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# Co-teaching as a resource for inclusive classes: teachers' perspectives on conditions for successful collaboration

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**ABSTRACT**

Co-teaching is a resource for inclusive classes, which includes the shared instruction of general and special education teachers. Against the background that the inclusive school system in Germany is currently developing, we investigated secondary school co-teachers' perspectives on the conditions for successful implementation of co-teaching. We interviewed general teachers ($n = 17$) and special education teachers ($n = 16$) about their individual experiences and their ideas about good practice implementation of co-teaching. The qualitative content analysis summarised the teachers' statements on 13 categories that refer to the educational system, the single school, or the teaching dyad. The teachers expressed their belief in the benefits from co-teaching. They stated the need for resources (time, equipment) and concepts for co-teaching and teaching in inclusive classes. The co-teachers found it necessary that principals, professionals within school, and experts from outside school develop a shared responsibility for inclusive schooling. The teachers' statements reflect the idea of a collaborative relationship and the need for general and special education teachers to negotiate the dyad's self-organisation and task assignments. In sum, the successful implementation of co-teaching seems to be a process of school development and professional development based on organisational structures and resources that support collaboration.

## Introduction

Since 1994, when 92 countries committed to the articles from Salamanca (The Salamanca Statement, UNESCO 1994), research on the implementation and effects of inclusive schooling on students' academic achievements and their social and emotional learning has intensified. In general, studies show neutral to positive effects of inclusive schooling, compared to non-inclusive schooling, for students with special needs as well as for students without special needs (Ruijs and Peetsma 2009; Ruijs, Van der Veen, and Peetsma 2010). However, these effects differ between individual schools (Rouse and Florian 1996), pointing to the importance of the specific implementation of inclusion.

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The implementations of inclusive schooling are diverse and vary between and even within countries (cf. Hardy and Woodcock 2015). In inclusive schooling, basically, students with special needs get access to educational opportunities in regular classes where they receive high-quality instructions together with students without special needs. Implementing inclusive classes involves the entire school and its staff, making inclusive education an issue for school development (Heimlich 2019). Inclusive school development refers to inclusive cultures, organisational structures and policies, and inclusive practices (Both and Ainscow 2019; De Vroey, Struyf, and Petry 2016). Inclusive cultures mean that teachers, principals, students, and parents share supportive relationships and form a community adhering to inclusive values. Organisational structures and policies provide guidelines for grouping students and monitoring their academic and social-emotional learning as well as guidelines for teachers' professional development. Inclusive practices relate to learning arrangements and curricula that support students' individualised learning and peer learning.

In many countries, co-teaching has become an important teaching strategy in inclusive classes. In co-teaching, a general teacher and a special education teacher share the instruction in class (Friend et al. 2010). Co-teaching between two experts is a resource to provide students with individualised instructions that meet their specific needs and simultaneously to ensure the joint learning of students with and without special needs. Research supports the importance of co-teaching as a resource for inclusive schooling. A metasynthesis of qualitative research revealed that both students and teachers have positive attitudes towards co-teaching (Scruggs, Mastropieri, and McDuffie 2007). Moreover, teachers reported positive effects of co-teaching on their professional development and students' academic and social-emotional learning. The positive view of teachers and students about co-teaching is in line with quantitative analysis showing that co-teaching in inclusive classes enhances special needs students' grades and their achievements in mathematics and reading and has positive effects on students' peer acceptance, friendships, and social skills (Murawski and Swanson 2001). These benefits may be the result of the extra attention and support students get from two teachers (Scruggs, Mastropieri, and McDuffie 2007). Moreover, the collaboration of co-teachers can serve as a social model for students.

In Germany, the *United Nations Convention on the Rights of Persons with Disabilities* came into effect in 2008. Thus, Germany is still facing the challenge to develop an inclusive educational system. There exist different approaches for the use of special education teachers' expertise for inclusive schooling. For example, special education teachers provide additional services for specific students or they share the instruction in class with general teachers (cf. Lütje-Klose and Neumann 2018). The current study investigated German secondary school teachers' perspectives on the conditions for successful implementation of co-teaching in inclusive classes. We analysed whether the teachers' experiences and ideas about co-teaching reflect the aspects of successful co-teaching described in theories and supported by earlier research in this field. In what follows, we give a brief overview on approaches and aspects of co-teaching based on international theories and studies. We then describe the current situation of inclusion in Germany and explain our qualitative interview approach to get more insights into co-teaching in German inclusive schooling. Based on the results of replicated and newly identified aspects of successful co-teaching in inclusive classes, we discuss the implications for teachers' professional development and school development.

