One-on-one instruction in a fully inclusive preschool: A single case research design study

Johanna Lundqvist[1]

[1] Mälardalen University, Sweden

HOW TO CITE:
RLundqvist, J. (2023). One-on-one instruction in a fully inclusive preschool: A single case research design study. *International Journal of Special Education, 38*(2), 153-164.

CORRESPONDING AUTHOR:
Johanna Lundqvist;
johanna.lundqvist@mdu.se

DOI:
https://doi.org/10.52291/ijse.2023.38.30

ABSTRACT:

This study is about five children with disabilities in a fully inclusive preschool and their involvement in learning throughout teacher-initiated instruction sessions. Involvement matters for the children and refers to attendance, concentration on tasks and the child's interest in preschool activities. Its first aim is to investigate the children's involvement in learning during group instruction sessions, such as circle times. Since their involvement is not observed to be high, the second aim of the study is to investigate and discuss (a) whether the children's involvement in learning changes when instruction sessions are provided one-on-one and (b) if one-on-one instruction and full inclusion work together. One-on-one instruction refers to a teacher instructing a child and is often for children with difficulties in learning. The design used was a single case research study. The teachers also shared their views, and these were collected. The results show positive change across participants. For all children, the percentage of exceeding the median was 100%, which is indicative of very effective intervention. The intervention provided new insights relating to children's knowledge and one-on-one instruction in a fully inclusive preschool. The study can form a basis for important preschool discussions.

Keywords: early childhood education, inclusion, instruction, learning, single case research design

INTRODUCTION

Currently, inclusion is a human right (United Nations Convention on the Rights of Persons with Disabilities; UN, 2006). According to the UN (2006), children with disabilities should have access to fully inclusive education (Article 24) in which, both children with and children without disabilities can access preschool spaces, materials, and equipment; feel a sense of belonging among peers, and develop socially and academically (Guralnick & Bruder, 2016; Hebbler & Spiker, 2009; Lundqvist, 2016; Soukakou, 2012). Currently, inclusion is also a Sustainable Development Goal to be reached by 2030 (UN, 2015, Goal 4). The goal is to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UN, 2015, SDG 4), since inclusive education plays an important role both for the development of the individual child (Guralnick & Bruder, 2016; Lundqvist, 2016; Odom et al., 2004; Sandall et al., 2019) and for the formation of a welcoming and inclusive society (UNESCO, 1994, 2020).

In Sweden, preschool inclusion is taken seriously at a macrosystem level. Children with disabilities have access to preschool and the goal is to provide inclusive, equitable and quality education for all children. The preschools are open to both children with and children without disabilities from 1 to 5 years of age and form the basis for compulsory school (Education Act, 2010; SNAE, 2018). In Sweden, a preschool can implement full inclusion, partial inclusion, integrated activities, or outdoor inclusion (Lundqvist 2016, 2021). Thus, they implement at least some form of preschool inclusion. In *full inclusion*, children with disabilities participate in all the preschool activities that take place. A fully inclusive preschool does not provide pulled-out instruction or similar for children with disabilities. In *partial inclusion*, children with disabilities participate in almost all preschool activities that take place but participate on a regular basis in a separate exercise with a preschool staff member to obtain one-on-one instruction or similar. In *integrated activities*, children with disabilities spend most of their time in their preschool unit that usually does not enrol typically developing children (i.e., children without disabilities). In this unit, the children have one-on-one instruction or similar They also meet and interact with typically developing children from other units and these activities are referred to as integrated activities. In *outdoor inclusion*, children with disabilities spend most of their time in their preschool unit that usually does not enrol typically developing children. In this unit, the children have one-on-one instruction or similar. They also have outdoor interaction and meet with typically developing children from other units in the preschool playground and these activities are referred to as (outdoor) integrated activities.

In the Swedish preschool, which is the first stage in the Swedish education system, all children, including children with disabilities, are to be provided with rich opportunities to play with peers, to learn and practise daily routines and to experience instruction sessions under the leadership of preschool teachers with a teaching degree at the level of Bachelor. These opportunities should stimulate children's interest and curiosity, hold their attention, incorporate support of various types when needed, and be designed and adapted so that all children benefit developmentally. The National Curriculum for the Preschool (SNAE, 2018) states that "play should play a central role in the education" (p. 7), that good care should be offered, and that education includes teaching. The Curriculum (SNAE, 2018) also states this: The preschool "should promote all children's development and learning" (p. 5) and that the education should: "continuously challenge children by inspiring them to make new discoveries and acquire new knowledge. The preschool should pay particular attention to children who need more guidance and stimulation or special support for various reasons. All children should receive an education that is designed and adapted so that they develop as far as possible. Children who need more support and stimulation, either temporarily or permanently, should be provided with this, structured according to their own needs and conditions" (p. 7). In the Swedish preschool, the rights stated in the UN Convention on the Rights of the Child (UN, 1998) should be reflected. Therefore, preschool activities such as play, daily routines and teacher-initiated instruction sessions should be based on what is the child's best interests. Children should also have influence, that is to say, be heard and respected.

BACKGROUND

In the following sections, I present teacher-initiated instruction sessions, involvement in preschool activities and learning, and multi-tiered systems of support. The rationale of the study is also presented.

Teacher-initiated instruction sessions

In this study, teacher-initiated instruction sessions, of various types, are understood as influential proximal pro-

cesses at a microsystem level (Bronfenbrenner & Morris, 1998). These are also understood as teaching activities that are planned by preschool teachers (SNAE, 2018). Teaching activities mean "stimulating and challenging the children" and aim at "encouraging development and learning among the children" (SNAE, 2018, p. 7).

