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Research paper

Teachers' goals and strategies for classroom seating arrangements: A qualitative study

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ABSTRACT

Teachers can use seating arrangements to effectively manage classroom dynamics. However, *what* do teachers aim for and *how* are they trying to achieve this when creating seating arrangements? We conducted semi-structured interviews with 13 upper elementary school teachers. Teachers expressed to have both academic and social-emotional goals addressing the group and individual students. Although their goals were quite similar, teachers employed different, sometimes even opposite strategies to achieve them. Moreover, they adapted goals and strategies to specific group or individual student needs. Our findings add to the growing body of knowledge regarding teachers' practices in managing classroom social dynamics.

Creating a classroom seating arrangement is a universal challenge that all teachers have to face. They have to choose how to arrange the desks and whom to place where. Teachers' decisions regarding seats are important, because they affect the social dynamics in the classroom and thereby impact students' learning and development (e.g., Gest & Rodkin, 2011; Wannarka & Ruhl, 2008). Yet, little is known about the goals teachers have in mind and how they translate into specific seating arrangement choices. Obtaining this information can contribute to gaining a deeper and more complete understanding of the process of teachers seating students. This could lead to guidelines for teachers on how to incorporate seating arrangements in the effective management of classroom social dynamics. Therefore, the aim of the current study was to examine teachers' goals when seating students, both for the entire classroom and for individual students, and to learn more about the strategies they use to achieve these goals.

1. Seating arrangements as a means to manage classroom social dynamics

One of the most important jobs teachers have is managing the classroom in an effective way (Martin et al., 2016; Marzano & Marzano, 2003). Effective classroom management is defined as "the ability to establish, maintain, and (when necessary) restore the classroom as an effective environment for teaching and learning" (Brophy, 1986, p. 182). Indeed, research has shown that teachers' management strategies in the classroom are highly impactful on student achievement and development (e.g., Marzano, 2003). However, students do not only need to learn and achieve academically. They also have to learn how to interact with one another. Hence, classroom management is not limited to academic aspects, but also entails managing the social and behavioral processes in the classroom (Gest, Madill, Zadzora, Miller, & Rodkin, 2014). One way for teachers to attend to these social and behavioral processes is to engage in network-related teaching. This refers to teachers' choices or strategies focused on impacting peer relationships and provides teachers with the opportunity to manage students' social networks, social status, and aggression (Farmer et al., 2006; Gest & Rodkin, 2011).

Teachers can put network-related teaching into practice through

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their seating arrangements. Seating arrangements are relatively understudied, but a few studies have addressed them. Gest & Rodkin, 2011 asked teachers to rate several student seating grouping strategies based on their importance. They found that separating students with behavior problems was an important consideration for most teachers as well as promoting new friendships and academic diversity. Kim and colleagues (2020) also found that behavioral problems were the most important consideration when creating a seating arrangement, whereas promoting both existing and new friendships was considered the least important. Finally, Gremmen, Van den Berg, Segers, & Cillessen, 2016 interviewed teachers to gain in-depth information about what they consider important when creating classroom seating arrangements. Teachers experienced creating a seating arrangement as very challenging and mentioned between 2 and 19 considerations, indicating a lot of variation between teachers. The considerations that teachers reported as most important were promoting cooperation and promoting a positive atmosphere in the classroom. Together, these findings suggest that teachers have various considerations when creating a seating arrangement and that they use them to manage and address the needs and relationships of individual children (Gest & Rodkin, 2011; Kim et al., 2020) as well as the group (Gremmen, Van den Berg, Segers, & Cillessen, 2016).

However, a gap in the literature remains. In the studies by Gest & Rodkin, 2011 and Kim et al. (2020), teachers were presented considerations formulated by the researchers. Hence, it is unclear which considerations teachers would have named themselves, whereas the study by Gremmen, Van den Berg, Segers, & Cillessen, 2016 showed that there is a lot of diversity between teachers in the number and type of considerations they mention. More importantly, previous studies did not distinguish between *what* teachers aim for when creating a seating arrangement and *how* they try to do this. Hence, teachers' goals (i.e., *what*) and strategies (i.e., *how*) are still understudied. Disentangling these will yield more insight into what teachers do to manage social dynamics through seating arrangements.

1.1. Teacher's goals and strategies when creating seating arrangements

Teachers have a multitude of goals and strategies in their daily work. As they are both educators and pedagogues (Biesta & Miedema, 2002), these goals and strategies are academic as well as social-emotional and can be directed at the group as a whole as well as at specific individual students. For individual students, teachers adapt them to the specific student's characteristics and needs, as shown by practices such as differentiation (e.g., Tomlinson & Imbeau, 2010) and setting expectations (e.g., Rubie-Davies, 2014). Hence, teachers likely also have goals and strategies in mind when creating a classroom seating arrangement.

There is some empirical research on the effects of specific classroom seating strategies. Most studies have focused on desk configuration (i.e., rows vs. groups vs. other formats) and academic outcomes. A row seating arrangement has been found to be associated with more on-task time during individual task work (Hastings & Schwieso, 1995), students ask more questions when seated in a semi-circle than in rows (Marx, Fuhrer, & Hartig, 1999), and the quantity but not the quality of student work is higher in rows than in groups (Bennett & Blundell, 1983). In addition, a review by Wannarka & Ruhl, 2008 showed that students displayed more desired behavior with respect to learning when seated in rows. Finally, an ethnographic study by Zhang (2019) showed that Chinese teachers impose a hierarchy on classroom seats (e.g., students who do not show a good academic attitude are seated in the corner by themselves), which suggests that teachers around the world may perceive and use their classroom seating arrangement in different ways.

Regarding the location of specific students in the classroom or their position relative to their classmates, Gremmen, Van den Berg, Steglich, Veenstra, & Dijkstra, 2018 found that students became more dissimilar in academic achievement and engagement to near-seated non-friends, but more similar to friends, regardless of their position in the seating arrangement. Furthermore, being seated in the center versus the sides of the room was associated with students' social status in the group (van den Berg & Cillessen, 2015; Lintner & Šalamounová, 2021) and separating aggressors and victims in terms of seating was related to reduced aggression and victimization (Troop-Gordon & Ladd, 2015). In addition, Gest & Rodkin, 2011 found that in classrooms where the teacher aimed to separate students with behavior problems, students reported more liking than disliking and their friendship networks were denser, whereas Kim et al. (2020) found that the separation of students with behavior problems did not predict changes in friendships, nor peer conflicts. Other intervention research has shown that a purposeful rearrangement of the seating can lead to changes between individual students as well as in the peer group as a whole. Seating students who show externalizing behavior next to a prosocial buddy decreased their externalizing behavior problems and increased their likeability, yet also negatively affected the social status of the classmate seated next to them (van den Berg & Stoltz, 2018). Moreover, bringing students who initially disliked each other closer together in the classroom increased dyad-level liking (van den Berg, Segers, & Cillessen, 2012), but this may come at the cost of the larger classroom climate (Braun, van den Berg, & Cillessen, 2020). Together, these studies show that specific goals or strategies may affect students' learning and development. Therefore, in this study we identified the goals and strategies that teachers use to manage classroom social dynamics.