## Approaches of Co-teaching

Different approaches for implementing co-teaching in class are discussed (cf. Friend et al. 2010): (1) one teaches the class while the other one observes, (2) one teacher leads the instruction in class while the other one assists, (3) the teachers instruct the students at different stations, (4) each teacher instructs half the class, (5) one teaches most students while the other one works with a smaller group, and (6) both teachers lead the instruction in class collaboratively. Co-teachers can use these approaches flexibly depending on students' needs or educational requirements. Thus, co-teachers' roles and responsibilities can be fluid. Pancsofar and Petroff (2016) investigated the use of the co-teaching approaches in 69 dyads of general teachers and special education teachers. They found that teachers most frequently use an approach in which one teacher plans the lesson and leads the instruction in class while the other provides students with individualised assistance (cf. type 2; Friend et al. 2010). The model where teachers are co-constructing lessons and leading large-group instructions in class collaboratively (cf. type 6) was used least frequently. The more teachers reported to have experiences with co-teaching, the more time they spent with their co-teacher, and the more opportunities they had to learn about co-teaching during pre-service and in-service training the more often they lead the instruction collaboratively.

Class observations found that general teachers spend less time interacting with special needs students when a special education teacher is present in class (Magiera et al. 2005). Therefore, teachers should be careful of excluding the students with special needs even in co-teaching arrangements. Moreover, the constant use of some approaches of co-teaching (e.g. type 5; Friend et al. 2010) could result in the separation of the special needs students from the students without special needs. In this case, the implementation of co-teaching rather resembles exclusive models of education (Manset and Semmel 1997).

Co-teaching between special education teachers and general teachers concerns not only the instruction in class but also tasks including lesson planning, evaluation of lessons, parental work, implementation of the curriculum, diagnosis of special needs, or planning individualised support. Following theories about teacher cooperation in staff (cf. Gräsel, Fußangel, and Pröbstel 2006; Little 1990), working together on these tasks can take several forms that increase in the degree of interdependence and trust between special education teachers and general teachers: (1) exchange of information and materials, (2) task sharing and coordination of individual work, and (3) co-construction on the same task. Studies with German general teachers show that cooperation forms with stronger interdependence occur less frequently than forms with lower interdependence (Drossel and Willems 2014; Richter and Pant 2016).

## Empirical findings on the conditions for successful co-teaching

The international research hints on requirements for successful co-teaching regarding resources, administration, teacher education, the relationship between co-teachers, and teachers' characteristics (for a summary see Table 1). Lütje-Klose et al. (2016) cluster these factors on three system levels: (1) institutional level, (2) interactional level, and (3) individual level. On the institutional level, teachers expressed the need for materials, equipment, specialised personnel, an appropriate student-staff-ratio, structured

**Table 1.** Conditions for successful co-teaching found in earlier research.

| Aspect | Description | Examples for Sources of the Aspect |
| --- | --- | --- |
| co-teaching in class | approaches of co-teaching | Friend et al. (2010) |
| collaboration on tasks | forms of collaboration | Gräsel, Fußangel, and Pröbstel (2006), Little (1990) |
| task assignment | assignment of tasks due to expertise | Arndt and Werning (2016) |
| relationship | commitment, negotiation of roles and responsibilities, common goals | Friend et al. (2010), Rytivaara, Pulkkinen, and de Bruin (2019) |
| teachers' characteristics | social skills, attitudes towards cooperation, experiences | Carter et al. (2009), Friend and Cook (2010), Hellmich et al. (2017) |
| resources | equipment, materials, time for collaboration, specialised personnel | Mulholland and O'Connor (2016), Solis et al. (2012) |
| administration | administrative support by the principal | Santoli et al. (2008) |
| teacher education | training on co-teaching approaches and special needs students | Scruggs, Mastropieri, and McDuffie (2007), Solis et al. (2012) |

opportunities to collaborate, and administrative support (Solis et al. 2012). Common planning time was found to be most important for co-teachers (Kohler-Evans 2006; Murray 2004). However, in an interview study with primary school teachers, 66% of the general teachers did not meet with their co-teachers and other professionals on a regular basis (Mulholland and O'Connor 2016). Administrative support predominantly refers to the provision of opportunities for professional development and common planning times by the school's principal (Santoli et al. 2008).

