast between ideas explicit (Dobie & Anderson, 2015): offering a diversity of perspectives is intended to help challenge teachers' conceptual assumptions and routine practices.

Second, some *social norms*, which regulate interaction and participation in teachers' teams and shape teachers' discourse, seem to be central to promote productive discourse and the aforementioned discourse practices (Lefstein et al., 2020). For instance, mutual trust is essential for productive discourse to happen; discussion has to be seen as a safe space that supports teachers' risk-taking, while confronting traditional norms of teaching privacy. Egalitarian inclusion (i.e., a sense of inclusion and equal standing for all participants) is also crucial to support the possibility of mutual challenge, taking advantage of diverse perspectives and using disagreements constructively. Furthermore, productive discourse requires a dialogic stance: an orientation to the group's work as shared inquiry and improvement, and a sense of shared responsibility for collective understanding (Grossman, Wineburg, & Woolworth, 2001) that supports and promotes practices such as building on other's ideas or offering different perspectives.

Finally, productive collaborative teacher discourse also relates to *discourse topics*. On the one hand, identifying and maintaining topical foci seems to support productive discourse (Levine & Marcus, 2010). On the other hand, teachers need to move beyond the mere description of their practices and focus on problematizing and critically analysing these practices (Popp & Goldman, 2016).

These characteristics connect productive teacher collaborative discourse with reflection on teaching practices, particularly with higher-level or "productive" reflection: reflection that is not only descriptive, but also comparative and critical (Gelfuso & Dennis, 2014; Griffiths, 2000; Moore-Russo & Wilsey, 2014). Moore-Russo and Wilsey (2014), for instance, characterise "productive reflection" through three dimensions: content, connectedness and complexity. Productive reflection focuses on teaching and learning processes and aims to achieve a deeper understanding of these processes (content); goes beyond description of practices, connecting them with personal and others' experiences, and with ideas or concepts accepted by the educational community (connectedness); and considers a complex view of teaching, emphasizing, and integrating multiple aspects of teaching practice (complexity). In a similar vein, Gelfuso and Dennis (2014) conceive productive reflection as a rigorous mode of thought that results on "warranted assertabilities" about teaching and learning through a process which involves dissonance, judgement, analysis and synthesis, in dialogue with "knowledgeable others".

The set of characteristics that define productive teacher collaborative discourse make it difficult to attain. Thus, simply bringing teachers together or putting them into groups does not guarantee that a teachers' learning community will be developed (Alles, Seidel, & Gröschner, 2019; Popp & Goldman, 2016). Moreover, the mere fact of talking about their practice does not ensure that productive reflection processes take place among participants (Moore-Russo & Wilsey, 2014).

From their systematic literature review, Lefstein et al. (2020) concluded that one of the conditions that support productive teacher collaborative discourse in professional development is the "transparency" of teachers' practices: explicitly displaying teachers' practices in a way that allows these practices to be an object of analysis and inquiry. For transparency to be achieved, specific forms of displaying teachers' practices (e.g., lesson plans, peer observations, self-reports or video records) have to be used within particular tasks and forms of interaction that are able to promote deep examination of these practices. For example, merely viewing video records does not assure teacher productive reflection or learning, and particular frameworks to foster productive reflection need to be designed to this end (Karsenty & Arcavi, 2017; van Es, Tunney, Goldsmith, & Seago, 2014). Therefore, the particular design of the professional development process is important for supporting and

promoting productive collaborative teacher discourse —just as teaching design is important for supporting and promoting student productive talk in the classroom (Andriessen & Schwarz, 2009; Howe, Tolmie, Duchak-Tanner, & Rattay, 2000; Michaels & O'Connor, 2013). Similarly, several authors have proposed that organizing and structuring the process of reflection in particular ways (i.e., through particular sequences of phases) is important for supporting and promoting productive reflection (Gelfuso, 2016; Korthagen, 2001; Liu, 2015).

Lefstein et al. (2020) also identified skilled facilitation, the focus of our study, as a second condition to support productive discourse. We explore this issue in the next section.

1.2. Facilitating productive discourse

1.2.1. Facilitation in professional development: a sociocultural approach

The facilitator's actions can constitute a powerful tool for assisting the emergence and development of productive teacher collaborative discourse (Collet, 2015; Lefstein et al., 2020; Popp & Goldman, 2016; Weiland-Carter & Amador, 2015; Zhang et al., 2011) and, by extension, for the success and quality of professional development (Andrews-Larson, Wilson, & Larbi-Cherif, 2017). It has been noted that the facilitators' actions can promote an atmosphere of learning, helping to create an environment in which productive reflection is possible (Alles et al., 2019; Nachlieli, 2011). It has also been noted that their actions can help to manage the flow and direction of interaction (Molle, 2013), develop a certain culture of productive and collaborative conversation (Alles et al., 2019), and question teaching practices in certain situations and conditions, supporting the critical and reflective examination of these practices (Bjuland & Helgevold, 2018; Nachlieli, 2011; Zhang et al., 2011). Achieving these goals, however, is complex (van der Want & Meirink, 2020), and poses significant challenges to the facilitator. One of these challenges is to keep a balance between the recognition of what teachers are already doing and the promotion of changes in their practices (Heineke, 2013; Ippolito, 2010). Another important challenge for the facilitator is to get to take into account the teachers' experience and representations and to help them review and rebuild these representations at the same time (Finkelstein, 2019). The facilitator should also provide support and guidance to teachers to move forward, while ensuring their leading role and increasing autonomy throughout the process (Collet, 2015; Molle, 2013).

The way and possibilities of meeting these challenges can be influenced by the position of the facilitator in the institution. An internal position can allow for a greater knowledge of the organization and continuity in the relationship with the teachers, but it can also entail more dependence on the hierarchy and policy of the institution. An external position can allow for greater neutrality, a new point of view and more resistance to the pressures of the institution, but it can also lead to marginalization (Dougherty, 2013). In a recent review study on school-based professional development processes, Postholm (2018) points out that the outsider perspective of external facilitators can contribute to develop an object for professional development that responds to teachers' needs (e.g., Smith & Lindsay, 2016); help teachers expand their perspectives (Cravens & Wang, 2017); and use their language in diverse ways to support teachers' professional development and learning.

In this research we adopt a sociocultural perspective, based on Vygostky's ideas and on several subsequent works that have extended and elaborated his ideas (Littleton & Mercer, 2013; Mercer, 2000; Tharp, Estrada, Dalton, & Yamauchi, 2000; Wells, 1999; Wertsch, 1985), as a framework for exploring teachers'

learning and facilitation processes (Heineke, 2013; Lago & Onrubia, 2011). Thus, we assume that some of the main ideas of the sociocultural perspective provide the basis for understanding how teachers learn in professional development settings and how facilitators may support teachers' learning (e.g., learning as a social process that emerges from the joint activity among participants; discourse as a mediator of learning and thinking; learning as a process of creating Zones of Proximal Development (ZPD) through the interaction with more knowledgeable others; the importance of scaffolding for learning in the ZPD; the relationship between learning and the construction and re-construction of the learner identity; or the power relations involved in learning and the negotiation of these relations).

In particular, the sociocultural perspective highlights the importance of learning with knowledgeable others and makes it possible to conceptualise the actions of facilitators in terms of providing assistance. In doing so, it focuses the analysis on how facilitation can best assist the professional growth of teachers and the improvement of their practices (Heineke, 2013), and more specifically, on how certain sequences of interaction and forms of communication can promote productive discourse and thereby lead to professional learning (Bjuland & Helgevold, 2018; Weiland-Carter & Amador, 2015).

This perspective also permits us to recognise the multifaceted nature of facilitation and the complexity of the relationships between facilitators and teachers (and among teachers) (Molle, 2013). On one hand, this perspective emphasises the need for a collaborative relationship, mutual recognition, and collaboration between the facilitator and the teachers, in which each person builds on the knowledge of the other. On the other hand, it assumes that the forms of power and positioning of the participants will influence this relationship, recognising the importance of understanding how participants position themselves or are positioned in the interactions between the facilitator and teachers (Crafton & Kaiser, 2011; Hunt, 2016; Robertson, Ford-Connors, Frahm, Bock, & Paratore, 2020). Accordingly, one of the fundamental challenges for facilitators is to strike a balance between an intervention that guides and structures the teachers' experience and one that allows teachers to manage their own collaboration, reflection and learning process (Heineke, 2013; Ippolito, 2010). Ultimately, it is a matter of sustaining the process of teachers' collaboration, reflection and learning while empowering them to make their own decisions (Wood et al., 2017).

The notions of scaffolding and gradual release of responsibility proposed by the sociocultural perspective (Edwards & Mercer, 1987; Pearson & Gallagher, 1983) are, in our view, useful for suggesting how facilitators can deal with this challenge. These notions can help to better conceptualise and understand the sensitivity that facilitators must show to support collaboration among teachers (Tan & Caleon, 2016). As Collet (2015) pointed out, the facilitator's actions are more effective when they respond and adjust to the teachers' needs throughout the interaction, strategically modifying their actions to achieve a "progressive scaffolding" and a "gradual increase of responsibility". From this perspective, the facilitator can promote teacher awareness and autonomy precisely through an action that strategically combines collaboration and direction (Finkelstein, 2019; Molle, 2013). In this approach, therefore, collaboration (recognition of the teachers' voice and agenda) and directiveness (influence and orientation to promote the critical revision of teachers' representations of their own practice) are not understood as opposites, but rather correspond to different dimensions of the facilitator's actions. They can and should be combined in diverse ways, dynamically and flexibly, throughout the interaction (Heineke, 2013; Lago & Onrubia, 2011; Robertson et al., 2020), in favour of teachers' autonomy and empowerment.

Similarly, scaffolding and achieving the gradual increase of responsibility for teachers are not considered to be simple or mechanical processes, but rather complex and dynamic ones. These processes are embedded in constant negotiation and re-negotiation of meanings between the teachers and the facilitator (and among teachers), and in the construction and re-construction of an increasing degree of intersubjectivity among participants (Edwards & Mercer, 1987; Wertsch, 1985).

From these theoretical coordinates, therefore, it is essential to understand how facilitators can promote a productive discourse that can enhance participants' interthinking. It is also important to identify the specific discourse strategies and uses that facilitators can apply in certain contexts and situations of professional development to achieve this aim.