In Sweden, as in other countries, a preschool can provide various types of structured teacher-initiated instruction sessions such as whole-group circle times, half-group book reading, and one-on-one instruction sessions. One applied concept related to whole-group circle times and half-group book reading is group activities (Kemp et al., 2013), and three concepts related to one-on-one instruction is discrete trials teaching (Ghezzi, 2007; McBride & Schwartz, 2003), one-on-one training (Lundqvist, 2016) and explicit, child-focused instructional strategies (Sandall et al., 2019). One-on-one instruction refers to a teacher instructing a child and is often for children with difficulties in learning. Discrete trial teaching is provided one-on-one and refers to instruction sessions in a concise manner having at least three recurring basic steps.

Previous studies on children with disabilities in inclusive preschools in Sweden (Lundqvist, 2016, 2021) show that teacher-initiated one-on-one instruction sessions conducted in a discrete trial manner are provided in preschools implementing partial inclusion, integrated activities or outdoor inclusion; these are not provided in preschools implementing full inclusion. In a fully inclusive preschool in Sweden, children with disabilities participate in all preschool activities taking place and therefore they do not experience teacher-initiated one-on-one instruction sessions conducted in this manner on a regular basis.

These previous studies (Lundqvist, 2016, 2021) also show that teacher-initiated one-on-one instruction or similar preschool activities conducted in a discrete trial manner most often are provided pulled-out. For example, in a partially inclusive preschool children with disabilities can experience pulled-out teacher-initiated one-on-one instruction sessions conducted in this manner on a regular basis (Lundqvist, 2021). Therefore, a preschool can be termed partially inclusive. So, in the Swedish preschool, one-on-one instruction sessions conducted in a discrete trial manner, are related to elements of exclusion. Teacher-initiated group instruction sessions (e.g., whole-group circle times and half-group book reading) are common in all Swedish preschools and related to both fully inclusive preschools and other preschools implementing a lower degree of preschool inclusion such as partial inclusion, integrated activities or outdoor inclusion with elements of exclusion (Lundqvist, 2016, 2021).

Involvement in preschool activities and learning

In this study, involvement in preschool activities and learning is understood to include attendance, concentration on a task and interest in an activity, and a close concept is understood to be engagement.

It goes without saying that a high level of involvement in preschool activities, for example in teacher-initiated instruction sessions, is more beneficial for a child's social and academic development than a low level. That is also the case with a child's engagement (Sjöman, 2018). A high level of involvement namely means intensely focused and engaged in learning, whereas a low level of involvement refers to a child who stares off into space during instruction and is not engaged in learning (Farran, 2014). Therefore, a teacher who intends to facilitate and enhance a child's social and academic development needs to pay attention to the level of involvement of a child in preschool activities such as teacher-initiated instruction sessions.

Among the studies on children with disabilities in inclusive preschools and teacher-initiated instruction, the one by Kemp et al. (2013) examined the engagement and interaction of young children with a range of disabilities in play, at mealtimes, and during teacher-initiated group activities. The study, from Australia, concluded that the children with disabilities were more actively engaged during mealtimes and in play than during teacher-initiated group activities; that they interacted more during mealtimes and in play than during teacher-initiated group activities; and that they were given better opportunities to engage as well as interact during mealtimes and in play than during teacher-initiated group activities. Lundqvist (2022), who investigated preschool inclusion at a fully inclusive preschool in Sweden, also concluded that the children with disabilities participated more actively in daily routines and play than during teacher-initiated group instruction sessions. This was the case even though they were provided with various types of quality support from their teachers during these group instructions. These two studies show that children with disabilities do not experience high levels of involvement during teacher-initiated group activities in their inclusive preschools.

Multi-tiered systems of support

Sandall et al. (2019), Sandall et al. (2001), and McBride and Schwartz (2003), who have conducted studies on preschool inclusion and children with disabilities in the United States, concluded that children with disabilities at

inclusive preschools can benefit socially and academically from multi-tiered systems of support. These include, for example:

- curriculum modifications and adaptations (i.e., changes to ongoing preschool activities and materials that facilitate and maximise active participation),
- embedded learning opportunities (i.e., teacher-initiated instruction related to children's learning objectives that are integrated into ongoing preschool activities), and
- explicit, child-focused instructional strategies such as one-on-one instruction sessions.

Explicit, child-focused instruction is defined as "specially designed instructional situations […] used when a child may need more intensive attention than what can be embedded" (Sandall et al. 2019, p. 148). These are linked to the individual child's learning objectives and are planned, initiated, and led by teachers, and they comprise at least three recurring basic steps similar to the steps in discrete trials and early intensive behavioural interventions (Ghezzi 2007; McBride & Schwartz 2003): One teacher tells one child what he or she is expected to do (step 1). The child responds. When needed, the teacher uses prompting strategies (step 2). The teacher gives positive reinforcement to the child (step 3). Sandall et al. (2019) explained why intensive specialised individual instruction is needed and beneficial for some children, for example, children with disabilities, at inclusive preschools. They wrote: "To acquire necessary skills and concepts, some children may need more opportunities every day to practice the skill [or concept], more assistance from their teachers, instruction in a setting with fewer distractions, positive reinforcements in a more consistent manner, and consistent guidance when they make errors" (p. 147). Others (Miller Young & Carta, 2019; Willis, 2009) have also arrived at the same conclusion and explained that intensive specialised individual instruction or similar is needed and beneficial for some children at inclusive preschools. These studies show that children with disabilities may need intensive specialised individual instruction conducted in a discrete trial manner in addition to teacher-initiated group activities in their inclusive preschools.