On the interactional level, special education teachers and general teachers expressed the need to be compatible concerning their philosophy about teaching and learning while complementing each other with respect to their different expertise (Pratt 2014; Rice and Zigmond 2000). Special education teachers and general teachers also found it necessary to volunteer to teach together (Scruggs, Mastropieri, and McDuffie 2007). On the individual level, teachers reported the need for communication and social skills, in particular to resolve conflicts that might occur about roles or responsibilities (Carter et al. 2009; Friend and Cook 2010). Furthermore, a study showed that teachers' cooperativeness correlated positively with their experiences with inclusive schooling and their attitudes towards working in teams (Hellmich et al. 2017). In addition, on the level of the educational system teachers reported the need for teacher training including characteristics of disabilities, approaches to support students' learning, co-teaching approaches, and communication skills (Scruggs, Mastropieri, and McDuffie 2007; Solis et al. 2012).

According to Tuckman's (1965) sequential stage theory, groups develop in stages from coming together and accepting the group's tasks (forming), over arguing about expertise and responsibilities (storming), to resolving these conflicts (norming) for the benefit of the group's performance (performing). Furthermore, Little (1990) assumes that teachers' relationship moves from autonomy and individual responsibility to interdependence and joint work. Thus, facing and resolving conflicts probably is part of co-teachers' challenge to build a collaborative relationship. For co-teaching to be successful, general teachers and special education teachers need to build a reliable relationship (Friend et al. 2010) and to become effective in their collaboration (Pratt 2014). Collaboration means that general teachers and special education teachers coordinate and bring together their expertise to attain the common goal of inclusive schooling (Jurkowski and Müller 2018; Pratt 2014). A literature review on teacher cooperation in staff indicates that common goals about education and teaching are necessary for successful cooperation as well

(Massenkeil and Rothland 2016). Research shows that co-teachers develop their collaborative relationship by committing to this relationship and negotiating routines, their roles and responsibilities, and their understanding of teaching in inclusive settings (Rytivaara, Pulkkinen, and de Bruin 2019). Co-teachers also reported that they establish their relationship by reflecting together on their expectations (Solis et al. 2012). A study in a German sample revealed that co-teachers developed their collaboration ranging between a clear differentiation between the responsibilities of special education teachers and the responsibilities of general teachers due to their expertise and a flexible task assignment within the dyad (Arndt and Werning 2016). Thus, co-teachers need time to develop effective co-teaching (Rytivaara and Kershner 2012). However, a longitudinal study with German co-teachers revealed that collaboration on planning and evaluating lessons remained at a low level over the duration of one school year (Jurkowski and Müller 2018). This result raises the question about the specifics of co-teaching in inclusive classes in Germany that are relevant for building collaborative relationships.

## Inclusive schooling and co-Teaching in Germany

Since 2008, Germany has implemented a school system in which students with special needs have access to regular classes. Special education teachers have to diagnose that a student has special needs. A class is labelled an inclusive class, when at least one special needs student attends the class. Special schools continue to exist in parallel. The parents of special needs students receive counselling by experts (i.e. special education teachers and school psychologists) to decide which type of school fits best for their child. In the school year 2016/2017, approximately 40% of the students with special needs attended regular classes, whereas about 60% attended special schools (Autorengruppe Bildungsberichterstattung 2018). The inclusion rate decreases with the level of education (Klemm 2015). Thus, inclusive schooling in Germany is currently developing while inclusive classes and special schools co-exist. Moreover, federal states set their own legal regulations for education. This results in the development of various implementations of inclusive schooling. For example, in a cooperative form of inclusive classes, students with special needs attend regular classes in some subjects and for a specific number of lessons per week while in legal terms they are students of a special school. In a full-inclusive form, special needs students are legally students of the regular school and attend regular classes the whole time.

In light of the need to develop inclusive schooling, many federal states are implementing co-teaching for teaching and learning in inclusive classes (cf. Borsch 2018; Werning and Avci-Werning 2015). In Germany, co-teaching means that one general teacher and one special education teacher share the instruction in some lessons. The number of lessons with co-teaching depends on the number of special needs students in one class. Some schools pool the special needs students in a few classes while others assign them to different classes. Consequently, a special education teacher might co-teach with several general teachers and even with general teachers from different schools. Thus, special education teachers must adapt to several general teachers and many students (Jurkowski and Müller 2018). Possibly because of these circumstances, in a study with German teachers, the special education teachers reported to be more critical towards co-teaching than the general teachers (Gebhard et al. 2014). Since co-teaching has just began to be

an issue for teacher training in Germany, establishing collaborative relationships may be very challenging for German co-teachers. We assume that studying German co-teachers' perspectives on co-teaching can provide empirical insights into the conditions for successful implementation of co-teaching in inclusive classes against the background of challenging circumstances.