1.2.2. Facilitating productive discourse in professional development

Although there are a number of proposals and practical protocols to guide the facilitators' work (e.g., Venables, 2018; Woodland, 2016; Woodland, Lee, & Randall, 2013), studies that have empirically analysed the facilitators' discourse are relatively scarce and have been conducted in different contexts and with diverse participants. Thus, we found studies that examined mentoring conversations with student teachers or pre-service teachers (Amador & Carter, 2018; Beek, Zuiker, & Zwart, 2019; Bjuland & Helgevold, 2018; Gelfuso, 2016, 2017; Weiland-Carter & Amador, 2015), or analyses of conversations between coaches and teachers, mainly in dyadic situations (one-to-one) (Collet, 2015; Finkelstein, 2019; Haneda, Sherman, Bose, & Teemant, 2019; Heineke, 2013; Hunt, 2016, 2019; Nachlieli, 2011; Reichenberg & Boyd, 2019; Robertson et al., 2020). Only a few studies focus on professional development situations in which a facilitator supports the development of collaborative conversation in groups of in-service teachers (e.g., Alles et al., 2019; Andrews-Larson et al., 2017; González, Deal, & Skultety, 2016; Molle, 2013; Zhang et al., 2011).

The results obtained in these studies focus on identifying specific discourse strategies or moves used by the facilitators. These strategies include questioning (Bjuland & Helgevold, 2018; Collet, 2015; Weiland-Carter & Amador, 2015; Zhang et al., 2011), revoicing (Nachlieli, 2011; Reichenberg & Boyd, 2019; Zhang et al., 2011), modelling (Collet, 2015; Reichenberg & Boyd, 2019; Weiland-Carter & Amador, 2015; Zhang et al., 2011), and reconceptualising or reframing (Reichenberg & Boyd, 2019; Robertson et al., 2020; Zhang et al., 2011). Other strategies identified include, for example, allowing free discourse, clarifying, challenging teachers' ideas, making connections, proposing alternatives and summarising. It is interesting to note that some of these strategies (e.g., revoicing) are meant to build consonance between the facilitator and the teachers, helping to recognise and take on the teachers' ideas, while others (e.g., reconceptualising) are aimed at introducing dissonance between them, so that these ideas can be questioned and critically revised (Reichenberg & Boyd, 2019).

There is also evidence that the facilitators' actions can promote the creation of a positive learning environment in which the emergence of a productive discourse is plausible. For example, the explicit introduction of certain "collective shared discourse rules" (Alles et al., 2019) has been found to enhance a "conversation culture". More specifically, several studies on video-based discussions agree on the need to redirect the dialogue from evaluation to interpretation to orchestrate productive discussions, and to help build a stance of inquiry. For instance, Coles (2013) insists on the importance of avoiding judgments or evaluations, and proposes three key dimensions of the role of the facilitator: setting up the discussion norms, moving to interpretation, and meta-commenting (identifying and labelling sets of teaching strategies that are useful

in a wide range of contexts and that are of interest for the specific situation that is being observed). Karsenty and Arcavi (2017) highlight the relevance of establishing non-judgmental norms of discussion, moving the evaluative comments to "issues to think about", encouraging teachers to reflect on the affordances and constraints of the observed teacher's decisions. González et al. (2016) stress the need to sustain a stance of inquiry among teachers to promote their learning through clarifying, pressing, and asking for explanation moves.

Discussing about teaching practices also requires the proper regulation of the differences in interpretation between participants. In this respect, Molle (2013) identified some of the resources that facilitators use to "resolve tensions", such as building a common ground in divergent opinions, challenging the basis on which an argument is founded rather than the argument itself, and promoting the coexistence of divergent views.

On another note, Zhang et al. (2011) suggest that the different discourse strategies facilitators apply are not always equally useful. They therefore assert the importance of studying the effectiveness of the strategies considering variables such as time, participant structures and group dynamics, rather than studying them isolated from the context in which they appear. They also noted that these strategies are usually combined in the facilitator's discourse. van Es et al. (2014), focusing on the facilitation of video-based discussions, also point out that what leads to productive discussions is not the particular or isolated moves in the facilitator's discourse, but the coordination of these moves at the service of certain practices (e.g., sustaining an inquiry stance, maintaining a focus on the video and the Mathematics, and supporting group collaboration). In a similar vein, Borko, Jacobs, Seago, and Mangram (2014) propose three practices for directing productive discussions based on videos: eliciting teachers' ideas, probing for evidence, and helping teachers make connections between what they observe and key mathematical ideas.

At this point, it is worth noting that the interest of analysing the discourse using units that go beyond the individual moves coincides with the approach of some recent research in the field of classroom discourse analysis from a sociocultural perspective. These works highlight the importance of analysing relatively long discourse segments, as well as adopting units of analysis that include extensive sequences of turns. For example, Lefstein, Snell, and Israeli (2015) emphasize that the discourse moves are positioned within sequences that significantly influence their meaning and effect. For this reason, they claim that, for many purposes, it is necessary to expand the unit of analysis to investigate how discrete moves are sequentially structured. Specifically, they point out that interactional structures of three or more turns are methodologically convenient and theoretically sound units of analysis for classroom discourse. Lately, Hennessy, Howe, Mercer, and Vrikki (2020) argue that the patterning and sequencing of the conversational moves are crucial for dialogic discourse, and that it is thus very useful to use analytic techniques that allow to capture these temporal sequences.

All these considerations show that it is necessary to analyse facilitators' strategies in greater depth by researching how they are used in a combined way and at the service of specific and contextually situated discursive functions. However, the studies that adopt this approach are even scarcer and analyse mostly coach-teacher dyads. Among them, Collet's (2015) results show both quantitative and qualitative changes in the coaches' actions throughout the set of sessions analysed: the coaches' predominant discourse moves vary over time, and are more directive at the beginning, and more intended to confirm the teachers' decisions by the end of the process. Heineke (2013) illustrates how, in the same interaction episode, coaches may exert different degrees of

directiveness/responsiveness, which enables them to scaffold teachers' learning. More recently, Robertson et al. (2020) pointed out that in the coaches' discourse there is a pathway from establishing a common ground with the teachers to expanding that knowledge and introducing new ideas. Finally, the study by Andrews-Larson et al. (2017) does analyse school-based collaborative meetings between teachers and a facilitator, and identifies three features of the facilitator's conversational moves that create space for teachers to contribute to conversations in meaningful ways: (i) solicitation of detailed representations of teachers' classrooms and practice; (ii) orientation toward students as sensemakers; and (iii) press for teachers to articulate rationales for instructional decisions that are linked to coherent goals for student learning.

All things considered, the knowledge on how discourse strategies are used in a combined way and at the service of specific and contextually situated discursive functions is still very limited. In this context, our study aims to address this limitation. In line with the above considerations, we understand that the potential contribution of our study is based on four features. First, we analyse the intervention of an expert facilitator who aims to promote productive discourse in their interaction with a group of in-service teachers (the entire teaching staff of a secondary school) in a professional development situation originating from a request from the teachers themselves. Second, the professional development that we analyse was specifically designed to foster teachers' reflection on their new practices. Third, we not only focus on identifying isolated discourse strategies, but we also aim to identify combinations of discourse strategies developed through extensive sequences of turns and that are used for certain specific and situated discursive functions. Fourth, we place the analysis of discourse strategies and combination of discourse strategies within the framework of a broader analysis of the joint activity between facilitator and teachers, in such a way that it focuses on those specific moments of professional development in which teachers are reviewing and analysing how they are incorporating the new teaching practices into their classrooms. These new practices have been previously co-designed and co-planned collectively in the group with the support of the facilitator.

Thus, the purpose of our study is twofold: (i) to describe the discourse strategies that the facilitator uses to assist introducing changes into the teachers' practice; and (ii) to explore the ways the facilitator combines these discourse strategies. Specifically, we aim to identify and describe the combination of discourse strategies (CDS) that the facilitator uses recurrently, the situations in which they appear and the purpose they serve in the interaction between the facilitator and the teachers.

2. Method

2.1. Context and participants

In accordance with the study aims, we observed and analysed a professional development (PD) process in depth with a group of in-service teachers (the teaching staff of the Compulsory Secondary Education level of a school). The PD process was led by an expert facilitator, and was designed from a collaborative perspective that sought to elicit teachers' active learning.

The purpose of the PD process was that the teachers systematically incorporated teaching practices based on students' cooperative learning into their classrooms, with the ultimate goal of increasing classroom inclusion. The process followed the approach to cooperative learning from the programme "Cooperar para Aprender, Aprender a Cooperar" [Cooperate to Learn, Learn to Cooperate] (CA/AC) (Pujolàs, 2008; Pujolàs & Lago, 2018). This

programme is grounded in the contributions of authors such as Slavin (1995), Kagan (1994) and Johnson and Johnson (Johnson, Jonhnson, & Holubec, 1994).

The PD process was carried out in a secondary school of a small town near Barcelona (Spain), which provides the Compulsory Secondary Education level of the Spanish education system (students from 12 to 16 years old). The school identified with the values of inclusive education, and the school management team had promoted several professional development processes for teachers to respond to diversity. In this context, teachers themselves asked to participate in a PD program about cooperative learning understood as a tool to promote inclusion of all students. For this reason, the school principal contacted a facilitator with proven expertise in conducting PD on cooperative learning as an inclusion strategy. The facilitator was selected following the recommendation of other school principals who have had the experience of participating in the CA/AC programme before. The entire PD and innovation process lasted three academic years, and was structured in three stages according to the CA/AC programme: Introduction, Generalization, and Consolidation (Lago & Naranjo, 2015). Each stage lasted one academic year.

Our study focuses on the PD sessions of the Introduction stage —corresponding to an early implementation stage of the innovation process (Fullan, 2016). In this first year, teachers began incorporating into their classroom certain cooperative learning practices related to the three aspects considered in the CA/AC programme: (i) activities for improving classroom cohesion and the students' interest in cooperative learning; (ii) use of simple cooperative learning structures for students to learn diverse subject contents; and (iii) use of different tools and strategies to systematically teach the students the competence of teamwork and cooperative learning. Nine professional development sessions were conducted during this first year, each lasting about 2 h. They were held always the same day of the week (Wednesday), and approximately on a monthly basis: the first session took place in October, and the following sessions were in November, December (2 sessions), February, March, April and June (2 sessions).