Rationale

The study in hand focuses on five children with disabilities in a fully inclusive preschool in Sweden and their involvement in learning during teacher-initiated group instruction sessions and one-on-one instruction sessions. It has a particular focus on the association between teacher-initiated one-on-one instruction sessions conducted in a discrete trial manner provided on-site in accordance with full preschool inclusion.

There are four main reasons for conducting this study: Firstly, full inclusion is a right of every child. Secondly, preschool children with disabilities may need teacher-initiated one-on-one instruction sessions conducted in a discrete trial manner in addition to group instruction sessions. Thirdly, teacher-initiated one-on-one instructions sessions conducted in a discrete trial manner and full inclusion do not seem to go together in the Swedish preschool. Fourthly, researchers and others who question the use and value of inclusion often argue that inclusion comes at the expense of needed and beneficial individualised, specially designed, intensive, and explicit instruction sessions (Zigmond et al., 2009). However, that need not be the case.

AIM

The aim of this study is to investigate the level of involvement in learning of five children with disabilities in teacher-initiated *group instruction sessions* at a fully inclusive preschool unit. Since it is not observed to be high, and involvement matters for them, the aim is also to investigate whether their involvement in learning changes when instruction is *one-on-one*. The questions posed are the following:

- What is the level of involvement in learning of the children in teacher-initiated group instruction?
- Does one-on-one instruction for the children with disabilities result in a change (i.e., an increase or decrease) in their involvement in learning?
- What are the teachers' experiences of teacher-initiated group and one-on-one instruction?

The association between one-on-one instruction and full inclusion (i.e., if one-on-one instruction and full inclusion work together), in this preschool, is discussed in the final section.

METHOD

The study is part of a research project entitled Sustainable Development of Inclusive Preschools: Interdisciplinary Co-production Research for Children with Disabilities and the Teacher Profession in the Preschool of the Future and has the ethical approval of the Swedish Ethical Review Authority (2019-03724).

In the study, a single case research design (Gast et al., 2018; Ledford et al., 2019), was utilised. An examination of the relation between a researcher-manipulated independent variable (e.g., the implementation of one-on-one instruction conducted in a discrete trial manner) and a dependent variable (e.g., children's involvement in learning) in a fully inclusive preschool unit was conducted. The design was considered useful and valuable since a change across participants in the same inclusive preschool unit was investigated.

The study was conducted during the autumn of 2020. Five children with disabilities (n=4 boys; n=1 girl) attending a preschool in Sweden participated. They met the inclusion criteria, which were as follows: (a) they attended a fully inclusive preschool; (b) their chronological age range was 53 to 68 months (m=59 months); (c) they could see and hear; (d) they had disabilities (i.e., attachment difficulties/disorder which, in this study, means behavioural problems and problems in emotional attachments to others); (e) they attended daily teacher-initiated group instruction sessions in their preschool; and (f) they had no experience of one-on-one instruction conducted in a discrete trial manner. In the preschool, the children had nine typically developing peers. This information was obtained from the preschool staff members (n=3 teachers; n=1 childminder [barnskötare, in Swedish]) working in the preschool. They knew the children well; they knew about their medical, psychological, and special educational assessments. No child dropped out and no child who met the inclusion criteria in the preschool unit was excluded.

In the study, children who had similar functional characteristics and similar preschool contexts to the participating children were considered to constitute the population for which the results of the study are representative.

Before the study commenced, information was provided to and consent was obtained from the preschool's head teacher, the teachers, and the children's parents.

A-B design

In accordance with an A-B design, the baseline was measured and the intervention – one-on-one instruction conducted in a discrete trial manner on-site – was used with the participants simultaneously. During the baseline, data were collected on children's involvement in learning in teacher-initiated group instruction at their fully inclusive preschool unit. Baseline data were collected for approximately 75 hours (two whole weeks), and every day at preschool, there were two such group instruction sessions: one in the morning, in the form of a circa 10 minutes whole-group circle time including songs and instruction sessions (e.g., about the calendar, weather, children's names, animals, and colours or themes) and one after or before mealtime containing a circa 10 minutes half-group book reading, film time, song time, or group play. A whole group refers to 14 children and a half group to 7 children. During week two of data collection, and when the baseline data from week one had reached steady stages and been confirmed by teachers, the five children received one-on-one instruction sessions conducted in a discrete trial manner and on-site. The group instruction sessions continued and so did the baseline measures during these.

Several efforts, suggested by Ledford et al. (2019) and Gast et al. (2018), were made to increase the thoroughness of the study. The involvement in learning was measured repeatedly in each condition with at least three sessions and was collected in natural preschool environments that did not change during the period of the study. A rapid design was used to prevent the threat of maturation. Several indications of change became apparent. Further, reports from teachers were noted during baseline and intervention conditions. These reports were used for the purpose of data triangulation.