### This study

We interviewed general teachers and special education teachers with experiences in co-teaching in German secondary schools on their understanding of co-teaching and the contribution of this teaching strategy for effective inclusive schooling. The interviews were guided by the following questions:

(1) How do teachers define co-teaching? What concepts and expectations of collaboration and relationship underlie this understanding?
(2) What do teachers need for successful co-teaching in inclusive schooling?
(3) Based on teachers' understanding of co-teaching, what recommendations can be made for teachers' professional development and school development?

We used a semi-structured interview and referred to teachers' individual experiences with co-teaching as well as their ideas about good practice implementation of co-teaching. Using a qualitative approach, we intended to identify various conditions for successful co-teaching at different levels of inclusive schooling. We analysed teachers' experiences and ideas against the background of the conditions for successful co-teaching found in earlier international research (cf. Table 1) and set out to identify further aspects. This procedure should contribute to the development of a system of categories that reflects German secondary school teachers' perspectives on the conditions for successful collaboration in teaching dyads.

### Methodology

#### Sample and procedure

Participants were 17 general teachers and 16 special education teachers from 25 secondary schools in the middle and the south of Germany. Secondary education refers to grades 5–9 and is equivalent to level 2 in the International Standard Classification of Education (UNESCO 2011). At the time of the interview, five teachers gave instructions in

**Table 2.** Characteristics of the sample.

| | General Teachers | Special Education Teachers |
|---|---|---|
| N (number of females) | 17 (13) | 16 (14) |
| Age in years M (SD) | 40.9 (11.9) | 41.4 (8.5) |
| Work experience in years Mdn (Min – Max) | 8.0 (3–34) | 9.5 (1–36) |
| Experience with co-teaching in years Mdn (Min – Max) | 3.0 (1–24) | 4.0 (1–20) |
| Number of inclusive classes M (SD) | 3.8 (2.7) | 3.4 (2.7) |
| Number of co-teaching lessons per week M (SD) | 6.0 (6.2) | 13.4 (8.0) |

Note. The number of inclusive classes and the number of co-teaching lessons per week relate to the school year of the study.

cooperative-inclusive classes and 28 teachers taught in full-inclusive classes. Table 2 summarises the characteristics of the sample.

The study was approved by the Ministry of Education and Cultural Affairs. Teachers received information about the aim of this study and participated on a volunteer basis giving written informed consent. A trained research assistant interviewed the teachers individually via telephone or in an online video meeting. The average duration of the interviews was approximately 40 min. The interviews were tape recorded and then transcribed.

## Interview guideline

The semi-structured interview guideline asked teachers to report on both their ideas about good practice implementation of co-teaching and their individual experiences with co-teaching. This procedure was intended to elaborate in detail on the teachers' understanding of co-teaching and its contribution for effective inclusive schooling, their concepts and expectations of collaboration and relationship within the teaching dyad, and their needs for successful co-teaching. In the following, we provide examples for the interview guideline.

(1) How do you define 'successful collaboration' within the teaching dyad? How do both of you collaborate on the preparation of lessons/ during lessons/ following lessons? For what aspects do you share responsibility? What aspects are predominantly in your responsibility/ in your teaching partner's responsibility?
(2) What are the aims of co-teaching in inclusive classes? What benefits of co-teaching for students do you believe in? What benefits of co-teaching for yourself do you believe in? What do you expect from your teaching partner? What do you think does your teaching partner expect from you?
(3) What resources are necessary for successful collaboration? What organisational structures are important for co-teaching to be effective? How should co-teaching be organised within the school structures? What are the requirements on the school staff and the school administrators?

## Data analysis

The goal of the data analysis was to describe a model of teachers' understanding of collaboration and their perspectives on the conditions for successful co-teaching. We used the qualitative content analysis according to Mayring (2014). This method reduces the amount of data by summarising text passages into categories. Therefore, the qualitative content analysis was an appropriate method to design a system of categories describing the conditions for successful co-teaching in inclusive classes. In our analysis, we combined deductive and inductive procedures. As a starting point for the categorisation, we referred to the conditions for successful co-teaching identified in earlier research as summarised in Table 1. Moreover, we referred to theories including approaches for co-teaching (Friend et al. 2010), forms of cooperation (Gräsel, Fußangel, and Pröbstel 2006), stages of team development (Tuckman 1965), and system levels of the conditions for successful co-teaching (Lütje-Klose et al. 2016). Based on these research findings and theories, we described

categories and applied them to eight transcripts. Our data showed that the categories needed to be refined and extended. Consequently, we defined further categories beyond those listed in earlier research. We applied the extended system of categories to further transcripts, and in an iterative process refined the categories until a theoretical saturation was reached (cf. Flick, von Kardorff, and Steinke 2004). On a regular basis, we used peer debriefing (Flick 2019) to reflect upon the current design of the system of categories with three experts that were not involved in the data analyses. Thus, the system of categories reflects the teachers' perspectives on the conditions for successful collaboration in teaching dyads integrating existing research results and theories.