Eighteen teachers and one facilitator participated in the PD sessions. There were 10 women and 8 men teachers, aged between 33 and 60 years old. Fourteen out of the eighteen teachers had extensive teaching experience (more than five years) in that specific secondary school, while the remaining four had joined the teaching staff recently. In accordance with the regular organization of teaching at secondary schools in our country, teachers taught different subject contents in different year groups (e.g., the same teacher can teach mathematics in the first year of the stage and physics in the third year), and their students were grouped in diverse forms. For this reason, at the beginning of the process, the teachers decided in which classrooms they would incorporate the new cooperative learning practices, and established teams of teachers focused on each year group. The teachers also chose among themselves a group to act as a coordinating team for the whole process.

The facilitator was a white man, aged 55 years old. He was an external professional, with a wide and recognized professional career as a facilitator. He is one of the creators of the CA/AC programme and has published several articles, both on this specific programme and on the role of the facilitator to promote teaching practices. Furthermore, he has been a trainer of facilitators and has acted as a facilitator himself for more than 15 years in geographically, contextually and educationally diverse school settings.

The PD process was based on a set of structured actions aimed to guide teachers in the progressive incorporation of cooperative learning in their classrooms, and was designed to promote teachers' reflection on their new practices. The process began with the

facilitator presenting information on some of the basic aspects of the CA/AC programme (classroom cohesion activities, simple cooperative learning structures or Team Planning activities). In the following PD sessions, he proposed a series of possible changes regarding one of these basic aspects, the teachers chose what to incorporate in their classrooms, and the facilitator and the teachers co-designed and co-planned how to apply these changes (when, which teacher, in which class group and what classroom cohesion activity, cooperative learning structure or Team Planning activity in particular). After incorporating the new practices they agreed on, each teacher individually completed a self-report analysing the practice he/she had carried out and sent it to the facilitator. The facilitator collected these self-reports and analysed them to organise the next PD session, that was going to focus on assisting the teachers to systematically describe and reflect on the new practices they applied in their classrooms, and to agree on criteria for future actions. Subsequently, new proposals for change were made and this cycle of actions started again (presentation of information on some aspect of the programme, decision making on what is going to be incorporated, etc.), advancing this way in the incorporation of the new cooperative learning practices. Thus, throughout the sessions, the teachers, supported by the facilitator, co-designed and co-planned different cooperative learning practices and, after these practices had been applied in their classrooms, they revised and analysed them together.

The self-reports were crucial to structure the sessions in which the new educational practices were discussed. In these self-reports, the teachers recorded their new practices (classroom cohesion activity, simple cooperative learning structure or Team Planning activity), the group of students they had worked with, and the date of application. They were asked to describe how they had incorporated the new teaching practice and whether by doing so they met the objectives of the programme (e.g., in the case of cooperative learning structures, they were asked whether it improved equitable participation and simultaneous interaction among team members). Finally, they were asked to make a general assessment (difficulties encountered, positive aspects and doubts raised by the incorporation of the new teaching practice).

Taking these self-reports as the basis for reflection, the sessions focused either on detailing the new practices that teachers had incorporated in their classrooms, or on analysing the value of these practices considering the objectives of the CA/AC programme. Typically, the facilitator would ask the teachers, organized in one big group, to provide their description of new practice, their assessment on this practice, the challenges encountered, etc. The facilitator took teachers' contributions as a starting point to help them elaborate their description or analysis of the teaching practices through dialogue. This process of joint reflection aimed to assist the teachers in the co-construction of shared criteria on which to base decisions such as *why*, *what for*, and *how* to teach their students to learn cooperatively. Therefore, the process was specifically designed to promote the teachers' continuous reflection on their practice, to assist them in critically revising the representations of their own practice, and to promote teachers' autonomy and competence in improving this practice. The facilitator tried to take the needs, problems and challenges experienced by the teachers as a starting point and tried to systematically connect cooperative learning practices and principles with those needs, problems, and challenges.

The participants gave informed consent for the sessions to be recorded and for the entire data collection process. Throughout the process, they maintained a positive disposition to participating in the study.

2.2. Data collection

Table 1 details the duration and the main contents for each of the nine PD sessions observed in the professional development process.

We audio-recorded all nine sessions. In order to obtain more contextual information, a narrative record of each session was also made, and all the documents and materials used or elaborated by the participants were collected. All this information was used as the main data corpus for the study.

In addition, we conducted short semi-structured interviews with the facilitator before and after each session, and a longer semi-structured interview with the facilitator before and after the whole process. A follow-up and a final questionnaire were administered to the teachers. These data are not directly analysed in this paper.

2.3. Data analysis

First, the audio recordings of the nine sessions were transcribed verbatim. In order to consider in detail the contextual, prosodic and paralinguistic aspects when the facilitator's discourse strategies are identified, data analysis was carried out considering the audio recordings and their transcription at the same time.

We conducted a three-step data analysis. The first step focused on how joint activity among participants was carried out in each session. This analysis allowed us to establish the activity context in which the participants' discourse appeared, and to identify the interaction segments in which the teachers and the facilitator reflected on and analysed the new cooperative learning practices that the teachers were incorporating to their classrooms. The other two steps were directly geared towards identifying the discourse strategies (second step) and the combinations of discourse strategies (CDS) (third step) used by the facilitator. This three-step analysis allow us to see what the facilitator does, in a given pedagogical design, to foster productive discourse.

The first step of the analysis was performed using a particular technique named "analysis of joint activity" (Clarà, Mauri, Colomina, & Onrubia, 2019; Coll, Onrubia, & Mauri, 2008; Mauri, Clarà, Colomina, & Onrubia, 2017). The aim of this technique was to identify the "interactivity segments" (IS) that constituted each session. Interactivity segments are defined as fragments or parts of the joint activity during a session that maintain a certain thematic focus or content and a certain participation structure (a set of rules for social and task participation (Erickson & Schultz, 1997) for the teachers and the facilitator). Therefore, each session can be constituted by one or more IS, and these IS can be of different types, depending on their thematic focus or content and their participation structure.

An inductive procedure was used to identify the IS, and consisted in: (i) identifying moments of the interaction in which there was a substantial change in the participation rules followed by the participants, or in the thematic focus or content of the interaction; those moments marked the end of an IS and the beginning of another; (ii) identifying and describing the patterns of joint action of the participants in each segment; (iii) establishing which segments have similar patterns of joint action, thus defining different types of segments that appear in the session; and (iv) naming each type of segment, according to their typical joint action patterns and their function in the joint activity. This procedure was repeated iteratively for each session to refine the description, naming and typology of the segments.

At the end of this procedure, we could identify the IS in which the interaction focused on reflecting on the new cooperative-

Table 1
Duration and main contents of the nine professional development sessions observed.

Session	Duration (hh:mm)	Main contents
S1	1:43	Cooperative learning: conceptual framework.
		General presentation of the professional development process and sessions
S2	2:12	Introduction of the aspects of cooperative learning considered in the CA/AC program (Aspects A, B, C).
		Aspect A: Activities aimed at improving classroom cohesion and students' interest in cooperative learning
		Co-planning of activities that the teachers will incorporate in their classrooms
S3	2:04	Analysis and reflection on the activities corresponding to Aspect A that the teachers had incorporated in their classrooms
S4	2:18	Analysis and reflection on the activities corresponding to Aspect A that the teachers had incorporated in their classrooms (cont.).
		Aspect B: Using simple cooperative learning structures for students to learn diverse subject contents
		Co-planning of structures that the teachers will incorporate in their classrooms
S5	2:12	Analysis and reflection on the simple cooperative learning structures that the teachers had incorporated in their classrooms
		Co-planning of cooperative learning structures to be incorporated in the teachers' Lesson Plans
S6	1:44	Analysis and reflection on the cooperative learning structures that the teachers had incorporated in their Lesson Plans
		Co-planning of additional cooperative learning structures to be incorporated in the teachers' Lesson Plans
S7	1:56	Cooperative teams: conceptual framework and practical issues of establishing teams
		Aspect C: Using different tools and strategies to systematically teach students the competence of teamwork and learning
		The Team Planning Document
		Co-planning the use of Cooperative Teams and the Team Planning Document in the teachers' classrooms
S8	1:36	Analysis and reflection on the teachers' experience when they were incorporating Cooperative Teams and the Team Planning Document into their classrooms
S9	1:18	General comments and review of the nine sessions of the professional development process
		Overall agreements for the next stage of the process (next academic year)

learning teaching practices that the teachers were incorporating. The discourse strategies and the combinations of discourse strategies used by the facilitator were identified on these segments.

In the second step of the analysis, the discourse strategies used by the facilitator were identified through a deductive-inductive process of coding, going back and forth between theory and data. The starting point for this process was the discourse strategies identified by Nachlieli (2011), Zhang et al. (2011), Weiland-Carter and Amador (2015), and Bjuland and Helgevold (2018).

The analysis unit for this coding was the thematic fragment within a facilitator's conversational turn. A thematic fragment was defined as a part of a facilitator's conversational turn, or a whole turn, that attains a particular discourse intention. The length of a thematic fragment may vary. As a result, in a given facilitator's conversational turn, there may be one or more fragments corresponding to one or more discourse strategies. The different discourse strategies are mutually exclusive, so only one discourse strategy can be coded for each fragment.

The third and final step of the analysis aimed to identify, based on the discourse strategies found in the previous step, the combinations of discourse strategies (CDS) that the facilitator used. That is, we identified the recurring patterns of discourse strategies that the facilitator used on a regular basis to attain certain discursive functions related to the aims of the professional development process (e.g., sharing a detailed description of the new teaching practices that the teachers had incorporated, or establishing criteria to analyse these practices).

To identify CDS, the IS were divided into episodes, and we looked for CDS within these episodes. An episode was defined as a sequence or chain of turns between the teachers and the facilitator that is part of an IS, and which maintains a particular topic and shows a certain conversational structure. CDS were then defined as recurring sequences or patterns of discourse strategies that the facilitator used on a regular basis within a particular episode. An inductive and exploratory procedure was used to identify CDS. This procedure involved: (i) identifying, for each episode, recurring sequences or patterns of discourse strategies used by the facilitator; (ii) selecting the recurring sequences or patterns of discourse strategies that appear regularly; (iii) establishing which of these recurring sequences or patterns relate, as a whole, to particular discursive functions in the context of how the session develops; (iv)

selecting those sequences or patterns that meet the previous criteria and that can be clearly and repetitively identified for a particular kind of episode.