1.2. Current study

Creating a seating arrangement is a complex task that involves addressing the academic and social-emotional needs of the group as well as of individual students. However, little is known about *what* teachers want to achieve when creating seating arrangements and *how* they aim to achieve it. This information could contribute to a better understanding of teachers' seating arrangements and eventually help establish guidelines. Therefore, the main question of the current qualitative study was: What are teachers' goals (i.e., *what* do they aim for) and strategies (i.e., *how* do they do it) with regard to seating students? We expected teachers to have both academic and social-emotional goals, focused on the group as well as on individual students. Furthermore, we expected teachers to report different goals and strategies they use to reach them. Finally, we expected teachers to choose different goals and strategies to differentiate between students in order to address individual needs.

2. Method

2.1. Recruitment and participants

Participants were recruited for an ongoing research project called "Safe at School" (SAS; registered on the Open Science Framework, https://osf.io/57z9a/). Data collection for this study took place in the academic year 2020–2021. Participants were 13 teachers from 12 classrooms in the upper grades of elementary school (grade 4, 5, and 6; i.e., students of 9–12 years old) in the Netherlands. Among them were 3 men and 10 women, with an average age of 38.00 years ($SD = 12.83$, range 21–58). They had on

average 15.25 years of teaching experience ($SD = 11.07$, range 1–36) and 3.67 years of experience teaching the current grade ($SD = 3.16$, range 1–11). Of them, 11 teachers were interviewed individually (7 were the only classroom teacher; 4 created the seating arrangement in collaboration with their colleague, but they were the teacher working most hours with the classroom) and 2 teachers of the same classroom were interviewed together.

2.2. Procedure

The questions and interview procedures were piloted prior to the data collection among four (former) elementary school teachers. The teachers who participated in the current study, also participated in the main study of Project SAS, for which they received a participation invitation by e-mail after which a follow-up phone conversation took place. A semi-structured one-on-one, face-to-face interview was used to ask teachers about their goals and strategies for seating students in class. Exceptions were that the two part time teachers were interviewed together and that one interview took place through an online video call. The interview started with a broad question about teachers' general seating considerations for the whole group, then zoomed in on the seating of individual types of students (e.g., disruptive students, leaders, bullies, victims; Babad & Ezer, 1993; Gremmen et al., 2016), the pairing of specific students with classmates, individual students' location relative to the teacher, and then zoomed out again by asking teachers about the general impact of the seating arrangement on the classroom climate as a whole. These questions were based on Gremmen, Van den Berg, Segers, & Cillessen, 2016. For example, Gremmen and colleagues specifically asked teachers about seating friends together or not. We asked teachers more generally about the types of students they did or did not pair with each other and what their underlying goal was. Examples of questions are 'Do you seat particular types of students (e.g., students who show disruptive behavior, students with physical problems, students who are victimized) next to specific classmates on purpose? In other words, do you make dyads of students who you seat next to each other? And are there students who you would rather not seat together? Why or why not?' and 'To what extent do you take students' position relative to yourself into account when designing your seating arrangements? Are there students who you like to have close to you or students who you would prefer to have a bit farther away? Why do you do this?'. Maps of teachers' current seating arrangement (van den Berg & Cillessen, 2015) were used as the starting point for the interview and teachers could use them to illustrate their answers. Teachers were interviewed by the first author. An interview lasted approximately 30 min.

Participants gave consent for all parts of Project SAS through an online consent form and gave permission to audio record the interview. Procedures were approved by the Institutional Review Board of the Faculty of Social Sciences at Radboud University (ESCW 2020-047).

2.3. Data analysis

All interviews were first transcribed verbatim by student assistants. Next, the data were analyzed, generally following the guidelines described by Creswell (2013) for phenomenological research. The steps of this method are very suitable for identifying and disentangling teachers' goals and strategies. In the interviews we addressed teachers' goals and strategies and their reflections on the implementation of these goals and strategies, and we took into account contextual information as well (e.g., extra challenges related to having multiple grades in one classroom). We focused on students' academic and social characteristics and needs, but also on teachers' observations of students' reactions to the seating arrangement. The current analysis allowed us to analyze the data in a systematic, in-depth manner. Moreover, a phenomenological approach is particularly useful when researchers want to explore a relatively understudied phenomenon in order to generate theory about it (Flowerday & Schraw, 2000), such as the current, understudied topic of teacher considerations for classroom seating arrangements.

2.4. Step 1: Bracketing

The first author was trained as an elementary school teacher and educational researcher. She has both practical and theoretical experience with classroom social dynamics and the challenge of seating arrangements. She conducted the interviews and completed all steps of the analysis. The second author was trained in pedagogical sciences and obtained a PhD in psychology, with a focus on social development. One of her research lines specifically focuses on classroom seating arrangements and their impact on classroom social dynamics. She listened to audiotapes of the interviews and completed all steps of the analysis. The third author obtained a PhD in psychology, also with a focus on social development. Her research addresses social interactions in elementary school classrooms. The fourth author obtained a PhD in educational sciences with a focus on the interpersonal relationship between teachers and their students. His research focuses on the classroom climate and classroom interactions in relation to wellbeing and learning. The third and fourth author were involved in creating themes (see step 4: clustering in themes).

2.5. Step 2: Horizonalization

The first and second author went through each transcript individually to highlight significant statements related to teachers' goals and strategies concerning seating arrangements. We approached this step research question-driven, which means that we specifically looked for descriptions of *what* teachers aim to achieve and *how* they tried to achieve it. We identified 903 significant statements. After filtering out duplicates, 484 unique significant statements remained.