## Results

The qualitative content analysis revealed 11 categories. We clustered these categories on three levels: (1) the level of the educational system, (2) the single school level, and (3) the level of the teaching dyad. The categories per level are summarised in Figure 1.

### Level 1: educational system

We identified two categories that refer to the educational systems of the federal states in Germany: the category teacher education, as already listed in earlier research, and the new category inclusive school system. *Inclusive school system* reflects the teachers' ideas about the implementation of inclusion and the educational opportunities for children with special needs. The statements coded within this category can be summarised in two conflicting perspectives. First, the wish for the development of a full-inclusive school system in
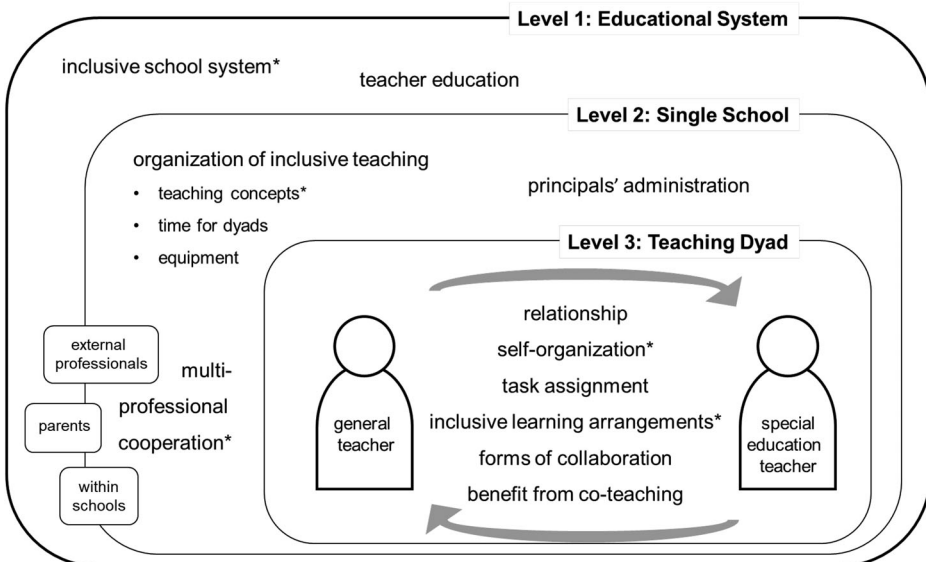
**Figure 1.** Categories describing the conditions for successful co-teaching in inclusive classes on the levels of the educational system, the single school, and the teaching dyad.

Note: The five categories marked with an asterisk go beyond the aspects listed in former research.

which students with diverse special needs and students without special needs learn together in regular classes. The following statement taken from a general teacher (GT) illustrates this perspective:

> I am very sad about the development that not all special needs are allocated to inclusive schools. It would be very fruitful to get students with all kinds of special needs […] because this heterogeneity makes students and society learn. (GT 1)

Second, the wish to stop the development towards inclusive schooling and to go back to a polynomial school system of specialised schools. Arguments in favour of this view are the opportunity to provide all children with individual and high-quality support and to omit disadvantages for students without special needs that could be caused by special needs students.

The category *teacher education* includes aspects of professionalisation in the field of inclusive education (i.e. study curricula, pre-service and in-service teacher training). The special education teachers interviewed state their lack of didactical knowledge that they would need for teaching large groups. The general teachers report the need for knowledge about their students' special needs to provide sufficient assistance to those students when the special education teacher is not in the class. Statements coded within this category indicate the wish for more standards in teacher education and a curriculum that is in part common to both general teachers' and special education teachers' training. The following statement taken from a special education teacher (ST) illustrates this idea:

> It is sad to see that primary school teachers do not know anything about a child-environment-analysis to investigate the relationship between development and environmental circumstances. This should be established in all teacher trainings. (ST 5)

### Level 2: single school

The categories on this level concern structural and organisational conditions as well as attitudes towards co-teaching and co-teachers' collaboration in inclusive classes. Several of these aspects are supported by previous research including time for collaboration, equipment, and the principals' administration (cf. Table 1). Going beyond earlier findings, we identified teaching concepts and multi-professional cooperation as further conditions for successful co-teaching. Based on the interviews we defined three primary categories: organisation of inclusive teaching, multi-professional cooperation, and principals' administration.