For the three analysis steps (IS, discourse strategies, CDS), coding credibility and confirmability was improved by a systematic procedure based on consensual intercoder agreement (Creswell, 2014) and continuous debriefing sessions (Shenton, 2004). This iterative procedure, which goes back and forth between theory and data, was as follows: (i) one of the authors of the paper began each step of the analysis; (ii) then, systematic debriefing sessions with another of the authors were held to discuss, revise and refine the analysis; (iii) when an overall consensus was reached, one of the authors formalised the analysis criteria and established and named the IS, discourse strategies or CDS; (iv) additional debriefing sessions were held to discuss and solve any doubts, difficulties or inconsistences in the implementation of the established codes; (v) when a first general analysis of the nine sessions was completed, the aspects in which doubts persisted were discussed again, until a final agreement was reached and the coding system was adjusted accordingly. As a whole, this procedure follows a "collaborate coding" strategy (Smagorinsky, 2008). This strategy aims for an agreement to be reached on each code through collaborative discussion rather than independent corroboration. Consequently, coders discuss coding until reaching a 100% consensus, and data are re-coded as necessary to reflect updated codes.

All the steps of the analysis were carried out using Atlas.ti v7.

3. Results

The first step of the analysis allowed us to identify seven kinds of interactivity segments (IS) in which the discussion focused on reflecting on the new teaching practices of cooperative learning that the teachers were incorporating in their classrooms: segments of commentary on classroom cohesion activities; segments of commentary on simple cooperative learning structures; segments of discussion about simple cooperative learning structures; segments of commentary on cooperative learning structures in Lesson Plans; segments of discussion about cooperative learning structures in Team Planning Documents; segments of commentary on Team functioning; and segments of commentary on the Team Planning Documents.

As stated in the Method section, the facilitators' discourse strategies were identified on these segments. This ensures that the discourse was analysed in the IS in which reflection actually emerged. This reflection was produced thanks to, and within the framework of, the specific design of the PD programme, aimed to promote such reflection. In fact, the IS that focused on reflecting on the new teaching practices of cooperative learning that the teachers were incorporating in their classrooms constituted a substantial part of the analysed sessions (7 h and 48 min in total), and were predominant in six of the nine sessions. Thus, for example, 93% of the time of the third session was spent on commenting on the team cohesion activities; 84% of the time of session 5 was devoted to discussing or commenting on cooperative learning structures; and segments of commentary on the Team Planning Documents were found in 95% of the time of session 8. The only sessions in which this reflection did not appear were the first, the second, and the last session. As we show in Table 1 (see Method section), the first two sessions focused on a general presentation of the professional development process and the features of cooperative learning considered in the CA/AC programme. The main activity during the closing session was reviewing the PD sessions carried out and preparing for the next stage of the PD process.

3.1. Identification of discourse strategies and frequency of use

The analysis of the facilitator's discourse led us to identify 10 different discourse strategies that he uses in his interaction with teachers to reflect on how they incorporate the new practices in their classrooms. The set of discourse strategies identified, including examples of each one, is presented in Table 2. The different strategies did not vary across the diverse contents related to cooperative learning addressed in the IS analysed (classroom cohesion activities, cooperative learning structures, Team Planning activities). Below, we briefly describe the 10 different discourse strategies, in decreasing order of frequency.

The discourse strategy that the facilitator used the most (33%) was "Confirming, accepting or rejecting the contribution of one or several participants" (ACCP). Through this strategy, the facilitator explicitly accepts or rejects a teacher' comment, interpretation or contribution. He can show his agreement by repeating part of that contribution, or by completing it when the teachers are trying to find the right words or leave their contributions unfinished. The core of this strategy is not to judge or evaluate positively or negatively what teachers comment or interpret, but rather to take them as a starting point for building upon the facilitator's contributions. ACCP enables the facilitator to assist the participants' discourse, reassure them and progress in the development of the session.

The strategy "Asking for information" (ASK) was also widely used by the facilitator (26%). The facilitator uses the ASK strategy to explicitly gather information from the participants, generally by asking questions. These questions can be either direct or indirect, either open- or closed-ended. The use of this strategy allows the facilitator to obtain information about classroom practices, to collect teachers' ideas or analyses about a specific situation or issue, open discussions, and clear up any doubt or confusion about what has been said or done by teachers.

The third discourse strategy with a high frequency (13%) was "Providing complementary information" (CMPL). CMPL is found when the facilitator adds to the conversation after a teacher's contribution or question, by answering, resuming, paraphrasing, expanding, or commenting on that contribution, without explicitly judging it. This strategy is used to revisit or challenge teachers' ideas and representations, clear up questions, or complement teachers' contributions to the discussion in various ways.

"Maintaining communication" (PHAT) was the next strategy in terms of frequency (8%). PHAT corresponds to the facilitator's use of expressions to keep the channels of communication open, such as "ok", "good", "yes". Therefore, the use of this strategy refers to the phatic function of language, showing the teachers that their contributions are being listened to and considered:

"Connecting, justifying, arguing by giving examples of teaching situations" (EXMP) had almost the same frequency (8%) as PHAT. Through EXMP the facilitator provides examples of teaching practice that connect with the problems, tasks or issues at hand. These examples can be real or fictitious and can refer to classroom situations or to other situations of work among teachers. This strategy allows the facilitator to illustrate and connect the teachers' needs and problems with the teaching practice, to make sense of the analyses or proposals, and to help find solutions.

"Controlling, checking comprehension" (CHCK) was used with a frequency of 5%. CHCK refers to the contributions of the facilitator aimed at controlling and verifying to what extent the teachers understand and agree on the content that is being presented or discussed.

"Pointing out a task to do" (TSK) appeared with a low frequency (3%). The facilitator uses TSK to indicate some kind of assignment that needs to be done. This assignment can be done individually or collectively, and the facilitator can suggest doing it during the session or in between sessions. The scope of the task can vary as well, and it can be broken down into subtasks. Using this discourse strategy, the facilitator manages and organizes the activity in each PD session.

"Conceptualizing, re-elaborating, arguing by means of a concept, notion, or theoretical idea" (THEO) had almost the same frequency as TSK (3%). THEO is used to provide information by linking the needs, problems, tasks or topics discussed and analysed with criteria, concepts, notions or theoretical ideas. THEO allows the facilitator to re-elaborate, justify, or argue his proposals, by pointing out the essential elements of a contribution or a teaching practice. This helps to make sense of the tasks and to find solutions to the problems that arise in the teaching practice.

"Connecting current elements of the PD process with previous or subsequent ones" (CONN) appeared with a very low frequency (1%). CONN consists in the facilitators' contributions that are used to link what is being discussed with other situations that happened before or that are expected to occur during the PD process. This strategy is used by the facilitator to recall or anticipate elements of the PD process and, thus, increase its internal coherence.

Finally, and also rarely used by the facilitator (<1%), is "Presenting a new problem or subproblem" (PROB). This strategy serves to focus the discussion: the facilitator presents and delimits a problem and, eventually, delimits or broadens its initial wording, integrating the teachers' contributions into this wording. This discourse strategy makes it possible to organise and manage the topics discussed during the session.

As a whole, we consider that the set of discourse strategies described above may offer the possibility for the facilitator to promote a productive teacher collaborative discourse throughout the sessions. On one hand, these strategies enable the development of a dialogical and collaborative discourse, in which one can build upon others' ideas and elaborate shared frameworks and representations, through the use of questions (ASK) and acceptances (ACCP), combined with expansions or comments (CMPL). Keeping the channels of communication open (PHAT) and controlling comprehension (CHCK) also contribute to enhancing this kind of discourse. On the other hand, the strategies that we identified make it possible to support a critical and reflective examination of the teaching practice, based on a thorough exploration of these

Table 2
Discourse strategies used by the facilitator for the joint construction of changes in teaching practices.

Code	Discourse strategies	Examples
PROB	Presenting a new problem or subproblem	F: *I think it would be important for us to talk a bit about the different learning structures, don't you think?* (Session 6, IS 3)
TSK	Pointing out a task to do	F: *Before the next activity I would like you to focus on one team and try to identify, for each of its four members, what you would tell them so they could improve their cooperative learning* (Session 5, IS 2)
ASK	Asking for information	F: *When you decided to do* The Interview *and the* World of colours*, what made you decide? (.) Why did you choose these activities and not* My favourite jobs? *What were the reasons for that?* (Session 3, IS 3)
CHCK	Controlling, checking comprehension	F: *Children assess themselves … But we intervene in the self-assessment processes between them because, of course, they are not critical enough to know what they are doing … I don't know if I'm making myself clear …* T: *That's the hardest part* F: *Of course that's the hardest part!* (Session 8, IS 2) F: *Have you understood what we said about the numbers, Artur?* T: *Yes, yes,* (Session 3, IS 2)
CMPL	Providing complementary information	T: *There was a criterion here as well. I personally wanted to see, because I know them better, how students in class B interacted.* F: *How did they interact? In …* T: *I mean, how they reacted while doing the interview* F: *Mmmmm* T: *With students in class B, that's why I went to Miguel's class.* F: *Ok* T: *I had this criterion.* F: *Ok, Miguel's class, ok … there's something, let's see, one of the aims of sharing the way you made the decisions for each year is that it could be extrapolated to the next academic years, common or different.* (Session 3, SI 2)
ACCP	Confirming, accepting or rejecting the contribution of one or several participants	T: *[…] two teachers did it in group A, and two others in group B* F: *[…] Two teachers did it in group A, and two others in group B* (Session 3, IS 2) T: *Here the teacher also played a very positive role, for example, Cèlia hugged the most outcast girl in the group* F: *Now, that's a good topic, that's a good topic!* (Session 3, IS 6)
PHAT	Maintaining communication	F: *Who was there? You?* T: *[…] Ferran, a first-year teacher, was there …* F: *… Yes …* T: *… Angels, the other teacher …* F: *… Yeees …* (Session 3, IS 1)
EXMP	Connecting, justifying, arguing by giving examples of teaching situations	F: *So, to make it clearer, yesterday I was following up on this in a one-room school, then, the fifth and sixth year teacher told me: "of course, depending on the case, some activities are done by fifth and sixth year students together and other activities are done by them separately". Well, I said to her: "you have to make a decision, either the base teams are fifth year-A, fifth year-B, sixth year-A, and sixth year-B, or the base teams are two fifth year students and two sixth year students, when you work together and then you work either with one or the other"* (Session 6, IS 3)
THEO	Conceptualizing, re-elaborating, arguing by means of a concept, notion, or theoretical idea	F: *This is a decision, it's a decision that goes beyond the concession to cooperative learning, it's a school project decision. Cooperative learning, teamwork, can be a tool to include or to exclude, for whatever you want, whatever you want. (…) We are thinking about learning for everyone and organizing the teams for this purpose. It's a decision from an inclusive perspective.* (Session 6, IS 2)
CONN	Connecting current elements of the PD process with previous or subsequent ones	F: *As a result of what they have done with One point, two points … and what they have done with My favourite jobs, in June we will say, well, next course, and making an overall proposal for each year, "what cohesion activities do you think may be best for the first trimester?" So, you don't have to think only in what you're doing, but you have to think in what other classes are doing as well. What would be useful for us? (…)* (Session 3, IS 6)