Dependent measures of children's involvement in learning

The children's involvement in learning during teacher-initiated instruction was measured using the Involvement in Learning Scale developed by Farran (2014). The measures were conducted by the author and documented using pen and paper. According to this scale, the level of involvement in the learning of children ranges between low, medium-low, medium, medium-high, and high. In this study, these five levels were transformed into a 5-point Likert Scale in which a rating of 5 denotes high involvement and a rating of 1 denotes low involvement. High involvement indicates that the "child is intensely focused on the activity and displays genuine involvement in learning", that "it would be hard to distract him or her", and that the "child appears to be concentrating and seriously pursuing the activity" (Farran, 2014, p. 28). It also refers to "intense concentration on task" and a child who "seems oblivious to [the] noise and the behavio[u]rs of the other children" (Farran, 2014, p. 30). Medium involvement indicates that the "child pays ordinary attention to the activity"; that the child "seems interested […] but could also easily give up that activity for another"; and that the child is "on task", "participating", and "may briefly look around but immediately comes back to task"

(Farran, 2014, p. 28-30). Low involvement indicates that the child is "clearly not interested in the activity. Low is reserved for a child who is truly off task, not attending at all, or disruptive. [The] child may sit with materials, but stare[s] off into space or thoughtlessly look[s] at what other children are doing" (Farran, 2014, p. 28). It also refers to "brief indication of attention" and "sitting quietly" (Farran, 2014, p. 30). Medium-high is between medium and high. Medium-low refers to between medium and low. Permission to use the scale was obtained (D. C. Farran, personal communication, May 16, 2018).

In a study that formed part of the same project that includes this study, the author and a research assistant simultaneously, for 33% of the sessions, measured children's involvement in learning using the Involvement in Learning Scale. Their measurements of involvement in learning were very similar in all but one case, and the difference there was minor: it was between a medium-high and a high measure. First, the number of ratings in agreement was calculated. Second, the total number of ratings was calculated. Third, the number in agreement was divided by the total number of ratings. The answer was converted into a percentage, and the agreement between ratings was found to be acceptable (IOA=80%).

Participating staff members and the intervention

Teachers 1, 2, and 3, who held a teaching degree at the level of Bachelor, had worked in the fully inclusive preschool unit for five years. The childminder had also worked in the unit for five years.

All staff members took part in the whole-group instruction sessions. Teacher 3 and the childminder led the whole-group instruction sessions, while teachers 1 and 2 supported the involvement in learning of the children with disabilities by, for example, sitting next to them, placing their hand on the child's back, and prompting and supporting communication during circle time.

The half-group instruction sessions were led by teachers 1, 2, or 3 or the childminder, and they all took turns supporting the involvement in learning of the children with disabilities by, for example, sitting next to them, holding the child's hand, prompting, modelling, and supporting communication during film times, group play, or book readings.

The implementers were teachers 1 and 2. They were introduced to one-on-one instruction sessions conducted in a discrete trial manner on-site by the author and were informed that the intention of these was to change (i.e., increase) the involvement in learning of children with disabilities as well as their opportunities to acquire skills and concepts. They were also asked to continue with their group instruction sessions. During these teacher-initiated one-on-one instruction sessions, which were jointly planned by the author and the teachers, and which were provided on-site within the preschool unit (not segregated), each child experienced three recurring steps for circa 5 minutes: the teacher told the child what he or she was expected to do (step 1). The child responded. When needed, the teacher prompted (step 2). The teacher gave positive reinforcement to the child. Both prompted and non-prompted responses were reinforced in a positive manner (step 3). The children's peers and the teachers' colleagues could see and hear the one-on-one instruction.

The transition to the instruction sessions was facilitated using a signal that it was time for work (i.e., two fists, tap one on the other), a verbal prompt (i.e., the teacher says or asks: "Now we are going to work", "Shall we work?"), a visual prompt (i.e., the teacher shows the child work material or the box in which work material is kept), and a gentle physical prompt (i.e., the teacher leads the child to the workplace [a table] and, when needed, holds hands with the child).

Teacher 1 gave instruction to Child 1, 3, and 4, and Teacher 2 to Child 2 and 5. The intervention was documented using a pen and notebook. Implementation fidelity was checked by means of direct observation on which notes were made in a notebook. All planned trials were held in a discrete trial three-step manner. During intervention sessions, the teachers asked the author for some advice and confirmation. The author responded with a few words and, for example, a smile or nod. Before the intervention started, the implementers had not given recurring three-step one-on-one instruction. Thus, the author was on the side and not directly involved in the implementation of the instruction sessions.

Statistical analyses

Ranges, means (Ashbaugh & Peck, 1998), Percentage of Exceeding the Median (PEM; Lenz, 2012; Ma, 2006), and apparent effect sizes (Lenz, 2012) were calculated and then shown graphically. PEM denotes the "percentage of data points exceeding the median of baseline phase" (Ma, 2006, p. 598). A PEM> 90% and an effect size of 0.9 and greater suggest support is very effective. A PEM between 70 and 89% and an effect size of 0.7 to .89 suggest that support had moderate effectiveness. A PEM between 50 and 69% and an effect size of 0.5 to .69 suggest that the support has questionable effectiveness. Less than 50% and an effect size below 0.5 suggest that support is ineffective.

RESULTS

The results are presented in fig. 1 (Child 1 to 5) and in the following sections. Table 1 presents a brief overview of the tasks (step 1), responses (step 2), and positive reinforcements (step 3) for the children. Table 2 presents an overview of the measures.

Child 1 has low, medium-low, or medium involvement in learning in group instruction. When one-on-one instruction is provided, the child's involvement in learning increases to a high involvement. The change is immediate and consistent with all intervention sessions well above the child's baseline sessions. During the intervention, the group instruction sessions continue (bottom line for Child 1) and the involvement in learning for Child 1 is low or medium-low.