2.6. Step 3: Meaning units

The first and second author read each significant statement and assigned a more general meaning to it (i.e., created a meaning unit), which still adequately reflected the original meaning that the participant expressed. When creating the meaning units, we again kept the research question in mind and formulated the meaning units as much as possible in terms of *what* and *how*. Multiple significant statements (i.e., either by one participant or similar statements by different participants) could be taken together to form one meaning unit. The first and second author created meaning units separately and then discussed them. Once consensus was reached, the result was a final list of 235 meaning units.

2.7. Step 4: Clustering in themes

The first and second author then individually clustered meaning units they considered to be similar into themes. They then compared and discussed their clustering and reached consensus about a final list of three goals (*what*) and eight strategies (*how*). The third and fourth author checked these themes and the meaning units that were assigned to each theme individually. Both the third and fourth author had not been involved in any of the preceding steps and had not seen any data before receiving the clustering of

meaning units in themes. They were asked specifically whether they would have come to similar themes, whether they felt that themes were missing, and whether they agreed with the assignment of the meaning units to each theme. The first and second author formulated the themes regarding the goals mostly in terms of their content. The third and fourth author both pointed out that they felt that there was a distinction between goals focused on the group and goals focused on the individual. Hence, we rearranged the meaning units in the themes such that they were assigned based on both their content and on whether they addressed the group or the individual and we included the terms 'student' and 'group' in the names of the themes.

2.8. Steps 5–7: Teachers' goals, teachers' strategies, and integration

Instead of a textural and structural description which is common in a phenomenological approach, we wrote descriptions of *what* teachers aimed to achieve with their seating arrangement (i.e., their goals, Step 5) and *how* they aimed to achieve this (i.e., their strategies, Step 6). In Step 7, the descriptions of the goals and strategies were integrated in order to present an overview of the process of creating a seating arrangement.

Table 1 shows an example of several significant statements made by teachers and how they were assigned meaning. The table also shows that multiple significant statements could be assigned the same meaning. Table 2 shows an example of how these meaning units were subsequently clustered into themes and how meaning units were sometimes assigned to multiple themes. For example, the meaning unit of 'socially weaker students are seated in a central place in the room in order for classmates to see them in a more positive light' fit with both the goal of social-emotional functioning and the strategy of seating students in specific areas or at a specific distance from the teacher.

The preregistration of this study, the full overview of questions, the anonymized transcripts, an overview of all significant statements made, as well as all documents used to assign meaning units and conduct the clustering into themes are available through the Open Science Framework (https://osf.io/5bt67/).

3. Results

In total, 11 themes emerged, of which 3 concerned goals (i.e., *what* teachers wanted to achieve) and 8 addressed strategies (i.e., *how* they aimed to achieve their goals). Teachers reported to have (one or multiple of) these 3 goals in mind when creating seating arrangements and to use (one or multiple of) these 8 strategies to reach their goals.

3.1. Teachers' goals (what)

3.1.1. Theme 1: Student academic functioning (goal)

Teachers reported to use the seating arrangement as a means to support students' academic functioning, collaboration, and independence. They talked about promoting a student's academic outcomes in general, for instance: *"These students are seated together because they both work on a more advanced level, so they can strengthen each other."* They also aimed at more specific goals within the scope of academic functioning, such as collaboration: *"I take it [individuals' cognitive abilities] into account, because there are often moments in which I say 'you can only collaborate within your group', so I make sure there are students of different levels in all groups."* Moreover, teachers mentioned seating students in such a way that their academic independence was promoted in particular: *"The students who are cognitively strong are usually also the ones who are independent. So I tend to seat them more toward the back, because you want to give them that trust, and you know they can handle it [their work] independently."* Thus, one way teachers reported to use seating arrangements was to support individual students' academic needs and competencies.

3.1.2. Theme 2: Student social-emotional functioning (goal)

Teachers also mentioned that they created the seating

Table 1
Examples of Significant Statements and their Formulated Meaning Units.

Significant Statement	Meaning Unit
I seated this student close to me on purpose, because they do not talk much. I thought 'if I want to increase my interactions with them, I need to be able to have small moments of contact. If they are seated here, that is possible.	Distance to teacher is decreased to promote social contact between teacher and student
I have students in the front with whom I know it is hard to build a connection. I can easily say something privately.	Distance to teacher is decreased to promote social contact between teacher and student
I now seated two weaker students next to each other in front. I can easily reach them to help.	Cognitively weaker students are seated in front more often so the teacher can quickly provide more guidance if needed
I often take that into account, that a cognitively weaker student is seated within reach, so I can guide them more easily.	Cognitively weaker students are seated in front more often so the teacher can quickly provide more guidance if needed
This student needs to sit in front, because they need the extra instruction, they need the extra contact in order to get to work.	Cognitively weaker students are seated in front more often so the teacher can quickly provide more guidance if needed
Of course you want to use your leaders in a positive way.	Leaders are spread over the classroom to maintain balance and preserve calmness
I try to put a leader in the middle of each group, so for example in the middle of a group of 6 students.	Leaders are spread over the classroom to maintain balance and preserve calmness
I would not seat two leaders together. Either they may become less of a leader, because they become more awaiting, or they may want to show each other who is the real leader, which may cause classroom disruptions.	Leaders are distributed over the classroom to maintain balance and preserve calmness
I would seat them with socially strong classmates, someone with whom they can feel safe.	Victimized students are seated next to classmates they feel safe with to stimulate their wellbeing
The victimized child should feel safe at all times. That is the most important thing to make sure. I would do what is needed, so I would for example seat them next to socially strong classmates.	Victimized students are seated next to classmates they feel safe with to stimulate their wellbeing
They are seated in pairs, frontally facing the board. Previous year my colleague noticed that there are quite some students in this group who cause unsafe social situations.	Classroom arrangement in rows to prevent disruptions and unsafe social situations
It is important to keep an overview as a teacher and that children cannot interact with each other too easily. We tried to sit in groups a month ago, but it was too difficult for a lot of students, because they constantly want to interact. That caused too many disruptions, because they are inclined to interact all the time.	Classroom arrangement in rows to prevent disruptions and unsafe social situations

Table 2
Examples of three themes and their associated meaning units.