practices (through ASK), the introduction and argumentation of new ideas (CMPL), and the use of examples (EXMP), eventually with explicit theoretical support (THEO). Within this framework, the remaining strategies (PROB, TSK, CONN) would help the facilitator to organise and sustain this discourse over time in order to engage teachers in a process of dialogical and collaborative reflection.

However, in our view, the possibility of using this set of strategies in such a way depends not on their use considered in an isolated manner, but on how the facilitator combines them. Therefore, for this possibility to be materialised, the discourse strategies need to be combined in specific ways for attaining particular discursive functions associated to particular aims within the PD process (e.g. using questions, acceptances and comments to build upon others' ideas; or using questions, introducing new ideas and theoretical concepts and giving examples to explore practices and examine them in an analytical and critical manner). The third and final step of our analysis explores the combinations of discourse strategies (CDS) effectively used by the facilitator.

3.2. Identification and description of the combinations of discourse strategies (CDS) used by the facilitator

Our analysis shows that the facilitator does not use the strategies that we identified randomly; rather he articulates them in specific ways, forming what we call combinations of discourse strategies (CDS), which appear repeatedly in the facilitator's discourse. The identified CDS are types of sequences or patterns of discourse strategies that can materialise with a certain flexibility in the facilitators' discourse (e.g., the number of questions raised by the facilitator before an acceptance of teacher's answers may vary among particular instances of an ASK/ACCP combination). These CDS constitute specific ways to fulfil the discourse strategies' potential for dialogical and collaborative reflection.

Specifically, the third step of the analysis allowed us to identify three different CDS that appeared recurrently in the facilitators' discourse. These CDS did not vary across the different content related to cooperative learning that appear in the IS analysed (classroom cohesion activities, cooperative learning structures, Team Planning activities). Table 3 gives a brief description of these

Table 3
Combinations of discourse strategies (CDS) in the segments of reflection on the new cooperative learning practices being incorporated by the teachers.

Combination of discourse strategies	Description	Function
Question loop − Request for information ASK ACCP/PHAT ASK CMPL	Loop of questions to request detailed information about how the new cooperative learning practices are being incorporated by the teachers, with a final clarification	To share a proper, detailed, representation of the new cooperative learning practices being incorporated
Question loop − Guided analysis ASK ACCP/PHAT ASK CMPL/THEO/EXMP/CHCK	Loop of questions to guide an in-depth analysis of the new cooperative learning practices, supported by conceptual criteria and examples	To support the joint analysis of the new teaching practices being incorporated, the shared construction of criteria and the teachers gaining autonomy in decision making
Answering through examples (ACCP) CMPL/EXMP CHCK	Accepting, and giving examples and clarifications as a response to teachers' doubts and proposals (type 1) Giving examples and clarification as a response to teachers' doubts and proposals (type 2)	To elaborate, based on the teachers' doubts and proposals, a progressively shared representation of the teaching practices being incorporated

CDS and the functions they serve.

Below we explain each of these CDS in greater detail and provide examples of their use during the PD sessions (see examples in Tables 4—7).

3.2.1. Question loop − request information: ASK ACCP/PHAT ASK CMPL

The first CDS that was identified (*Question loop − Request information*) appears in the episodes describing teaching practices and the episodes of joint analysis of these practices. This CDS begins with the facilitator asking the teachers an open question (ASK). Then, he takes the teachers' response (ACCP), asks more precise questions to gather specific information about the cooperative learning practices that are being incorporated, and goes on to taking the teachers' contributions as he maintains communication (ACCP/PHAT). This sequence of questions followed by acceptances can extend over time until, eventually, the facilitator, after accepting a contribution, provides further information, broadening or commenting on that contribution or adding relevant information (CMPL). With this CDS the facilitator gathers detailed, relevant information about the new practices that teachers are incorporating.

In Table 4 we provide and explain an example of this combination.

3.2.2. Question loop − guided analysis: ASK ACCP/PHAT ASK CMPL/THEO/EXMP/CHCK

The second CDS identified is the "*Question loop − Guided analysis*", and it appears in the episodes of joint analysis of teachers' new practices and is used to support this analysis by co-constructing shared criteria and promoting teachers' autonomy to make decisions on their new practices. In this CDS, the facilitator starts his contribution by asking an open-ended question (ASK) to encourage teachers to analyse the new teaching practices. As the teachers start to analyse their practice, he continues confirming their contributions (ACCP) and/or maintaining communication (PHAT). Next, the facilitator asks a sequence of questions to obtain progressively more precise information on this practice (ASK), and then he comments and broadly analyses the new practices by giving examples and providing conceptual criteria as a response to the teachers' contributions, comments, and questions, while checking that they understand (CMPL/THEO/EXMP/CHCK). This sequence of questions, comments and comprehension checks can extend more or less over time. Moreover, the facilitator adjusts his use of this CDS throughout the PD sessions. Thus, as the sessions progress, instead of beginning with open-ended questions, the facilitator starts his contribution by asking about a specific element of the innovation that he considers particularly important to focus on in the discussion and guides the analysis of its key components

to adjust the new teaching practices and to facilitate their incorporation in the future. By the final sessions, the facilitator starts his contribution by asking teachers to choose the new teaching practices that they consider that need to be discussed and analysed jointly.

Table 5 includes a conversation between the facilitator and the teachers during a PD session that illustrates this.

3.2.3. Answering through examples: (ACCP) CMPL/EXMP CHCK

The third CDS identified is "*Answering through examples*", which appears in episodes of commentary and elaboration as a response to teachers' doubts and proposals. The facilitator responds to the teachers' questions to clear up their doubts or to provide alternatives, provides information, and expands his explanations by giving examples of teaching practice (CMPL/EXMP), while making sure the teachers understand what is being discussed (CHCK). We identified two variants of this combination throughout the PD sessions:

- Accepting, and giving examples and clarification as a response to teachers' doubts and proposals (Type 1) - ACCP CMPL/EXMP CHCK: During the first sessions, the facilitator starts by explicitly accepting (ACCP) the teachers' contributions (see an example of this CDS in Table 6);
- Giving examples and clarification as a response to teachers' doubts and proposals (Type 2) - CMPL/EXMP CHCK: By the last observed sessions, the use of the ACCP strategy has disappeared, and the facilitator responds to teachers' queries by combining brief and precise answers with broader explanations that include examples of teaching practice (see an example of this CDS in Table 7).

This CDS is used to listen to the teachers' reflections and doubts, and to use examples to explore their queries about the changes in the teaching practices in which they are involved.

In our view, the three CDS that we identified allow the facilitator to assist teachers' collaborative, critical and reflective examination of their teaching practices. In the first CDS (Question loop − Request information), this is done by scaffolding the joint construction of an increasingly detailed description of the teaching practice, based on the teachers' initial contributions. Through the second CDS (Question loop − Guided analysis), the facilitator also scaffolds the construction of shared criteria for the analysis of the teaching practice, taking the contributions of different teachers as a starting point. The facilitator uses the third CDS (Answering through examples) to encourage teachers to express their doubts and concerns about the new teaching practices, and to use these doubts to build more elaborated and informed representations of these practices. In all

Table 4
Example of the combination of discourse strategies Question loop − Request information.

Segment of commentary of the cooperative learning structures included in the lesson plans
Teachers had selected teaching units of the different subjects and Years they teach in Compulsory Secondary Education; they had planned how to incorporate in these units some of the cooperative learning structures they already know, and had put their plans into practice in their classrooms. In this PD session they are commenting on their teaching practices [with the cooperative learning structures in the different units].