Child 2 also has low, medium-low, or medium involvement in learning in group instruction sessions. When one-on-one instruction is provided, the child's involvement in learning increases. The change in involvement in learning is immediate with all intervention sessions above the baseline sessions. During the intervention, the group instruction sessions continue (bottom line for Child 2) and the involvement in learning for Child 2 is low, medium-low, or medium.

For Child 3, the involvement in learning in group instruction sessions is low, medium-low, or medium.. When one-on-one instruction is provided, the child's involvement in learning increases to a high involvement. The change is immediate and consistent with all intervention sessions well above the baseline sessions. During the intervention, the group instruction sessions continue (bottom line for Child 3), and the involvement in learning for Child 3 is low, medium-low, or medium.

The baseline sessions for Child 4 range from medium-low to medium and medium-high. The involvement in learning of Child 4 increases with the implementation of one-on-one instruction sessions and remains consistent after the first intervention session . During the intervention, the group instruction sessions continue (bottom line for Child 4) and the involvement in learning of Child 4 is medium-low, medium, or medium-high.

For Child 5, the baseline sessions range from medium to medium-high and are more stable than the others.

Table 1. **The recurring steps of one-on-one instruction and examples of contents, by step and child**

Child	Step 1	Step 2		Step 3
	Examples of tasks	Examples of responses	Examples of prompts	Examples of positive reinforcement
1	To match toys and colours, and to learn the concepts of red, blue, and green	To place red, blue, and green toys on pieces of red, blue, and green paper	Hand-over-hand assistance	Verbal praise and breakfast cereals
2	To match picture pairs and to learn concepts such as bike and tractor	To place matching pictures next to each other and say the concepts	To show how to match	Verbal praise and one cereal
3	To learn the names of peers. To locate body parts and to learn concepts such as neck, back, elbow, and eyebrow	To say the names of peers (when photos of them are shown). To point at body parts on oneself and a favourite doll and say the concepts	To show how to point. Hand-over-hand assistance	Verbal praise and a small paper heart that the child attaches to a big paper heart; the big heart is filled with hearts during the intervention
4	To learn peers' names. To see the odd one out (three toys; one is the odd one out), and to provide an explanation	To say the names of peers when photos of them are shown. To say which toy is the odd one out and to explain why it is different	To say the names	Verbal praise and watching a short favourite film clip on the tablet
5	To recognise, read, and write one's name	To point at one's own name, to place matching letters next to each other, to write each letter on a big piece of paper, to write all letters on a big piece of paper, and to read the name	To show where to write	Verbal praise and a picture of the child's favourite figure animation; the child shows these to peers; the child collects pictures during intervention sessions

Table 2. **Measures of involvement in learning**

Child	Baseline sessions	Intervention sessions	
	Involvement in learning in group instruction	Involvement in learning in one-on-one instruction	During intervention, the group instruction sessions continue (bottom lines)
	range (mean)	range (mean)	range (mean)
1	1 to 3 (m=1.5)	no range (m=5)	1 to 2 (m=1.6)
2	1 to 3 (m=1.9)	4 to 5 (m= 4.4)	1 to 3 (m=1.6)
3	1 to 3 (m=2.6)	no range (m=5)	1 to 3 (m=2.3)
4	2 to 4 (m=3.3)	4 to 5 (m= 4.8)	2 to 4 (m=3.2)
5	3 to 4 (m=3.1)	no range (m= 5)	3 to 4 (m=3.3)

Note. In this study, these five levels were transformed into a 5-point Likert Scale in which a rating of 5 denotes high involvement and a rating of 1 denotes low involvement.