Theme	Meaning Units
Choosing a specific physical arrangement (strategy)	Classroom arrangement in rows to prevent disruptions and unsafe social situations
	Classroom arrangement in groups to stimulate collaboration
	Classroom arrangement in groups because of the physical lay-out of the room
	Classroom arrangement in groups and rows, because some students prefer to sit in rows
Student's social-emotional functioning (goal)	Socially weaker students are seated in a central place in the room in order for classmates to see them in a more positive light
	Distance to teacher will be increased for insecure student to stimulate independence
	Victimized students are seated next to classmates they feel safe with, to stimulate their wellbeing
	Isolated students are seated together so they can find recognition
	Students with a less favorable social standing are seated with supportive classmates to stimulate contact
Seating students in specific areas or at specific distance to the teacher (strategy)	Distance to teacher is decreased, to promote social contact between teacher and student
	Cognitively weaker students are seated in front more often in order for the teacher to quickly provide more guidance if needed
	Cognitively stronger students are seated in the back to stimulate independence
	Victimized students are seated close to the teacher to promote feelings of safety
	Socially weaker students are seated in a central place in the room in order for classmates to see them in a more positive light

arrangement in such a way that it would promote students' social-emotional wellbeing in general, stimulate the social inclusion of individuals, and enhance socially competent behavior. Teachers reported they wanted to have a positive relationship with all students in the classroom: *"I realized I really have a good relationship with all students, also with the most disruptive ones."* Teachers also hoped to promote the social inclusion of students who are not a part of the group or who are isolated from the group: *"I want these two students to connect with others socially (…). They are both a bit … not victimized, not at all, but they are lonely students looking for connections. So I hoped that they would find each other."* In addition, teachers mentioned supporting socially competent behavior, both more indirectly (i.e., diminish unwanted behavior) and directly (i.e., promoting desired behavior). For example, teachers indicated that for some students they had the goal to not to join in on others' negative behavior: *"Here I seated these [disruptive] students in the same group on purpose (…) and I did that so I can see what happens, and I can say 'remember what we agreed upon.'"* On the other hand, teachers stated that they wanted students to pick up on classmates' positive behavior and show positive leadership: "*I often think it is important that students with a positive position in the group are visible (…) That way (…) when you see socially positive behavior, you can acknowledge that."* Thus, another way teachers used seating arrangements was to enhance individual students' social-emotional wellbeing and functioning.

3.1.3. Theme 3: Group functioning (goal)

At the group level, teachers indicated that they wanted to promote group cohesion, prevent disruption, and preserve calmness in their classroom. Whereas teachers always took group functioning into account, they varied in the emphasis they placed on group functioning in making their seating arrangements, based on the needs of the group at that moment. One goal was to stimulate students to form a group with each other: *"We chose to arrange the desks in groups, because we thought this was very important just for the ambiance in the classroom and the collaboration, and just the whole 'being in the group', so to say."* Another topic that teachers reported within the goal of promoting group functioning was preventing disruptions during class: *"Of course you take into account their line of eyesight. Like, if this student sits there, they can establish eye contact with that student sitting there, and you just know that will cause disruptions"* Lastly, teachers talked about preserving calmness in the group. *"I am in control of the seating arrangement and I know which students can communicate with each other (…). That provides calmness for the group. Because those [disruptive] students will not try it anymore, because they, they will not succeed."* Thus, the third way teachers reported to use seating arrangements was to promote group functioning.

3.2. Teachers' strategies (how)

3.2.1. Theme 4: Choosing a specific physical arrangement (strategy)

Teachers usually started by choosing what type of physical arrangement they wanted. Some teachers used rows: *"They are seated in rows here, which is a school-wide agreement. (…) The reason for that is that everyone is facing the blackboard and nobody has to look at it sideways, so that is better for students' concentration."* Other teachers used groups: *"We started the year in groups, because we think that is very important, just for the atmosphere and to promote collaboration."* There were also teachers who used a combination of rows and groups. It seemed that rows were primarily chosen to stimulate academic functioning, whereas groups were chosen to facilitate collaboration and interaction. When reporting about their physical arrangement, teachers emphasized that they take into account what they think is best for the needs of the whole group at that moment.

3.2.2. Theme 5: Mixing gender (strategy)

Teachers stated that one of the main strategies they employ when creating a seating arrangement is mixing boys and girls to avoid gender segregation and support mixed gender interactions: "*I placed the boys and the girls just next to each other (…) because of the fact that they have to be able to collaborate with anyone. When they get to choose themselves, they often choose that boys sit next to boys and girls next to girls."*

3.2.3. Theme 6: Separating students (strategy)

Another strategy expressed by teachers was separating specific individuals. They indicated that they start with seating disruptive students before seating others: *"This year there are a lot of disruptive students in the group. They can all reinforce each other, their behavior, so they are, they are separated and then I fill the rest of the seating arrangement. Or at least separated as much as possible."* In addition, they reported to separate positive leaders: *"I would not seat two leaders together. Either they may become less of a leader, because they become more awaiting, or they may want to show each other who is the real leader, which may cause classroom disruptions*." Furthermore, teachers indicated to separate bullies and victims. *"I mostly*

look at what it [the seating] does to the victim, and if they are completely unhappy in class and consequently are not able to learn, then I would not seat them next to or near the bully." Also, teachers indicated that they separated students based on their cognitive abilities. They separated both students with the same cognitive level: *"I never place only weaker students in a group, because I think, no, they need to be able to strengthen each other and lift each other up"* and students with different cognitive levels: *"I have a few students who are very strong cognitively (…) You should not seat them next to a very weak student, because they will only be annoyed."* In general, teachers mentioned they look at which types of students are in their group and which of these would not work well together.

3.2.4. Theme 7: Pairing students (strategy)

As opposed to separating students, teachers also indicated they purposely paired individual students with a specific classmate or a specific group of classmates, sometimes for similar reasons that other teachers mentioned for separating students. For instance, there were teachers who purposely paired disruptive students: "*I felt like it may be good to seat them together, so they do not distract each other throughout the whole classroom, but they can have direct contact and that may cause less inconvenience for other students."* In addition, teachers seated friends together: *"These are two friends. They really wanted to sit together, all the way in the back, X and Y. They requested to be seated together a lot of times. I know that in this group, I can allow such requests."* whereas others paired students with a classmate who is not their friend: *"You see, yes you see them grow, because they interact with different classmates each time, with different types of children."* There are also teachers who paired victims with their bully: "*I actually always seated them together. With others there as well, though, so they were for example a group of four and then there were two neutral students present. (…) So they see a different side … of each other (…). And I think that they see this best when they are seated close to each other, because then they are obligated to be in contact."* Other teachers chose to pair victims with classmates who could defend or comfort them: *"I would seat the victim next to students who can protect them, who do not join in on the bully's behavior"* This idea of pairing students to classmates from whom they could benefit, also seemed to be underlying teachers' decisions to pair positive leaders with students who were isolated or had a less favorable social standing the group: *"I try to seat them [positive leaders] next to someone who can benefit from that, who can learn from them. Someone who is socially awkward, I would like them next to a socially competent student."* Lastly, teachers also paired students based on their cognitive abilities. They either paired students of the same abilities: *"I have two cognitively weaker students seated together. Also to show them, 'you are not the only one' so to say"* or students of different cognitive abilities: *"I pair students of unequal cognitive abilities, so they can learn from each other."*