F: _Artur, tell me, of the three cooperative learning structures, which one is worth discussing its difficulties or its positive aspects?_ (ASK)	The facilitator asks a teacher which cooperative learning structure he wants to comment on and raises an initial open-ended question.
Artur: *Both the* Roundtable *and the* Pencils in the middle *are...*	
F: _... worth commenting on ..._ (ACCP)	After that, he goes on to accept the teacher's contributions or complete them, while reading his self-reports.
Artur: *... worth commenting on...*	
F: _Ok, let's talk about it! What happened, Artur?_ (ASK)	The facilitator briefly clarifies the teacher's explanations, and begins a loop of specific questions to guide to analysis of the functioning of a team while doing the *Roundtable* in a maths class.
Artur: *Let's see, what I wrote here was ... (...)*	
F: _The most important result is that this activity (inaudible) ... interaction_ [reads the file] (ACCP)	
Artur: *In this case, I think it is the* Roundtable	
F: _I think so_ (ACCP)	The facilitator combines these questions with explicit acceptances of the teacher's statements. Acceptances consisted of literal repetitions of part of the teacher's statements and brief contributions to give supplementary information that help the teacher continue to explain in detail the difficulties that he encountered and how he resolved them.
Artur: *Sure, the difference between this one and the* Pencils in the middle *is that in the* Roundtable *what happens is that, when a person presents a problem, everybody wants to interact. In the* Pencils in the Middle *everybody explained their story afterwards in an orderly way, and so the difficulty was that, well, you can all speak, but you need to respect other peoples' turn, and also, when somebody else is speaking it's not enough to be quite; you must be able to listen as well. Then, sometimes I needed to intervene in the teams to say, "well, let's redirect the situation, who is presenting the problem now ..."?*	
F: _who is who ..._ (CMPL)	
Artur: *Who is who, indeed*	
F: _Tell me about a team in which you needed to intervene_ (ASK)	
Artur: *With Manu Costa I needed to intervene quite frequently*	
F: _Manu Costa's team, eh! [laughs]_ (ACCP)	
Artur: *The truth is that he never keeps quite (...)*	
F: _There is this team, and then there is Manu Costa_ (CMPL)	
Artur: *Well, sometimes ... He's a straight-F student (...)*	
F: _... He's a straight-F student (...)_ (ACCP)	
Artur: *Pau is Manu Costa*	
F: _Pau is Manu Costa_ (ACCP) _[points at a teacher to simulate he is that student]_	
Artur: *Pau is Manu Costa, basically they are talking [laughs]*	
F: _Slowly, slowly, slowly_	
Artur: *Don't laugh*	
F: _They are doing the_ Pencils in the middle (CMPL)	
Artur: *Not the* Pencils in the middle, *the* Roundtable	
F: _They are doing the_ Roundtable ... (ACCP)	
Artur: *The* Pencils in the middle *is a highly structured cooperative learning structure*	
F: _Yes, yes, yes_ (ACCP)	
Artur: *But then, somebody else, for example, Emi Ubago, is speaking, she's making a point, and then another student begins to...*	
F: _begins to ... ?_ (ASK)	
Artur: *[seethes] interrupt*	
F: _To interrupt_ (ACCP), _and then you go, I go, and what do I do?_ (ASK)	
Artur: *Of course, of course (...) "Manu"*	
F: _Manu_ (ACCP)	
Artur: *"Be quite"*	
F: _Be quite_ (ACCP)	
Artur: *"Let Emi finish her contribution and then you can talk, but first, listen to her ..."*	
F: _She is Emi Ubago?_ (ASK) _[points at the teacher]_	
Artur: *Yes*	
F: _And she? Who was she?_ (ASK)	
Artur: *Vicente Enríquez*	
F: _While you speak, what are they doing?_ (ASK)	
Artur: *they shut up (.) they stop, they pay attention to what I say, this is something ...*	
F: _... carefully_ (ACCP)	
Artur: *... yes, this is something I can achieve, when we intervene, at least they listen to us!*	
F: _There's a problem ..._ (CMPL)	
Artur: *There's a problem, and then you say, look, look who is presenting the problem, for example if it was Veronica ...*	
F: _"Manu, listen, because ..."_ (CMPL)	
Artur: *not Veronica, she was not presenting, it was ... Ubago (...) No!*	
Míriam: *Vicente Enríquez*	
Artur: *Vicente Enríquez, but the others were interacting, then, Emi was interacting, and I said: "Costa, wait until she's done, when she's done, then if you want you can speak, but first you have to be quite, you have to listen". So, to sum up, it would be like this.*	
(Session 6, IS6, Episode 2)	

three cases, the structure of the CDS promotes teachers' joint description, analysis and decision-making about their practices based on the systematic elicitation and progressive review of their initial ideas.

4. Discussion

Our study had two objectives: first, to describe the discourse strategies that the facilitator uses to assist teachers to introduce

Table 5
Example of the combination of discourse strategies Questions' loop − Guided analysis.

Segments of commentary of activities of classroom cohesion	
Teachers are commenting on the cohesion activity *Manel's Team* they have incorporated in different classrooms. This activity aims to make students aware that teamwork generates more ideas than individual work. Firstly, the students reflect individually on the story of Manel and write their thoughts down. After that, they discuss it with their team and write their joint conclusions down. Finally, each team shares their conclusions with the whole class, and they all have to reach a consensus on the advantages of working in teams	

F: *You did* Manel's Team *as well, can you tell us about it?* (ASK)	The facilitator asks an open question about the teaching practice
Pau: We took the guidelines that we had, and we more or less followed them. First, we showed that page, we explained it…	that they are going to analyse.
	After that, he accepts the teacher's response.
F: *… where Manel's story is explained* (ACCP)	Then, he makes the teacher's contributions more precise.
Pau: Yes, exactly, we read it out loud	The facilitator asks one or more questions to obtain more
F: *… yes*	detailed information on the development of the teaching practice
Pau: … and then after a while we tried to see, the whole class, we tried to see if that happened in our class or not	they are analysing and goes on by accepting the teachers' contributions.
F: *In a comment* (CMPL)	This loop of questions and acceptances is interrupted when the
Pau: A general comment	facilitator, in a longer contribution, sets out the theoretical
F: *Were you there as well, Andreu?* (ASK)	framework of the PD programme, highlights key aspects of the
Andreu: Yes	cohesion activities, and provides examples of teaching practice
Pau: And that actually was what happened, people thought that yes. "Now we're going to do this activity to see if we can find more" (…) and we started to do it. We explained it, what we had to do, that is, first we would do it individually, decide what we considered to be important for working in a team, cooperatively. Then, when we were done, we said: "now you'll join a team and in the team you have to try to add something, to add what has not come up [individually]", and when we had it all, we gave them some time. I think that when all the teams had finished, we started, let's say, to comment all together, and then, well, "let's see what you got" (…). Then team by team they started to tell us, so we got that it encourages fellowship, and so on. They went to the blackboard and of course, it's clear that the aims of this activity are so easy to achieve. They don't go any further, that's ok, because you can really see that you get more stuff than when you do it individually; in the blackboard you can see that there are a lot of things (inaudible) on paper everybody sees it clearly (…) I don't know if that's the idea!	related to the problems under analysis. The facilitator alternates these interventions with others to check comprehension.
F: *Ok* (ACCP) *(…) we are gonna break it down little by little, Alícia, in your class, eh (…) what was similar or different?* (ASK)	
Alícia: I think it was basically the same. We just designated a secretary who wrote things down …	
F: *Yes* (ACCP)	
Alícia: Mostly because you could see …	
F: *… how did the activity end?* (ASK)	
Alícia: Ah (…) with a reflection, the secretary of each team gave their opinion about what they had seen	
F: *The secretary of each team* (ACCP)	
Alícia: Yes, the secretary acted like a spokesman and was the one who said what they had actually seen. And it was confirmed that cooperative work was useful for a lot of things and he summarised them. Especially Àngels and me were surprised that the idea, well, the idea that (.) that you add qualities, that everyone has some good quality, appeared a lot	
F: *Yes, yes, that's a highlight* (ACCP)	
Alícia: That was something that appeared repeatedly in a lot of teams, that everyone has some good quality, we found that very important …	
F: *Yes* (ACCP)	
Alícia: That they could see that if we put all these qualities together we obtain much more, and that's something that they saw themselves, we didn't lead them to it [to that conclusion]	
F: *Very good* (ACCP) *There's a second part, maybe I haven't explained it very clearly, but when we propose this activity we always say that it pursues two goals in one: to identify what we all share and what teamwork adds. The aim of this activity was … do you remember? The activities … the aim of* The Ball *was self-knowledge; the aim of the* One point, two points *… that we talked about was to reach a consensus; in* The World of colours, *it was to identify solidary features; and* Manel's team *aims to promote teamwork in children who find it difficult to engage in it. Then there's a key element, which is the listening and the incorporation.* (THEO) *So the moment they're in teams … you said it before very well, Ferran, each one takes one or two elements. What I think is very important is the second moment, that is, when each person must incorporate at least one thing from what the others have said. Because when you ask a team of four members to talk and they are discussing in the* Pencils in the Middle *− that's something we'll talk about today − what's the solution of a problem that consists of three sums and one starts to say: we have to add the first two, and then subtract the third and, no, no, you need to subtract them all, and he says, no, no, no, you need to add them all, and then I ask him: "what did she say?" Typically, half of the kids haven't paid attention to the others; they read the problem, start and think of themselves, regardless of whether it's what the others have said or if it's totally different. One of the most important problems we have is the listening, that about what the others have said I contribute, contradict or where I stand, I say (…) then of course (…) one of the parts of the activity here is, everybody says something, and at the second moment, when the others say something, at some point she has to incorporate into her list some of the qualities that others say and that are missing on her list,* (EXMP) *do you understand the idea?* (.) (CHCK) *This moment is very important, the time to listen and take something that the others don't have, and we propose the same at the class level, and when you finish, as you say very well, each one has their list and the secretary should have what everybody said, ideally it's a third element.* (THEO)	
(Session 4, IS2, Episode 2)	

Table 6

Example of the combination of discourse strategies Answering through examples — Type 1.

Segments of commentary of activities of classroom cohesion	
The teachers are commenting on the cohesion activities that they have incorporated in the different classes. They talk about The Interview and the criteria they have adopted to choose the pairs of students.	