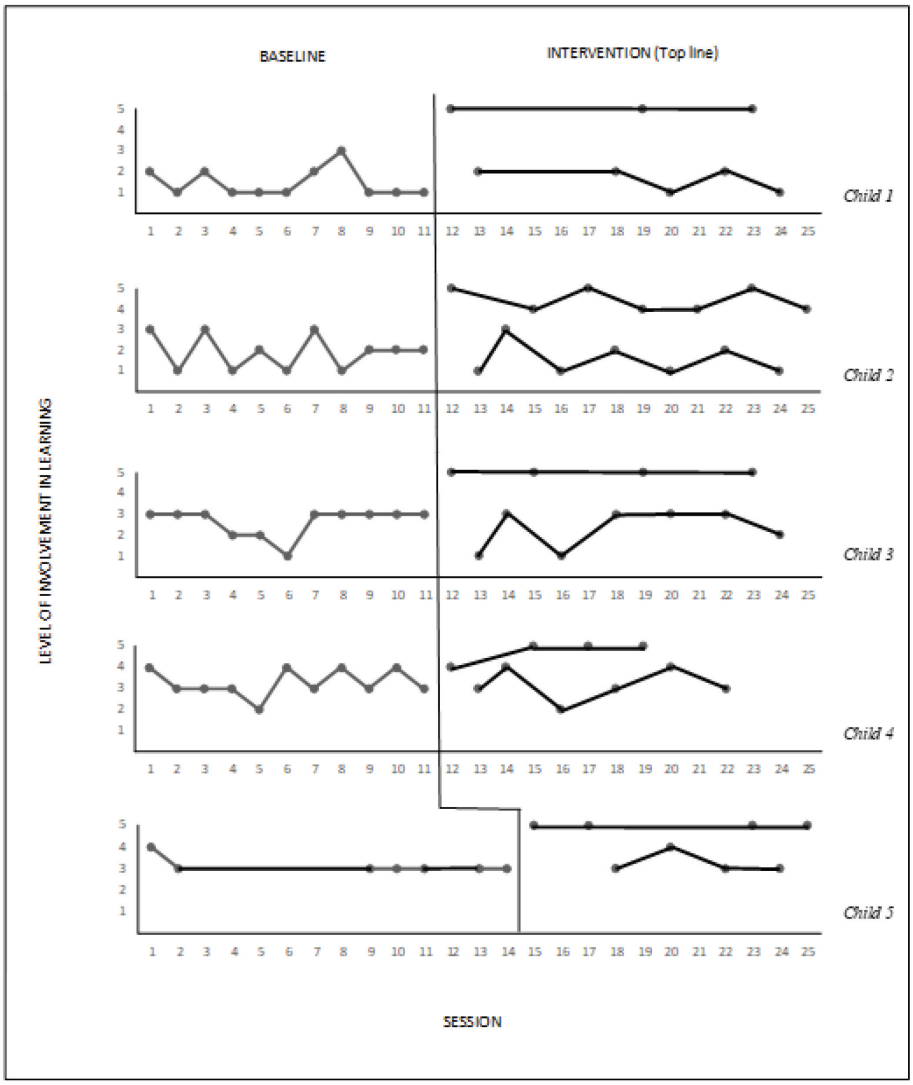

Fig. 1. The levels of involvement of Children 1 to 5 in learning in teacher-initiated instruction

Note. The baseline incorporates group instruction sessions. Each bottom line, which is found under each intervention top line, reflects the child's level of involvement in learning in group instruction sessions, which continues during intervention sessions (i.e., one-on-one instruction sessions). The number of sessions varies between the children since they have different hourly and daily attendance.

The involvement of Child 5 in learning increases immediately with the implementation of one-on-one instruction sessions and is consistent. During the intervention, the group instruction sessions continue (bottom line for Child 5) and the involvement of Child 5 in learning is medium or medium-high.

For all children (Child 1 to Child 5), the PEM is 100%, which is indicative of a very effective intervention.

These results are confirmed by the reports of the teachers. After baseline sessions, the teachers report such difficulties as getting the children's attention and ensuring they remain in the group instruction sessions. However, they also give examples of children's likes in group instruction sessions. For example, they say that the children with disabilities, like their peers, enjoy book reading, film time, song time, and group play (e.g., the Bear is sleeping; the Dog and the Bone) as well as sitting next to their peers and teachers.

After one-on-one intervention sessions, the teachers comment on the children's work. For example, they say that it is great to see the children focused and interested, and that a little effort from them can make a big difference. They also say that they gain a better insight into the children's knowledge, that the children seem positive towards one-on-one instruction, and that the one-on-one work does not encroach on other preschool activities. This is important for them since they do not want to interfere in the children's play with their peers. Further, they say that one-on-one instruction generates positive meetings and contacts that they have longed for (such as is the case with Child 1, who is often "in his own bubble") and that one-on-one instruction creates valuable opportunities for them to facilitate and enhance the children's progress towards individual objectives and curriculum content. They say: "This is a new experience […] we connected […] now, I can get what I want and be the instructor […] I have missed that […] he came out of his bubble". Something else they mention is the fact that the children's peers appear jealous when it comes to the children's one-on-one instruction sessions and positive reinforcements.

DISCUSSION

The aim of this study was to investigate the level of involvement in learning of children with disabilities in teacher-initiated group instruction sessions. Since the involvement in learning of the children participating was not observed to be high and involvement matters, the aim was also to investigate and discuss (a) whether the children's involvement in learning changes when instruction sessions are provided one-on-one and (b) if one-on-one instruction and full inclusion work together.

A desirable change

The results of the study reveal a desirable change (i.e., an increase) across participants. Their involvement in learning increased from low, medium-low, medium, and medium-high levels in the group instruction sessions to medium-high and high levels in the one-on-one instruction sessions. For all children, the PEM was 100%, which was indicative of a very effective intervention. Thus, the results indicate that one-on-one-instruction, conducted in a discrete trial manner on site, can be both useful and valuable at fully inclusive preschool units for children with disabilities, that an increase in involvement in learning of children with disabilities can be achieved immediately, and that an increase in involvement in learning of children with disabilities can be achieved by teachers who have only limited knowledge of one-on-one instruction with the support of an expert (in this case the author).

One-on-one instruction sessions provided on-site

One interesting aspect of the results is that the one-on-one instruction, which generated the change (i.e., the increase) in involvement in learning of the children participating, was delivered on-site within their fully inclusive preschool unit. Instruction was not provided in segregated forms. Thus, the results also indicate that medium-high and high involvement in the learning of children with disabilities can be reached without segregated services and sessions, and that children with disabilities can be very focused on instruction and exhibit genuine involvement in learning despite any potential surrounding noise in the unit or distractions from peers. So, in this preschool, one-on-one instruction and full inclusion worked together. The children with disabilities did not need elements of exclusion, such as segregated services and sessions, to show a medium-high or high level of involvement in learning.

Strike a balance

An important question to ask in relation to the results is whether there should be fewer group instruction sessions or, indeed, no group instruction at all in favour of more one-on-one instruction. According to this study, the answer to this question would be no. Instead, teachers should strike a balance between group instruction sessions and one-on-one instruction sessions. Too many one-on-one instruction sessions would be negative in

terms of the sense of belonging children with disabilities have with their peers and would also negatively affect the opportunities they would have to play. Children with disabilities can also enjoy elements of group instruction sessions even if they do not show a high level of involvement in learning. This was the case with the participating children. The results suggest how a balance can be achieved: during the intervention condition of one-on-one instruction sessions, group instruction sessions continued as did the children's opportunities to feel a sense of belonging among their peers and to play with them. This means that the intervention of one-on-one instruction sessions in a fully inclusive preschool unit does not result in education for preschool children with disabilities that is heavily structured by their teachers. Rather these can be understood as short elements.