3.2.5. Theme 8: Seating students in specific classroom areas or at a specific distance to the teacher (strategy)

Teachers also considered the specific location within the classroom when seating children. Location was taken into account for students whose behavior is disruptive or distracting to others. Teachers either seated them in the front and close to themselves: *"Students who disrupt class a lot, I actually always want them as close as possible to me, because then you can be in direct contact with them"*, more to the back: *"That affects me as a teacher as well, it distracts me, so if I would seat them in front (…) then you spend all your time on that"*, or to the side: *"I have a very popular student, a very nice student, but they are also a bit of a clown. So if I seat them in the middle, especially in this group, chances are they are going to distract others."* Furthermore, location was considered when seating victimized or socially isolated students. They were either seated close to the teacher: *"So you can … increase their feeling of safety, I think"* or in the center of the classroom: "*I try to put them in a positive light. They have a central spot in that row over there. (…) They are seated with a lot of classmates around them and I try to involve them in everything. (…) I hope others will also see their positive side. That they think 'oh wait, they are not so bad as I thought."*

Next, teachers seated students close to themselves when they wanted to provide some extra attention on a personal level: *"I have a student with a difficult home situation (…) Then I think, 'I like having you close, so I can put my hand on your table or shoulder', (…) you do not need to cross the whole room"*, or build a stronger relationship: "*I have students in the front with whom I know it is hard to build a connection. I can easily say something privately."* Lastly, students' cognitive abilities were taken into account when seating students in specific areas or at a specific distance to the teacher: *"Usually (…) when they are cognitively stronger, they are seated more to the back, and when they are weaker, more to the front."* Teachers also seated students in the back when the students needed an overview of the classroom in order to get to work: *"They need to see everything and everyone, and I have been doing this for years, I seat these students in the back. With that, I give them that overview and calmness they need."* However, there were also teachers who objected to seating students in specific locations based on cognitive abilities, because they did not want to focus attention on cognitively weaker students or overlook cognitively stronger students: "*I absolutely do not want all students with cognitive problems to be seated in a specific area of the classroom (…). Back in the days you had that, that was the smart row and that was the less smart row so to say, but no, I seat them throughout the classroom."*

3.2.6. Theme 9: Weighing and prioritizing (strategy)

Teachers indicated they weighed and prioritized all of the above mentioned goals and strategies when assigning students to seats: *"I think every time you create a seating arrangement, you bear all these aspects in mind, and try to do well for everyone and the group all together. It is not just one aspect, you are really taking five, six different aspects into account."* On the individual level, it stood out that teachers indicated that for some students, the teacher would want to apply specific strategies, but could not do so because of the student's behavior or social-emotional needs. In almost all cases, the overridden strategies pertained to academic functioning. As these students' behavior or social-emotional needs were so influential, it had to be the first priority, both for the students' own good: *"I have a student who is quite gifted. I want them in front with me, because they are so young and small, socially and emotionally. If I seat them in the back … they will drown in the classroom"*, or that of their classmates: "*Yes, if you have to put it very clear-cut, you put cognitively stronger students more often in the back (…) However, it is dependent on the social wellbeing of the student"*. Similarly, students' personality outweighed strategies related to academics: "*I also have one student who is very strong cognitively, but not socially (…) and they become very restless when they have to wait for someone or have to explain things to someone else. This student does not have that insight, that drive, they just want to do their own work (…) so I match them with a stronger classmate, so they can continue their work and do their own thing. So it is very dependent on how the student is as a person"*. Finally, teachers also mentioned that their priorities shift over time, based on how the group develops. *"In the beginning of the school year (…) you specifically focus on that [cognitive levels] (…), but I notice that over the course of the school year, I seat students more and more based on social considerations, actually."* Teachers also reported that thinking consciously about which aspects they consider most important at that particular moment is an important strategy when creating a seating arrangement.

3.2.7. Theme 10: Taking into account contextual factors (strategy)

Teachers took into account numerous contextual factors. First, some teachers had to deal with the fact that they had students from multiple different grades in one classroom. They either seated them apart: *"They are one group, but for practical reasons they are seated separately."* or tried to mix them: *"At some point, based on an article, we said 'let us mix up the group', because we noticed the group needed more cohesion and they were really two separate groups in one room. When we did that, they became one group."* Second, teachers were bound to the physical properties of the room: "*It is a difficult room (…) There is a staircase there. The room is wide rather than long, so you have to look carefully at walking routes (…) There are two doors, that is also quite a thing, students [who sit close to them] have to be able to deal with that."* The presence of students with special needs was also a frequently mentioned factor: *"The first thing I do, actually, is seating the special needs students."* Finally, they took students' preferences into account: *"I always have students make a top three (…), but eventually I decide where they are seated."*

3.2.8. Theme 11: Changing the seating arrangement over time (strategy)

Creating a seating arrangement was not a single event, as teachers created multiple arrangements throughout the school year. Most teachers chose to change their seating arrangement after every holiday break, although some specifically chose to change a few days before the break: "*I change before every break. I try to do that on Thursday. On Friday they have a 'try-out day', so we can change things if necessary."* There were also teachers who reported to change their seating arrangement more often, such as once a month: *"Quite a lot, I actually change … not only with holidays, but at least once a month"* and one teacher even changed it every week. Besides these periodic changes, teachers also reported to make small in-between adjustments, for example when they notice there is not a positive atmosphere in the group. However, there were also teachers who indicated that they did not make small adjustments: *"I discussed that with my colleague, but then you keep on dealing with incidents, so we chose to leave it like that and try to make the best of it. In the next arrangement, we paid more attention to it."*

3.3. Integration of goals and strategies

Teachers indicated that they considered creating a seating arrangement a challenging and complex task. This was mainly because they wanted to take differences between students into account, as they have specific characteristics and needs teachers wanted to accommodate. Teachers had (one or multiple of) the goals in mind when creating their seating arrangement and used (one or multiple of) the strategies in order to reach these goals.