Damià: Excuse me, linking the issue with the second-year students, but also with fourth-year students, [they want to] form teams with their friends	The facilitator explicitly shows that he agrees with the teacher's comments.
F: _Sure_ (ACCP)	He then describes teaching practice situations in other schools,
Damià: But when we were also talking about the project here, about the (inaudible) that we had to do with the fourth-year students and then that … First, that we have chosen the teams, and the fourth year students, who care more about their marks … there were some from the fourth year, a team, that said, "If you pair me up with … of course, if I'm worried about my marks, depending on who you pair me with, they might do nothing, I'll have all the responsibility, they'd make me get a worse mark than what I'd get individually". I mean, friendship is one factor, but the result is important as well.	clarifies key elements of cohesion activities and briefly provides information regarding the teacher's contribution. He checks the teacher's comprehension and sets out new examples of practice in relation to cooperative learning.
F: _Absolutely_ (ACCP)	
Damià: They were worried about it. Some were very worried about it in the fourth year	
F: _This topic has already come up, yes, yes, it has already come up._ (ACCP) **_Let's see, for starters, there's one thing that, fortunately, has not come out in any of you. Just this morning I had a problem with an English teacher who insisted on doing The Interview in English, I told her "no", [laughs] No, no, because there were children who were not at that point and who were entering in some activities of cohesion that instead of making them place themselves positively with respect to others, were making them withdraw, even though the activities were meant to be for team cohesion. That it was unacceptable! So, we insist a lot on one thing: these activities have to be something that is clearly perceived by the children as something that doesn't lead to any mark, something different,_** (EXMP) Joan	
Damià: Damià	
F: _Damià, something different, Damià_ (ACCP) *[laughs]* … **_Then, later in the teams, later in the teams … (…) Exactly, when we're gonna propose a certain activity with a content, it should be very clear the role that this plays in the assessment, in what it helps and in what it doesn't._** (CMPL) **_Am I making myself clear?_** (CHCK)	
Damià: Yes, yes, of course	
F: _That has to be very important, of course we can get into very complex situations, like one with a father of a four-year-old child the other day, they were doing the_ Roundtable … (EXMP)	
Míriam: … a four-year-old?	
F: _a four-year-old, a four-year-old. They were doing the_ Roundtable_, it was that structure in which one starts something, another one adds something from what the other has done, and so on. So there are many times that in early childhood education this is used a lot for all the elements that are of temporal and spatial ordering, for example, it's the typical activity that children do to serialise according to colours and shapes, to learn the organization in space, right? So, when we consider it in cooperative terms it means that, before filling in the activity sheet that each one has, they do it in teams of four, and each one has some stickers. When they have done it in a team of four and everyone could contribute, then some teachers do it individually. Of course, a father said, "but here you are taking opportunities away from my son, who couldn't do it three times by himself, he'd do it so much better."_ (EXMP)	
(Session 3, IS7, Episode 3)	

changes into their teaching practices; and second, to explore the ways the facilitator combines these strategies.

Regarding the first objective, we identified 10 discourse strategies. The most commonly used were: "Confirming, accepting or rejecting the contribution of one or several participants" (ACCP), "Asking for information" (ASK), and "Providing complementary information" (CMPL). Other strategies that also appeared in the facilitator's discourse with a noteworthy, albeit minor, frequency were: "Maintaining communication" (PHAT), "Connecting, justifying, arguing by giving examples of teaching situations" (EXMP), and "Controlling, checking comprehension" (CHCK). These strategies did not vary across the diverse contents related to cooperative learning.

Some of these strategies correspond to what other researchers have found in previous studies, thus confirming their results. For example, the ACCP strategy is similar to "revoicing" (Nachlieli, 2011; Reichenberg & Boyd, 2019; Zhang et al., 2011); ASK matches the "questioning" strategies described in other works (Bjuland & Helgevold, 2018; Collet, 2015; Weiland-Carter & Amador, 2015; Zhang et al., 2011); and CMPL is similar to "reconceptualising" or "reframing" (Reichenberg & Boyd, 2019; Robertson et al., 2020; Zhang et al., 2011).

Among the strategies that we identified there are some that, in contrast, have not been very prominent in prior research, for example, PHAT and EXMP. Specifically, we consider the EXMP strategy to be particularly relevant since, as we will discuss later, it played a significant role in the facilitator's combinations of discourse strategies (CDS). Furthermore, it is interesting to note that, contrary to what other researchers have found (e.g., Collet, 2015; Reichenberg & Boyd, 2019; Weiland-Carter & Amador, 2015; Zhang et al., 2011), we did not observe direct modelling strategies. In our view, this suggests that the facilitator systematically tried not to provide teachers with specific techniques or proposals for their practice, rather, he assisted teachers to build shared criteria to analyse their practice and to make decisions on *how* and *why* to incorporate the new teaching practices. We find this especially illustrative of how the facilitator can use his influence to foster teachers' awareness and to promote their autonomy (Molle, 2013), empowering the group to make their own decisions. (Wood et al., 2017). Below we will argue that the combinations of discourse strategies that we identified constitute specific ways of doing this.

Taken together, the set of discourse strategies described here can be a useful toolbox for the facilitator to promote a productive discourse among teachers. On one hand, these strategies allow the facilitator to support a critical and reflective examination of teaching practices (Bjuland & Helgevold, 2018; Nachlieli, 2011; Popp & Goldman, 2016), for example, by helping teachers to reveal

Table 7
Example of the combination of discourse strategies Answering through examples − Type 2.

Segments of commentary of the cooperative learning structures included in the lesson plans
Teachers see that cooperative learning and the functioning of the cooperative teams do not fit with the school's organization into homogeneous groups. Some teachers do not see this as clearly and argue that underperforming children and/or those with special educational needs do not participate in the cooperative structures they have implemented, although they do so when they are in smaller groups with extra support for the different subjects.

Cèlia: There are so many doubts that … in certain things … when you want to do everything this way, for me … you don't see cooperative learning when the teams are always the same, for me it would work better if the teams changed from time to time, because then you are really working on this competence **F:** *But there's something very important, which is: in order to learn to cooperate, people need a certain time to adapt* **(CMPL).** *The first day I heard you, when I left I thought: "oops, if I say three words too loud, Cèlia wouldn't listen to me." The second day I came here, I thought: "so I have to speak quietly, and then just one word louder." I saw what happened, and the fourth day, when I returned, I understood that I had to let Cèlia speak a little, and then I could speak,* **(EXMP),** *you see what I mean?* **(CHCK)** **(…)** *Cèlia: I understand, I understand. But can't it make them get used to working in a specific team, and reluctant to work with others afterwards?* **F:** *They have to learn, they have to learn that, by adapting, they can make progress. But then they change. Especially they change the most important thing, that is their role. When they begin with the assignments in the next trimester, that will be tough.* **(CMPL)** *In each team … let's see where I was, because we won't have enough time [to finish]! When I've asked Artur to talk, and when I've asked Míriam to talk, I'm sure that something similar happens to the rest of you. If you pay attention, you'll see that there's something that always happens. There's a problem with Manu Costa, they are fighting and Artur asks him: "Costa, what's going on?"* **(EXMP),** *it's like this, isn't it Artur?* **(CHCK)** *Artur: Yes* **F:** *There's a problem with Míriam, somebody's fighting* **(CMPL)** *(..) Do you realise? Do you understand? Everything that we propose in the Team Planning Document is that the coordination that falls on the teacher at first has to be progressively done by the students* **(CMPL)** *So* **(EXMP)** *Artur: … ok* **F:** *… if on the first day, when he sees Costa like this, Artur says: "who is the coordinator here?"* **(EXMP)** *Artur: Costa* **F:** *Maybe it's Costa! But somebody is his assistant, because we know that Costa, as we were saying before, is a child that needs some help to act as a coordinator (…) and this will happen to many children with special educational needs. Then you arrive, Marta: "who is the coordinator?". Costa says nothing, then somebody has to say, "I'm the assistant coordinator, I already told this [to Costa] twice, could you tell him?" Then for us the intervention is: "no, no, can you repeat that, what was that?". Am I making myself clear? It's about generating elements for self-regulation in the teams. But of course, it has to be done in a certain way. Which is based on the model that the teacher gives at a certain moment. "You [assistant coordinator] can't just tell him [in any way, you have to] do it in a certain way", you get here, and well, "wait, I'll repeat it to you", or not, you give the example, the model. So, when you give the model, then you say: "Come on, you try it now, how would it be?" Then the children incorporate it, they get to realise it. You have seen that a lot as teachers, perhaps it seems distant in secondary school, it's very unconscious, but in primary school, there are two moments where it's very clear. In the second and third years of primary school, teachers are used to hearing their own words repeated, often the words they say to a child, this child repeats it to another child.* **(EXMP)**	The facilitator briefly provides information regarding the teacher's contribution, questioning whether cooperative teams have to be kept stable. He then expands his explanations by describing practice situations related to the problem being addressed and checks whether the teachers understand.
(Session 6, IS6, Episode 3)	

and elicit problems of the teaching practice (through ASK), contrasting different perspectives on these practices (through CMPL), providing grounded arguments to analyse them (through CMPL, THEO and/or EXMP) and connecting examples of teaching practices with theoretical principles (though EXMP). On the other hand, using these strategies creates the space for a collaborative conversation, in which one builds upon others' ideas and the participants can construct frameworks that are progressively shared (Lefstein et al., 2020; Vrikki et al., 2017; Zhang et al., 2011). Indeed, these discourse strategies and the frequency with which they were used in our data seem to indicate that the facilitator supports and bases his actions systematically on teachers' contributions, while he challenges, expands and re-elaborates these contributions. Consequently, the facilitator's actions would focus on his attempts to adjust and to be sensitive to the teachers' needs throughout the interaction (Collet, 2015; Tan & Caleon, 2016). The discourse strategies would then be useful both to build consonance between facilitator and teachers (acknowledging and assuming teachers' ideas) and to introduce dissonance between them (encouraging the critical revision of these ideas) (Reichenberg & Boyd, 2019). To carry

out a process of progressive construction of shared meaning (Mercer, 2000; Wertsch, 1985) about teaching practices, it is essential to first ensure a common ground on which to construct new knowledge to be revised and challenged from a sociocultural perspective. Ultimately, and as Wertsch (1985) points out, it is about advancing through the Zone of Proximal Development, establishing successive levels of intersubjectivity that can be revised progressively, thus furthering the participants' meanings. In this sense, the set of discourse strategies that we found can be considered as tools for the facilitator to assist teachers to revise and enrich their representation of their own practice, enabling the construction of shared meanings among the participants.

Furthermore, our results reveal that these strategies are combined in the facilitator's discourse (Zhang et al., 2011) in the form of relatively stable and recurring patterns, relating some of these strategies in specific ways. These combinations are types of sequences or patterns of discourse strategies that can materialise with a certain flexibility. They appear within episodes constituted by extensive sequences of turns. Therefore, these combinations of discourse strategies (CDS) show particular forms of language use

for effectively enhancing a productive discourse among teachers, focusing on a critical and reflective examination of their practice and assisting the joint construction and re-construction of meanings about practice. The identification of these CDS corresponds to the second objective of this study and is an original contribution of our work.