The category *organization of inclusive teaching* contains the three subcategories time for teaching dyads, equipment, and teaching concepts. The statements coded within the subcategory *time for teaching dyads* show the co-teachers' need for joint planning and evaluation of their lessons. The teachers hint on the problem that special education teachers work in several schools at once and have a limited number of hours per school. This hampers the time co-teachers have available beyond their co-teaching lessons. Consequently, the general teachers and special education teachers express their wish for shared slots in their schedules as well as extra teaching hours for collaboration.

> The implementation of co-teaching and collaboration needs fixed times in our schedules. So far, time for collaboration is voluntary and based on goodwill. This cannot work on the long-

term. Each school as well as the educational policy needs to be poised to invest in co-teaching structures. (ST 6)

The subcategory *equipment* reflects the teachers' wishes on resources needed to realise inclusion and co-teaching. Statements coded within this subcategory concern teaching materials to come up with the students' special needs (i.e. tools and materials for visually or motoric impaired students), work spaces for teaching dyads (i.e. shared desks, PCs, and places for teaching materials), and inclusive classrooms. For example:

> I am very lucky to have a class room with a small second room besides. This offers the opportunity to split the class for different exercises and inputs or to give students a time-out in a quiet place if needed. [...] Every class room should have such an adjacent room to make internal differentiation possible. (GT 28)

*Teaching concepts* are guidelines and standards for the implementation of inclusion and co-teaching within a school. This category has not been named in former research explicitly. Based on our distinction between educational system, single school, and teaching dyad, we added this new subcategory at the level of the single school. Teaching concepts include specifications for shared class leadership, approaches for promoting students with special needs and for individualised teaching. As an example for teaching concepts, teachers report the need for time slots of individualised student learning that offer general and special education teachers the opportunity to work with all student individually. The statements of the teachers also hint on difficulties, for example:

> According to our school's concept, students with special needs are taken out of class regularly. We have to teach in separated groups due to organizational reasons, for example limitations in our schedule. (GT 9)

The second category on the single school level summarises statements on *multi-professional cooperation* within a school, with external professionals, and with parents and families. We have not found this aspect in previous research explicitly and therefore added this category based on the interviews. The teachers elaborated on this organisational standard as part of a school's concept of inclusion. The statements coded within this category reflect the need to develop a common ground on the implementation of inclusion and a shared responsibility for inclusion. All professionals should be part of this development. The teachers name counseling and task forces as methods to put this organisational standard into practice. The following examples taken from a special education teacher and a general teacher illustrate the need for multi-professional cooperation:

> Against the background of the increasing number of students with special needs in regular schools, all teachers need to work together to develop concepts of shared responsibilities for these students instead of treating them as "students for the special education teachers. (ST 2)

> It is important to keep the parents in mind. Some parents believe and demand that the special education teacher is solely responsible for their child. Other parents do not want their child to be taught together with disabled children. (GT 1)

The *principals' administration* turns out to be the third category on the single school level. Statements coded within this category pertain to the principals' responsibility to provide co-teachers with guidelines as well as his or her attitudes towards inclusive

schooling. General teachers and special education teachers confirm that the principals' leadership skills are important to develop successful inclusive schooling and a culture of co-teaching. For instance, the teachers ask for transparency concerning the principals' ideas on co-teaching, inclusive teaching concepts, and the roles of general and special education teachers. Moreover, they express the need for the principals' open-mindedness towards inclusive schooling. The following example illustrates some issues coded in this category:

> What does shared class leadership and co-teaching mean if the special education teachers often work at several schools simultaneously? Is it justified that he or she does not prepare and control tests or does any replacement lessons? Do I need to accept if he or she leaves co-teaching lessons for counseling with other professionals whereas I must do these counseling after lessons? […] I cannot answer these questions for my school, but it is necessary to know the principal's attitude on that. (GT 29)

### Level 3: teaching dyad

The level of the teaching dyad contains six categories that describe co-teaching in inclusive schooling in detail. In accordance with earlier findings, these are the following: relationship, task assignment, forms of collaboration, and benefits from co-teaching. Going beyond previous research, we identified self-organisation and inclusive learning arrangements as further conditions for successful co-teaching.