It seems important to carefully consider when to implement one-on-one instruction at fully inclusive preschool units. One possible example is when a child wanders around in the unit and another is when a child tells a teacher that he or she would like to have one-on-one instruction. It is not when a child plays with peers or when there is whole- or half-group instruction. The timing of one-on-one instruction sessions will probably determine whether such instruction is useful and valuable in fully inclusive preschool units or whether it may be seen to threaten this.

New insights

For the participating teachers, the one-on-one instruction sessions were also useful and valuable. They generated new insights into the children's knowledge and one-on-one instruction in full inclusion. This is interesting and an aspect of preschool inclusion that should not be disregarded. This could also be the case for other teachers who decide to implement one-on-one instruction at fully inclusive preschool units. It seems difficult for teachers who do not implement one-on-one instruction to know, in detail, what concepts and skills children have mastered.

External validity and knowledge contribution

The results of this study confirm previous studies showing that children with disabilities do not always actively participate in teacher-initiated group instruction at inclusive preschools (Kemp et al., 2013; Lundqvist, 2022) and that children with disabilities can benefit from and be involved in one-on-one instruction sessions or similar at an inclusive preschool (McBride & Schwartz, 2003; Miller Young & Carta 2019; Sandall et al., 2019; Sandall et al., 2001; Willis, 2009). The similarities strengthen the external validity of both this study as well as previous studies.

Researchers and others who question the use and value of inclusion, in particular full inclusion since it is considered to come at the expense of individualised, specially designed, intensive, and explicit instruction sessions, may need to rethink. According to the results of this study, and others (McBride & Schwartz, 2003; Sandall et al., 2001; Sandall et al., 2019), preschool inclusion and more individualised instruction can work together. Additionally, teacher-initiated one-on-one instruction sessions conducted in a discrete trial manner and full inclusion can work together in the Swedish preschool. Children with disabilities also do not seem to need elements of exclusion, such as segregated services and sessions, to show a medium-high or high level of involvement in learning.

Limitations, more research, and a basis for interesting preschool discussions

This study has limitations. The intervention sessions of Child 1 were limited to three sessions. Only the intervention sessions of Child 5 started one day later than those of the other children; the intervention sessions of the other children started a few hours apart. The study was conducted at a single fully inclusive preschool unit and there were no replications across preschool units or staff. The study focuses on children's involvement in learning levels, and it does not reveal, for example, how many skills or concepts the children learned during the different forms of instruction. As such, more research is needed. It should be repeated that this study was focused on one-on-one instruction as a possible solution to not observed high levels of involvement in group instruction sessions, such as circle times. It was not focused on increasing the involvement of children in group instruction sessions. Further research could investigate ways to increase levels of involvement for children with disabilities in group instruction sessions in this unit and other fully inclusive preschool units.

This study exemplifies how a change (i.e., an increase) in involvement in learning of children with disabilities at a fully inclusive preschool unit can be achieved and examined by means of a single case research design study that includes triangulation reports from teachers. At a time when preschool inclusion is valued, full inclusion is a right of every child and inclusion is a Sustainable Development Goal (UN, 2015, Goal 4; UN, 2006; UNESCO, 1994; 2020), such a study as this is needed. Furthermore, its results can provide a basis for interesting preschool discussions in Sweden as well as in other countries.

ACKNOWLEDGEMENT

I would like to express my great appreciation to Patrik Arvidsson for his valuable and constructive suggestions during the planning and writing of this research study.

DECLARATIONS OF INTEREST

None

FUNDING

The study was supported by the Swedish Research Council for Health, Working Life and Welfare (Forte) [grant number 2018-01855].

REFERENCES

Ashbaugh, R. & Peck. S. M. (1998). Treatment of sleep problems in a toddler: a replication of the faded bedtime with response cost protocol. *J Appl Behav Anal, 31*(1), 127–129. https://doi.org/10.1901/jaba.1998.31-127

Bronfenbrenner, U. & Morris, P. A. (1998). The ecology of developmental processes. In: W. Damon (Series Ed.) & R. M. Lerner (Vol. Ed.), *Handbook of child psychology: Vol. 1. Theoretical models for human development* (5th ed., pp. 993-1028). New York: John Wiley.

Education Act. (2010). Retrieved from: https://www.riksdagen.se/sv/Dokument-Lagar/Lagar/Svenskforfattningssamling/Skollag-2010800_sfs-2010-800/ (access: 2023/05/22).

Farran, D. (2014). *Child observation in preschool (COP).* https://cdn.vanderbilt.edu/vu-my/wp-content/uploads/sites/412/2012/01/14084318/New-COP-Manual-051414.pdf (access: 2023/05/22).

Gast, D. L., Lloyd, P. B., & Ledford, J. R. (2018). Multiple baseline and multiple probe designs. In: J. R. Ledford & D. L Gast (Eds), *Single case research methodology: Applications in special education and behavioral Sciences* (Third Edition, pp. 239-282.). New York, NY: Routledge.

Ghezzi, P. M. (2007). Discrete trials teaching. *Psychology in the Schools*, 44(7), 667-679.