In particular, we found three combinations of discourse strategies (CDS) that the facilitator used recurrently: the first CDS, "Question loop − Request information", was aimed at obtaining and sharing detailed information on how teachers were incorporating the new, co-designed, teaching practices for cooperative learning; the second CDS, "Question loop − Guided analysis", was aimed at assisting the analysis and reflection on these practices and, especially, assisting the construction of criteria that were the foundations for this analysis; finally, the third CDS, "Answering through examples", was aimed at further developing the teachers' representations of their new practices, building on their doubts and proposals. In our results, these CDS did not vary across contents throughout the analysed the IS.

The identification of these CDS confirms the interest of an analytic approach to the facilitators' discourse that goes beyond the individual discourse strategies or moves, considering the coordination of certain moves at the service of specific functions (Borko et al., 2014; van Es et al., 2014), and is in line with some recent proposals in the field of classroom discourse analysis (Hennessy et al., 2020; Lefstein et al., 2015).

Furthermore, the CDS identified in our study converge with some existing results on sequences or combinations of discourse strategies used by the teachers in school classrooms. For example, Rojas-Drummond and colleagues (Rojas-Drummond et al., 2013, 2020) showed that extended exchanges between the teacher and the students, which include particular forms of (re)questioning and other discourse moves, can allow "dialogic scaffolding" of students' reasoning and understanding. In a similar vein, Hardman (2019) found that using particular sequences of teacher's questions through extended teacher/students exchanges could help the students to share, expand and elaborate upon their ideas, building on other students' contributions.

Overall, the three CDS that we identified appear to fulfil two main functions: they promote a detailed description of the new practices that teachers are incorporating, and they assist the teachers to co-construct criteria to analyse these practices. This helps teachers to progressively understand, reflect on and improve their practices by themselves. These functions are in accordance with some of the results in Andrews-Larson et al. (2017). These authors found two types of facilitator contributions that create spaces for teachers to participate in conversations in meaningful ways. These include the request for detailed information on teaching practices and the contributions that promote that teachers articulate rationales for instructional decisions that are tied to coherent goals for student learning. The two main functions of the CDS that we identified allow to develop an interpretative, non-judgmental discussion, aimed at identifying issues for reflection in the teachers' practice and building a stance of inquiry about this practice (Coles, 2013; González et al., 2016; Karsenty & Arcavi, 2017).

Taking these functions as a reference, the CDS seem to illustrate particular ways of assisting the construction of shared meanings between facilitator and teachers, starting by establishing a common ground with teachers then expanding it and introducing new knowledge (Robertson et al., 2020). This process occurs in specific ways in each of the CDS. In the first one ("Question loop − Request information"), it is produced through the interplay between the questions about teaching practices (ASK), the acceptances of teachers' descriptions of these practices (ACCP) and the

introduction of information that complements what the teachers have explained (CMPL); in the second ("Question loop − Guided analysis"), through the combination of acceptances of the teachers' analyses (ACCP) with the use of examples of practices (EXMP) and conceptualisations (THEO) that contrast and expand their analyses; and in the third ("Answering through examples"), through the combination of acceptances of teachers' doubts and queries (ACCP), the provision of complementary information (CMPL) and the use of examples (EXMP).

Using the three CDS identified, instead of directly modelling and proposing specific teaching practices, the facilitator helps teachers to learn how to describe and analyse their teaching practices more deeply. Therefore, teachers are provided with tools to progressively make decisions for themselves about how to analyse and improve their own practice (Ippolito, 2010; Molle, 2013; Wood et al., 2017). From a sociocultural perspective, this kind of facilitation is consistent with the notions of scaffolding and a gradual increase in teachers' responsibility (Collet, 2015; Heineke, 2013). As we stated before, the CDS would constitute specific ways in which the facilitator can use language to assist this process. This way, by means of the "Question loop − Request information" combination the facilitator can assist the teachers to explain, describe and share their teaching practices, starting from an overall description that becomes increasingly detailed as a response to specific questions. The "Question loop − Guided analysis" combination offers a discursive tool for teachers to analyse their practices through a detailed description of these practices, identifying their key features, contrasting their own practice with others and connecting theory and practice. Finally, the "Answering through examples" combination, in which the facilitator no longer initiates the interaction, but rather takes teachers' doubts and queries as a starting point, represents an important step in the process of gradually increasing the teachers' responsibility by scaffolding the teachers' approach to their doubts, inconsistencies and open questions about their own practices.

By using this set of discourse strategies and CDS, the facilitator makes the teachers the protagonists of the PD process, carrying out an intervention that simultaneously takes their practices as a starting point, while encourages collaborative learning and reflection on these practices, expanding teachers' perspectives (Cravens & Wang, 2017; Finkelstein, 2019; Molle, 2013; Robertson et al., 2020). Through his intervention, the facilitator can support the teachers' professional development, and the use of language and dialogue as a tool for their professional learning (Postholm, 2018). Specifically, we consider that the use of examples of teaching practices, which play a crucial role in the second and third CDS, is a powerful tool for this kind of intervention for several reasons. One of the reasons is that it recognises that teachers often understand some of the situations they find in their own practice by framing them in other practical situations (Schön, 1987). Therefore, through the constant use of examples, the facilitator avoids imposing proposals or solutions based only on his theoretical or academic knowledge, and acknowledges the value of the teachers' practical knowledge, bringing it into the discussion. In addition, this use of examples implies that the facilitator promotes the teachers' engagement in developing relationships between the proposed examples and the situations under analysis, thus letting them draw their own conclusions.

All the discourse strategies and CDS used by the facilitator are embedded in the particular design of the PD process. The characteristics of this particular design (the interplay of presentation of information, selection of practices to be introduced, co-design of these practices, introduction in the classroom, self-reports on this introduction, and joint reflection from the self-reports; the features of the self-reports and how they are used in the joint activity) allow and promote, in our view, the discourse strategies and CDS used by

the facilitator. At the same time, particular forms of discourse are needed within this design to attain productive discourse and reflection (Coles, 2013; Karsenty & Arcavi, 2017; van Es et al., 2014). As a result, the identified discourse strategies and CDS develop and materialise the possibilities opened by the design. Our analysis shows how the facilitator fostered, in this particular design, productive teachers' reflection and collaborative discourse. In terms of the seminal work by Frank, Zhao, Penuel, Ellefson, and Porter (2011), we could argue that the combination of the PD design and the facilitator's discourse promotes and supports a continuous spiral of presentation of information on new cooperative learning practices (Focus), introduction of these new practices in teachers' classrooms in different ways (Fiddle), and joint reflection on this introduction in a productive manner (Friends), all along the analysed PD process.

A relevant matter that arises from our results refers to the origin of the facilitators' choice of certain discourse strategies and his decision-making "on the go", during his interaction with the teachers. In our study, the interviews with the facilitator let us know that he assumes a sociocultural framework of facilitation processes, and an inclusive view of learning. This "analytical framework" and "vision" (Saito & Atencio, 2016) could be, at least partially, at the origin of the way the facilitator tries to assist the teachers to build shared criteria to describe and analyse their practice and to make decisions on this practice, and could influence his choices of discourse strategies for this purpose. However, contrasting this hypothesis would require additional data collection procedures and analysis (e.g., think-aloud protocols or stimulated recall) and exceeds the aims of this study.

5. Limitations, conclusions and future research

To summarise, we consider that the discourse strategies and CDS we describe here provide relevant elements for understanding how facilitators can foster a productive discourse that enhances participants' interthinking. They allow the facilitator to focus the discussion on a critical and reflective examination of teaching practices, to scaffold forms of conversation based on revising the ideas that the teachers initially hold, to assist processes of construction of shared meaning between facilitator and teachers, and to promote professional autonomy and the teachers' empowerment. Adopting some ideas and concepts of the sociocultural perspective, such as learning with more knowledgeable others, scaffolding, co-constructing meaning through the ZPD or the progressive assumption of responsibility, has proved to be useful for understanding and conceptualizing this kind of facilitators' intervention. Furthermore, it has enabled us to characterise the facilitation as a complex and dynamic process that strategically combines collaboration and directiveness to promote teachers' awareness and professional autonomy.

However, these results must be considered with caution as the study has some limitations. First, our study focused on the facilitator's discourse, so the teachers' discourse was not explicitly analysed. Even so, our data provided some indirect evidence of teachers' change and learning. For instance, the teachers did introduce changes in their practice and used the proposed new cooperative activities in their classrooms (as evidenced by self-reports). They also did develop, within the framework of the facilitator's CDS, detailed descriptions of their practice and relevant contributions to analysing it (as shown by the CDS themselves). Future research should combine the analysis of facilitators' discourse and the analysis of teachers' discourse, to provide specific evidence of how some facilitators' CDS affect teachers' discourse.

Second, our study analysed a single process of professional development with specific characteristics (a single external facilitator, and a structured sequence of sessions over an extended period). Successive studies should contrast and nuance our results considering PD processes in other contexts and with different characteristics.

Moreover, our analysis focused on some particular moments within the PD process —the interactivity segments dedicated to reflecting on the new practices being introduced by the teachers in their classrooms. Future research may expand this analysis to different kinds of segments within a PD process, which would allow to compare the facilitators' discourse strategies and CDS among segments, and to explore the specificity or generality of these strategies.

Finally, our analysis is exploratory, especially regarding the combinations of discourse strategies, which need to be corroborated in subsequent studies.

Despite these limitations, we consider that our results have certain implications for practice that are worth considering. First, they place the conscious and deliberate use of certain forms of communication at the centre of the facilitators' actions to encourage a productive teacher collaborative discourse. And second, they offer several specific clues to how to promote this discourse. Among them we can highlight: systematically building on teachers' contributions; combining discourse strategies that build consonance with others that introduce dissonance; helping teachers through sequences of questions, developing detailed descriptions of their practices, which would serve as a shared framework for reflection, and incorporating teachers' voices and needs; identifying key elements of teaching practices according to the educational goals they pursue, which can be used as the basis to co-construct criteria for analysing teaching practices; using teachers' doubts and suggestions about new practices to support the construction of more elaborated representations of these practices; or systematically using examples of practice as a way of answering teachers' queries, thus extending and deepening their representations.

Subsequent studies should certainly confirm and complete these ideas, deepening our understanding of how effective facilitation can support PD processes, capable of considering teachers' voices, needs, contexts and demands, while assisting them to improve their practices in an increasingly autonomous, conscious, thoughtful and critical manner.

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Declaration of competing interest

The authors declare that they have no conflict of interests.

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