The category *relationship* summarises the teachers' statements on soft skills and attitudes that form the basis for a collaborative relationship and contribute to co-teachers working together effectively. The general and special education teachers express the need for sympathy, mutual appreciation, trust, open-mindedness, and collaborative problem solving. The teachers report that the relationship depends on the stability of the teaching dyads. The following example illustrates some issues coded in this category:

> Effective collaboration in teaching dyads is based on appreciation and on being at eye level as well as autonomy and space to realize your own ideas. Respect and equality are necessary and, for sure, shared goals. (ST 7)

All organisational issues that are relevant for the communication and time management within the teaching dyads are included in the category *self-organization*. The teachers' statements show that the willingness to communicate by e-mail or phone even after work is necessary for successful collaboration and preparation of co-teaching. They describe the need to adapt the intensity of their communication depending on the requirements of single classes or students. The communication aspect was named by Carter et al. (2009) as well as Friend and Cook (2010) as part of the teachers' skills. However, the teachers in our study emphasised the need to manage their cooperation on tasks flexibly and to negotiate their ways of communication. Therefore, we defined a separate category self-organisation.

The category *task assignment* summarises the statements on the roles and responsibilities within the teaching dyads. Special education teachers and general teachers point out that they assign roles based on either explicit agreements or implicitly due to their perceptions about professional competencies (e.g. the individual diagnostic of learning and development is in the responsibility of the special education teacher, the preparation of lessons

is the general teacher's task). Extra-curricular activities such as parent evenings and excursions are tasks that should be organised in shared responsibility of both teachers.

> I want the special teachers to bring in their competencies when my competencies are exceeded - doing diagnostics, counseling for parents, developing individualized study plans, and realizing instructions for students with special needs. (GT 21)

*Inclusive learning arrangements* turns out to be a category containing teaching methods that are realised by co-teachers. This newly identified category reflects the teachers' ideas about the aims of teaching in inclusive classes and the methods that the co-teachers can use to achieve these goals. The general and special education teachers express their wish for activating all students by using methods of individualised learning and of learning together in small heterogeneous groups. From the co-teachers' perspective, these methods support students' academic and social-emotional learning.

The fifth category on the level of the teaching dyad describes *forms of collaboration* between general and special education teachers. We identified three form of collaboration that are in line with the forms of cooperation described by Gräsel, Fußangel, and Pröbstel (2006). First, *exchange* in which co-teachers exchange information and materials without a common ground on co-teaching or inclusive schooling, for example:

> Successful collaboration means the exchange of work sheets, books, or any kind of teaching material in preparation of the lessons. (GT 12)

Second, *task sharing* means that general and special education teachers coordinate and bring together individual work in the dyad. The teachers describe this form as a goal-oriented shared planning of assignments. The following example illustrates this idea:

> It is our goal to prepare the lessons together, that is, to discuss the teaching methods and to decide who is responsible for what. The materials needed for the lessons are prepared separately by general and special education teachers afterwards. (ST 3)

Third, *co-construction* describes that co-teachers work together on the same task and jointly prepare, implement, and evaluate lessons and exercises. The general and special education teachers interviewed state that co-construction is the ideal form of collaboration. However, it is time-consuming and can only by realised when teaching dyads have time beyond their co-teaching lessons.

> For me, successful collaboration means to evaluate lessons jointly. What works and should be maintained? What needs to be modified? […] Who needs special instructions or help that should be kept in mind for the next lessons?. (GT 12)

The social, emotional, and cognitive *benefits from co-teaching* turns out to be the last category on the level of the teaching dyad. Teachers express benefits for both students and themselves. General and special education teachers report that co-teaching supports students' learning processes independent of their educational needs (e.g. give more corrective feedback, use cooperative learning methods with peer-support). The benefits for teachers include support, discharge, and professional development because of bringing together the different expertise of the co-teachers.

> Working in dyads makes me learn about diagnostics, reduce and differentiate learning material to increase individualized support - things I did not learn at the university. (GT 1)

## Discussion

In this study, we interviewed German secondary school general teachers and special education teachers on their understanding of collaboration, the conditions for successful co-teaching, and the contribution of this teaching strategy for effective inclusive schooling. The teachers' statements were analysed against the background of theories and research findings in the field of co-teaching. In combining deductive and inductive procedures, we investigated whether the teachers' ideas and experiences with co-teaching in inclusive classes are in line with former literature and/or contain further aspects. Taken together, we replicated eight aspects listed in the literature and added five new aspects based on the interviews conducted.