Regarding goals, a distinction between goals focused on *the group* versus *individual students* emerged. Concerning goals for individuals, teachers indicated they differentiated between academic and social-emotional goals. However, when teachers talked about group goals, it seemed that academic and social-emotional goals were more intertwined and addressed simultaneously. Hence, we ended up with two goals regarding individuals and one addressing the group. All teachers reported to have these three goals in mind when arranging the classroom seats. Regarding strategies, we noticed the presence of a chronological structure. All teachers seemed to adopt similar strategies in roughly the same order and almost all of them implemented all of the strategies we reported. There were, however, some individual differences (e.g., some teachers separated students before mixing boys and girls, some teachers did not use the strategy of mixing boys and girls at all, and some only used pairing or separating for specific types of students). Generally, when creating a seating arrangement, teachers chose a specific physical arrangement, placed individual students in specific seats, weighed their considerations against each other and decided which aspects were prioritized, and took into account several contextual factors. After having implemented the seating arrangement for a certain period of time, they eventually changed it and started the process again. Table 3 provides an overview of the goals each teacher had and the strategies each teacher used to reach their goals.

From our results, we identified three overall patterns. First, *across classrooms teachers seemed to have similar goals,* of which one was aimed at group functioning and two on individual students' functioning (i.e., academic vs social-emotional). Yet, *teachers used different strategies to achieve similar goals*. For instance, Fig. 1 illustrates how two teachers both wanted to maintain a positive teacher-student relationship with a disruptive student, yet used two almost opposite strategies. One teacher seated the student with disruptive behavior far away from themselves, in order to not see all disruptive behaviors and to prevent continuously addressing the student in a negative manner. In contrast, another teacher seated a student with similar disruptive behavior close to themselves, in order to have short moments of personal contact between lessons or during class and to increase the amount of positive interaction between them. Thus, this showed that teachers have similar goals, yet used different strategies to achieve them.

Yet, *teachers also used similar strategies to achieve different goals.* With regard to pairing students for instance, two teachers placed students with similar cognitive abilities next to each other. One teacher used this strategy so that the students would strengthen each other in their work (i.e., promote academic functioning). However, the other teacher used this same strategy to promote peer-to-peer recognition and feelings of similarity (i.e., promote social-emotional functioning).

Third and finally, *teachers adapt their goals and strategies to fit students' personal needs and those of the group*. With regard to individuals, for instance, one teacher wanted to promote a focus on work for two specific students. In order to do so, the teacher chose to seat student A close to themselves to provide extra guidance. However, the teacher knew that if they would apply the same strategy to student B, this student would show restless behavior and constantly turn around to see what is going on in the classroom. As such, the teacher placed student B in the back of the room so they would have a constant overview of the classroom (see Fig. 2). In other words, the teacher deviated from the general strategy as the behavioral consequences outweighed the potential academic benefits. When teachers had goals for the group as a whole, teachers picked their goals and strategies based on what they felt the group needed at that moment. Some teachers had to aim for group functioning more than others, because the group dynamic was less optimal, whereas other teachers wanted to focus on academic functioning as the final test of elementary school was approaching and their group was not yet well-prepared. The same applies to strategies: Teachers for example reported that only in the specific group they had, they could let friends sit together, or that they usually use a seating arrangement with small groups, but that this specific group of students performed better academically when seated in rows. Taken together, this shows that teachers do not have a fixed goal-strategy approach, but seem to believe that different strategies may be effective for different students and different groups, depending on their characteristics and needs.

4. Discussion

The current study examined teachers' goals and strategies when creating classroom seating arrangements. Although there is some

Table 3
Goals and strategies that each teacher mentioned during the interview.

	Themes		Teachers who mentioned having the goal or using the strategy												Percentage of teachers
			1	2	3	4	5	6	7	8	9	10	11	12	
Goals	Theme 1: Academic functioning		x	x	x	x	x	x	x	x	x	x	x	x	100%
	Theme 2: Social-emotional functioning		x	x	x	x	x	x	x	x	x	x	x	x	100%
	Theme 3: Group functioning		x	x	x	x	x	x	x	x	x	x	x	x	100%
Strategies	Theme 4: Choosing physical arrangement	Rows		x	x						x	x	x	x	50%
		Groups	x			x			x	x					33%
		Mix					x	x							17%
	Theme 5: Mixing gender		x	x	x	x	x		x				x		58%
	Theme 6: Separating students		x	x	x	x	x	x		x	x	x	x	x	100%
	Theme 7: Pairing students		x	x	x	x	x	x	x		x	x	x	x	92%
	Theme 8: Seating students in specific areas or at specific distance to teacher			x	x	x	x	x	x		x	x	x	x	83%
	Theme 9: Weighing and prioritizing		x	x	x	x	x	x	x	x	x	x	x	x	100%
	Theme 10: Taking into account contextual factors						x	x	x	x	x			x	50%
	Theme 11: Changing arrangement	Weekly								x					8%
		Monthly												x	8%
		Around break	x	x	x	x	x	x	x		x	x	x		83%

Note: The two teachers that were interviewed together are also reported as one respondent (number 3) here, as they created the seating arrangement in collaboration.

research available on teachers' considerations and the effects of specific seating strategies for student outcomes, it remained unclear *what* teachers actually aim for when creating seating arrangements and *how* they try to achieve this.

4.1. Teachers' goals and strategies for seating arrangements

We found differences in teachers' goals (*what*), which strategies they used to achieve these goals (*how)* as well as in the combination of the two. In terms of *what* teachers do, we found that teachers had goals on both the group and individual level and they distinguish between academic and social-emotional goals on the individual level. Teachers had quite similar goals, but they differed in *how* they tried to achieve them. In other words, teachers sometimes had the same goal, but used different if not opposite strategies (e.g., seat disruptive student close vs. further away to maintain positive student-teacher relationship). The opposite was also true: Teachers used the same strategy in order to achieve different goals (e.g., pairing cognitively weaker students, either to promote wellbeing or to promote collaboration). Lastly, we found that teachers adapted their goals and strategies to individual students' characteristics and needs as well as to those of the group as a whole.