Guralnick, M. J. & Bruder, B. B. (2016). Early childhood inclusion in the United States. *Infants and Young Children, 29*(3), 166–177. https://doi.org/10.1097/IYC.0000000000000071

Hebbeler, K., & Spiker, D. (2016). Supporting young children with disabilities. *The Future of Children, 26*(2), 185-205. Retrieved from: https://files.eric.ed.gov/fulltext/EJ1118562.pdf (access: 2023/12/01).

Kemp, C., Kishida, Y., Carter, M., & Sweller, N. (2013). The effect of activity type on the engagement and interaction of young children with disabilities in inclusive childcare settings. *Early Childhood Research Quarterly, 28*(1), 134-143. https://doi.org/10.1016/j.ecresq.2012.03.003

Ledford, J. R., Barton, E. E., Severini, K. E., & Zimmerman, K. N. (2019). A primer on single-case research designs: Contemporary use and analysis. *American Journal on Intellectual and Developmental Disabilities, 124*(1), 35-56. https://doi.org/10.1352/1944-7558-124.1.35

Lenz, A. S. (2012). Calculating effect size in single-case research: A comparison of nonoverlap. *Measurement and Evaluation in Counseling and Development, 46*(1), 64-73. https://doi.org/10.1177/0748175612456401

Lundqvist, J. (2016). *Educational pathways and transitions in the early school years: special educational needs, support provisions and inclusive education.* Diss. (sammanfattning) Stockholm: Stockholm University, 2016. Stockholm.

Lundqvist, J. (2021). Ways to implement preschool inclusion: A multiple-case study. *International Journal of Education Research Open,* 2. Retrieved from: https://www.sciencedirect.com/science/article/pii/S2666374021000674 (access: 2023/05/22).

Lundqvist, J. (2022). Putting preschool inclusion into practice. *European Journal of Special Needs Education, 38*(1), 95-109. Retrieved from: https://www.tandfonline.com/doi/full/10.1080/08856257.2022.2031096 (access: 2023/05/22).

Ma, H. (2006). An alternative method for quantitative synthesis of single-subject researches: Percentage of data points exceeding the median. *Behavior Modification, 30*(5), 598-617. https://doi.org/10.1177/0145445504272974

McBride, B. J., & Schwartz, I. S. (2003). Effects of teaching early interventionists to use discrete trials during ongoing classroom activities. *Topics in Early Childhood Special Education, 23*(1), 5-17. https://doi.org/10.1177/027112140302300102

Miller Young, R., & Carta, J. (2019). *Multi-Tiered Systems of Support for Young Children: Driving Change in Early Education.* Baltimore: Brookes Publishing.

Odom, L. S., Vitztum, J., Wolery, R., Lieber, J., Sandall, S., Hanson, M. J., Beckman, P., Schwartz, I., & Horn, E. (2004). Preschool inclusion in the United States: A review of research from an ecological systems perspective. *Journal of Research in Special Educational Needs, 4*(1), 17-49. https://doi.org/10.1111/J.1471-3802.2004.00016.x

Sandall, S., Schwartz, I., & Joseph, G. (2001). A Building Blocks model for effective instruction in inclusive early childhood settings. *Young Exceptional Children, 4*(3), 3-9. https://doi.org/10.1177/109625060100400301

Sandall, R. S., Schwartz, I. S., Joseph, G. E., Gauvreau, A. N., Lieber, J. A., Horn, E., & Odom, S. (2019). *Building Blocks for teaching preschoolers with special needs.* Baltimore: Paul H. Brookes Pub. Co.

Sjöman, M. (2018). *Peer interaction in preschool: Necessary, but not sufficient: The influence of social interaction on the link between behavior difficulties and engagement among children with and without need of special support.* Diss. (sammanfattning) Jönköping: Jönköping University, 2018, Jönköping.

Soukakou E. P. (2012). Measuring quality in inclusive preschool classrooms: Development and validation of the Inclusive Classroom Profile (ICP). *Early Childhood Research Quarterly, 27*(3), 478-488. https://doi.org/10.1016/j.ecresq.2011.12.003

SNAE, (2018). *Curriculum for the Preschool, Lpfö 18.* Swedish National Agency for Education. Retrieved from: https://www.skolverket.se/publikationer?id=4049 (access: 2023/05/22).

UN, (1989). *Convention on the rights of the chid.* United Nations. Retrieved from: https://www.unicef.org/child-rights-convention/convention-text (access: 2023/05/22).

UN, (2006). *Convention on the rights of persons with disabilities.* United Nations. Retrieved from: http://www.un.org/disabilities/convention/conventionfull.shtml (access: 2023/05/22).

UN, (2015). *Transforming our world: The 2030 agenda for sustainable development.* United Nations. Retrieved from: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (access: 2023/05/22).

UNESCO, (1994). *The Salamanca statement and framework for action on special needs education.* United Nations Educational, Scientific and Cultural Organisation. Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000098427 (access: 2023/05/22).

UNESCO, (2020). *Global education monitoring report, 2020: Inclusion and education: All means all.* United Nations Educational, Scientific and Cultural Organisation. Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000373724 (access: 2023/05/22).

Willis, C. (2009). *Creating inclusive learning environments for young children: what to do on Monday morning.* London: SAGE.

Zigmond, N., Kloo, A., & Volonino, V. (2009). What, where, and how? Special education in the climate of full inclusion. *Exceptionality, 17*(4),189-204. https://doi.org/10.1080/09362830903231986