We identified categories that reflect co-teachers' ideas about collaboration and relationship and the conditions for successful co-teaching in Germany. Overall, the different viewpoints, concepts, and expectations described by the teachers show that in Germany inclusive schooling is not the standard practice yet. Rather, inclusive classes and special schools co-exist. Furthermore, the federal states differ in their approaches to implement inclusive schooling and inclusive classes. These conditions within the German educational system could result in reservations, negative attitudes, or insecurities in some teachers.

We clustered the conditions for successful co-teaching on three levels of inclusive schooling. On the level of the single school, the general teachers and the special education teachers expressed the need for time, equipment, and the principals' administration. These results are consistent with international research on teachers' need for resources and administration (Scruggs, Mastropieri, and McDuffie 2007; Solis et al. 2012; cf. Table 1). However, our analyses revealed further conditions for successful co-teaching. The co-teachers stated the need for multi-professional cooperation within the school and with experts from outside the school to develop a shared understanding of inclusive schooling and a common responsibility for implementing inclusive education. We interpret this finding in the sense that co-teachers find it necessary to rely on a network of professionals that supports their teaching in inclusive classes. This wish for external support also became apparent in the teachers' statements about the need for guidelines and standards for co-teaching, individualised teaching, and assisting students with special needs. The co-teachers' wishes for the principals' administration, multi-professional cooperation, and teaching concepts suggest considering inclusion as a matter of school development (cf. De Vroey, Struyf, and Petry 2016).

Although the co-teachers expressed the need for external support, on the level of the teaching dyad it became apparent that general teachers and special education teachers have specific ideas about inclusive learning arrangements, develop their own ways to organise their collaboration, and negotiate on task assignments. Therefore, co-teachers seem to use open spaces very proactive and to develop their own practices for inclusive classes.

The teachers reported that to some extent they assign tasks implicitly based on their ideas about the other's expertise. This could lead to conflicts between general and special education teachers, especially as in general they do not attend a common curriculum in teacher training in Germany and, thus, do not get to know each other' expertise at an early stage. On the level of the educational system, teachers expressed the need for a curriculum that is in part common to both special education teachers' and general teachers' training. These findings suggest that teachers should get the opportunity to collaborate in pre-service teacher training to learn about each other's expertise and to negotiate

on teaching and learning in inclusive classes (Baeten and Simons 2014). Some German universities have begun to rearrange study programmes for teacher training and to integrate knowledge about special education into curricula for general teachers (cf. Amrhein, Lütje-Klose, and Miller 2015; Sallat et al. 2018). This provides an opportunity for student teachers to share their knowledge landscapes (Clandinin and Connelly 1996).

In line with international research on co-teachers' collaborative relationship (Pratt 2014; Rytivaara, Pulkkinen, and de Bruin 2019; cf. Table 1), the general and special education teachers expressed the need for trust, respect, and collaborative problem solving. In contrast to existing literature (cf. Lütje-Klose et al. 2016), we could not identify a separate individual level of teachers' characteristics. Rather, the teachers in our study reported on their skills and experiences against the background of their relationship. Thus, from the teachers' point of view, their characteristics and their relationship were intertwined. The co-teachers did not refer to approaches of co-teaching. We suppose that this finding is due to the content of teacher training in Germany that generally does not include co-teaching approaches. It indicates the need to revise teacher training and to instruct teachers on approaches for the implementation of inclusive teaching and co-teaching (cf. Faraclas 2018; Strieker, Logan, and Kuhel 2012). The co-teachers' statements reflect ideas about forms of collaboration that vary in the degree of autonomy and individual responsibility, or interdependence and joint work respectively (cf. Gräsel, Fußangel, and Pröbstel 2006; Little 1990). While the teachers declared themselves in favour of interdependence and joint work, they also hint on the limited time that hampers intensive forms of collaboration. Thus, the organisational structures and resources provide the setting for general and special education teachers' collaboration.

The system of categories developed for the co-teachers' statements in this study provides a framework for school and professional development as well as research. For the educational practice, the categories could guide activities to implement inclusive schooling and co-teaching (cf. Lindacher 2020). Working with the categories as a guideline can indicate conditions met and conditions that the single school, the professionals, and the co-teachers should work on. Such a procedure would allow the development of concrete measures, including building a network of professionals, developing guidelines for teaching in inclusive classes, reflecting on roles and responsibilities within the teaching dyad, or negotiating ways of self-organisation. For future research, the system of categories hints on variables that might moderate the effects of co-teaching on students' social-emotional and academic learning in inclusive classes. We believe that empirical results on the conditions for effective inclusive schooling and co-teaching, including the present study, can contribute to the development of a full-inclusive school system.

## Disclosure statement

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