These findings show that teachers actively used the classroom seating arrangement both for their classroom management and specifically for managing the social dynamics of the group. Moreover, our findings show the importance of disentangling the *what* from the *how*, when trying to understand teachers' classroom management and arrangement of seats in particular. For instance, previous studies found that 'separating students who show behavioral problems or disruptive behavior' and 'promoting new friendships' were two of the most important considerations to teachers (Gest & Rodkin, 2011; Kim et al., 2020). Yet, the first regards a *strategy* whereas the second regards a *goal.* By disentangling goals from strategies we were able to shed some light on potential similarities and differences between teachers and on differences within teachers regarding the seating of specific students. These goals and strategies reflect teachers' implementation of network-related teaching (Farmer et al., 2006; Gest & Rodkin, 2011) through their seating arrangement, as the choices they make aim to directly impact peer relationships and affect students' learning and development as well.

Our finding that teachers adapted their goals and strategies to the characteristics and needs of the group and individual students are in line with teacher practices such as differentiation (e.g., Tomlinson & Imbeau, 2010) and setting expectations (e.g., Rubie-Davies, 2014). We found that teachers assigned students to seats based on both their academic and social development and that teachers expressed expectations about students' learning process, but also about students' social-emotional growth through their seating arrangements. Moreover, sometimes when teachers had the same goal for two students (e.g., promote focus on work), they chose different strategies to reach that goal (e.g., seat in front vs. seat in back), because the student's individual characteristics (e.g., not able to work with distractions in front of them vs. wanting to see what is going on in the room) required a different approach. This suggests that differentiation and expectations are not limited to teachers' role as an educator, but that they also play a pivotal part in their role as a pedagogue. Indeed, the importance of "a student-centered philosophy or ethic of teaching" (Tomlinson & Imbeau, 2010, p. 13) and "the creation of a positive classroom environment" (Rubie-Davies, 2014, p. 89) is acknowledged in the literature. This shows that research on these practices endorses the idea that students' social-emotional needs and wellbeing should also be considered when trying to promote optimal

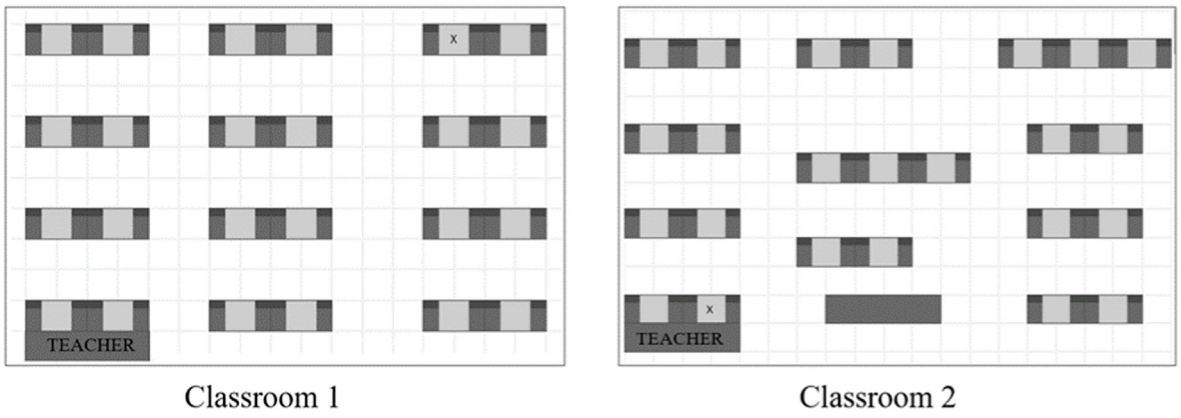

Fig. 1. Illustration of Two Teachers using Different Strategies for the Same Goal.
Note: In order to reach the goal of maintaining a positive teacher-student relationship, Teacher 1 seats the student with disruptive behavior far away (as indicated with X), whereas Teacher 2 seats the student with disruptive behavior close to themselves (as indicated with X).

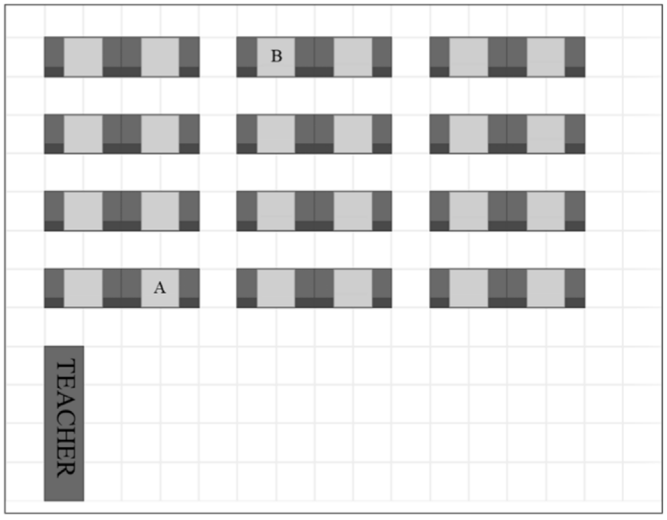

Fig. 2. Illustration of a Teacher Applying Different Strategies when Seating Two Students to Reach the Same Goal.
Note: In order to reach the goal of promoting a focus on work, the teacher seated Student A close to themselves to provide extra guidance, but student B in the back, because this student needed to have an overview of the room to be able to get to work.

learning and recognizes the teacher's role as both an educator and a pedagogue (Biesta & Miedema, 2002).

Hence, in their seating arrangements, teachers differentiated academically and pedagogically and they expressed academic and pedagogical expectations. For instance, they seated a student in the front of the classroom, because they wanted to provide the student with more instruction (i.e., academic differentiation), because they wanted to guide the student's disruptive and antisocial behaviors (i.e., *pedagogical* differentiation), because they expected the student to not do well elsewhere in the room because of lower levels of task independency (academic expectations), or because they expected the student to benefit from more contact with the teacher due to shy and withdrawn behaviors (*pedagogical* expectations). Thus, by practicing both academic and pedagogical differentiation and expressing academic and pedagogical expectations through their seating goals and strategies, teachers can create alignment between their classroom seating arrangement, their teaching, and their teacher behavior. For example, if a teacher wants a student to become more social-emotionally independent and adapts their teacher behavior accordingly, but seats the student in front of themselves, the goal may be less easily achieved than when the student would be seated further away from the teacher and next to a helpful classmate. Eventually, this may facilitate the aforementioned student-centered teaching and positive classroom environment and ultimately stimulate students' social-emotional development and learning.

4.2. Limitations and future directions

The findings of this study add to the literature on classroom seating arrangements and provide new insights in teachers' goals and strategies when creating a seating arrangement. However, some limitations should be taken into account when interpreting the results and several recommendations for future research can be made.

First, our analytic approach had a clear top-down element and this may have affected the results. We went through all the steps of the analysis with the research question about teachers' goals and strategies in mind and specifically looked for *what* teachers aim for and *how* they try to achieve it. Because of this procedure we did not include information that was not directly related to teachers' goals or strategies (e.g., their beliefs about processes such as bullying and victimization), but may have been interesting for understanding classroom seating arrangements or classroom management more generally. In addition, reproducibility and replicability could be considered an important limitation to our study, even though these are inherently more limited in qualitative research than in quantitative studies. Therefore, we tried to be as transparent as possible and share all of our documentation, so researchers can use this information in potential future replication studies.

Second, we did not examine to what extent teachers' responses to the interview questions matched their actual classroom seating arrangements. As our findings show that teachers sometimes prioritize certain goals and strategies, it is likely that they cannot always put all goals and strategies to practice. Nevertheless, the extent to which they can implement the goals and strategies they mention may have consequences for classroom social dynamics. For example, if teachers want to separate disruptive students in order to promote calmness in the classroom, but eventually cannot implement this strategy in the seating arrangement, this may have consequences for both the individual student (i.e., less focus or lower wellbeing) and the dynamics of the classroom as a whole (i.e., less optimal social climate or decreased work ethos because of distraction). Hence, future research could investigate to what

extent teachers' goals and strategies and their daily practices match, what could be the reasons for mismatches, and what the consequences are for both individual and group outcomes.

Third, we do not know to what extent teachers' goals and strategies are effective in daily practice. Research on teacher attunement has shown that teachers are not always able to accurately identify social patterns in the classroom, such as bullying and victimization (e.g., Ahn, Rodkin, & Gest, 2013; Norwalk, Hamm, Farmer, & Barnes, 2016), aggression (e.g., Dawes et al., 2017), or friendship (e.g., Gest, Madill, Zadzora, Miller, & Rodkin, 2014). This may have consequences for teachers' implementation of seating goals and strategies, such that teachers may apply a strategy to different students than they intended. For example, if a teacher wants to use the strategy of separating bullies and victims, but incorrectly identifies a victim's bully, the victim does not benefit. Moreover, in prior research on the effectiveness of strategies (e.g., van den Berg, Segers, & Cillessen, 2012), the strategies were introduced by researchers and applied to all students who matched certain criteria. However, as our findings show, teachers apply a wide range of different strategies to different students (i.e., they may not use the same strategy for all students showing similar behavior). Thus, future research could examine to what extent teachers correctly identify target students for their goals and strategies and what the effects of these are when they are teacher-chosen rather than researcher-imposed and not applied to all but to specific students in the classroom.

Similarly, future research could examine the effects of teachers' goals and strategies on students' experiences, as these could potentially have negative effects. Teachers may misjudge individual students' needs which could lead to harmful seating decisions. For example, a teacher may think that a shy, withdrawn student could benefit from sitting next to a popular, outgoing classmate, whereas this student feels very uncomfortable and out of place. In addition, students may perceive teachers' seating decisions in a different way than they were intended. For example, some teachers in this study reported that they seated disruptive students farther away in order to maintain a positive teacher-student relationship, but we do not know how this affects students' perceptions of teacher support. A student could interpret this as rejection, rather than an investment in a positive relationship. Hence, future research could examine whether it would have an added effect when teachers verbalize the goal they have for students for seating them at a specific spot. For example, if a teacher seats students together in order for them to collaborate and help each other, and also makes that explicit to the students, this may be more effective than when the teacher would not explain why they seated the students together.

Relatedly, as we found that teachers adapt their goals and strategies based on classroom and individual characteristics, future research could also investigate whether goals and strategies differ as a function of student factors such as gender or age, classroom factors such as the presence of special needs students or the percentage of multi-cultural background students, or teacher factors such as gender, age, experience, or self-efficacy. This could shed more light on which goals and strategies work and for whom.

4.3. Practical implications

This study has implications for practice. First, it is important that teachers are aware of the possibility to use their classroom seating arrangement as an instrument to promote both academic and social-emotional functioning. Not all teachers may know that they can actively use it to manage classroom social dynamics and to achieve their goals for individual students or the group as such. Second, once teachers are aware of the potential of the seating arrangement, it is essential that they consciously think about which goals they want to achieve through the seating arrangement and which strategy may best fit that goal, depending on characteristics of the group or the individual student. It may be the case that teachers need to be explicitly invited to think about their seating arrangement choices, as teachers indicated after the interview that they often make decisions regarding goals and strategies implicitly and that they had not thought explicitly about these before. Teachers experienced that talking about their goals and strategies had made them more aware and some mentioned that the interview had provided them with new insights. Finally, related to these implications, teacher education could pay more attention to the impact of seating arrangements. General classroom management is often a well-addressed topic, but social dynamics are less focused on and seating arrangements are even more scarcely addressed in teacher education programs. Hence, teachers enter the profession with little awareness of such a universal and yet practical aspect of their teaching and have to find out for themselves what works. Knowledge and training on this topic could thus be helpful.

5. Conclusion

This study identified teachers' goals and strategies when creating a classroom seating arrangement. We distinguished goals from strategies to understand *what* teachers aim for when creating a seating arrangement and *how* they try to achieve this. We found differences in the goals that teachers have (*what*), the strategies they use (*how*) as well as differences in the way they combine the two. Teachers can have similar goals, but use different strategies to reach these goals. They can also have different goals, but use similar strategies. Moreover, teachers adapt the goals as well as which strategy they pick for a certain goal based on students' individual needs. Our findings contribute to a more in-depth and nuanced understanding of the heterogeneity and breadth of teachers' considerations for classroom seating arrangements, which may impact children's development and learning. They also add to the growing body of knowledge of teachers' practices in managing the social dynamics of the classroom, which has been described as 'the invisible hand of the teacher' (Farmer, Lines, & Hamm, 2011). Our findings on classroom seating specifically are also informative for the broader literature on differentiation, teacher expectations, and general classroom management.

Data availability

Data are available through the Open Science Framework (https://osf.io/5bt67/).

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