Paper IV

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Developing a participatory multidisciplinary team approach to enhance the quality of school start

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Abstract

The article presents how participatory action research was applied during a 3-year project at 27 schools in Norway in order to enhance the quality of school start. A multidisciplinary on-site team approach was developed, supported by workshops and dialogue seminars. External professionals from the supportive municipal health care system and special education/school psychology services assisted children and teachers in the first grade, focusing on early health promotion and support to children at risk for developing problems. The project was reported to improve multidisciplinary teamwork and relationships, to increase focus on developmental and health care issues, to develop professional knowledge and practical skills, to increase support to local educational staff, and to provide a better school start for all and particularly vulnerable children. Local creativity and ownership within supportive administrative structures were reported as promoting factors, while available time and available external professional resources were main constraints. The building of learning partnerships based on face-to-face interaction appeared to be a particular strength of the approach.

Introduction

Starting school is an important change in all children's life, and has been described as a key life transition involving children, their families and local communities (Dockett & Perry, 2001). Vulnerable children need extra care and focus during this period (Stormont, Espinosa, Knipping & McCathren, 2003). All children in Norway have a right by law to attend their local school and inclusion is advocated as the educational ideology (UNESCO, 2003). In order to support the local schools professionally, each municipality in Norway provides a supportive consultative system, consisting of health professionals such as physio- and occupational therapists, school-nurses and physicians, as well as professionals from the special education/school psychology services. The external professionals have traditionally focused on providing services to children with various types of needs. With the exception of services from school-nurses and physicians, general health and developmental issues have so far received limited attention. Although the various groups of professionals cooperate, this has traditionally been trough formal meetings and exchange of paperwork. Collaboration has typically been restricted to individual cases.

This article presents how external professionals from the supportive municipal system may assist teachers in improving the quality of school start through the development of a participatory multidisciplinary on-site team approach, exploring a new and different way of interaction. Findings from processes and outcomes over a 3-year period at 27 schools in two geographical regions are reported.

Why a participatory action research (PAR) approach was chosen

Participatory action research is recommended in order to obtain relevant information from community based health-promotion and intervention programs that cannot be studied within traditional experimental designs (Hart & Bond, 1995; Stringer & Genat, 2004; White, Suchowierska & Campbell, 2004). However, in our case, it was not the knowledge about theory, but practical experience from an initial pilot-project that led to the choice of a PAR approach. In 1997, the first author, a physiotherapist in the municipal system in Stavanger, Norway, suggested a new approach based on evaluation of traditional screening procedures of motor problems in 6-year olds. The suggested approach consisted of physio- and occupational therapists visiting first grade classrooms in order to observe individual children as well as providing teacher guidance focusing on movement and physical activity issues. The municipal physio- and occupational therapy services invited one school in order to implement and evaluate the approach, and we arranged an introductory meeting and presented the project from our point of view. The work that followed during the school year was evaluated as owned by the physio-and occupational service, not by the teachers, who felt observed and checked upon. However, they appreciated the fact that external professionals attended their daily environment, and did indeed get help concerning children with movement difficulties. During this process the first author attended a workshop presenting PAR principles and evaluation techniques from the Participatory Learning and Action framework (Chambers 1997, 2002; Pretty, Guijt, Thomson & Scoones, 1995). The following year we organized the implementation of the approach as a formal 2-year project, and invited four more schools to participate. This time our introductory meetings

were organized completely differently: We met the teachers without any prepared material, told them " if you want to, we will join your classroom during one week this autumn. How can we help you? What do you want us to focus on? " Each school-team then used "the matrix technique" (Pretty et al., 1995) in order to decide on important issues, and discussed and decided on activities for the forthcoming participatory week. The teams carried out the weeks, and met for evaluation, using techniques such as "evaluation wheel" (Chambers, 2002 p.45). The evaluative material from the five teams was summarized, showing that this year none of the schools felt watched or "supervised" from the outside. On the contrary, teachers welcomed the approach. The teams particularly valued the exchange of knowledge and reciprocal learning, improved relations between professionals, and the fact that children with movement problems had been identified and received early help.

Further developments

In 1999, at the end of the pilot-project, the approach was implemented as regular procedure at the five schools (elementary schools in a city-district in Stavanger, Norway). During the period from 1999 – 2001 information about the approach spread through reports, presentations, and professional networks. Locally, the physio- and occupational services implemented the process at another 3 schools in a different city district. While the focus on movement and movement problems continued, with positive outcomes reported, the participants at all schools stated that they missed the competence from other groups of professionals in the municipal consultative system. This was not surprising, as studies of children with developmental deficits have shown high rates of comorbidity between motor control problems, attention deficits, speech-language deficits, specific learning disorders, perceptual deficits, psychiatric disorders and behavioral problems (e.g. Cantell, Smyth & Ahonen, 2003; Dewey, Kaplan, Crawford & Wilson, 2002; Kadesjö & Gillberg, 1998). In order to provide early identification and sufficient care for this vulnerable group, a multidisciplinary focus was needed, and asked for by the school-teams. The teams also took care of a small group of children who suffered from severe genetic, neurological and intellectual disorders. These children had received services for years, but school transition required a need for coordinated multidisciplinary effort in order to establish inclusive structures at school start. In addition to children with developmental deficits and severe medical conditions, the teachers asked for help in order to include children with certain social and ethnic backgrounds, frequently reported to be at risk for developing behavioral, social and academic problems (Stormont et al., 2003). When the local team evaluations were summarized, we registered that both teachers and external professionals pointed to a growing demand for early intervention strategies towards an increasing range of life style induced health problems such as unhealthy diet and obesity (Batch & Baur, 2005; Lindström et al., 2003; Van Staveren & Dale, 2004).

In order to meet these challenges, the schools and physio- and occupational therapy service invited school-nurses and the local special education/ psychology service to take part in a further development of what we named *the participatory multidisciplinary team approach*. Another two schools in Stavanger joined as participants and a further development of the approach was organized as a 3-year project, led by a

multidisciplinary group consisting of two teachers, a school-nurse, two physiotherapists, a representative from the special education/psychology service and a parent. The first author, who had extensive practice as an ordinary school-team member, and had written reports and presentations of the work, was a part of this group.

At the same time as an expanded version of the approach was being planned in Stavanger, the first author was asked by the regional special education/psychology service in Vesterålen and Lødingen in Northern Norway to guide and lead the implementation of a similar project in their region. The second author, who worked as a as a consultant to the special education/psychology services, and also held a position as professor at the University of Stavanger, initiated the project in the North. In line with the experiences from Stavanger, the special education/psychology service in the North planned a project including all external professional groups, thus expanding the scope of the Stavanger pilot-project. A multidisciplinary regional group was established consisting of a representative from the special education/psychology service (third author), a physiotherapist, a teacher, two representatives from the regional teaching administration, and the second and first author. In 2001 – 2002, a small-scale pilot project was carried out at one school, yielding evaluative reports of improved professional relations, reciprocal professional learning, and improved services for vulnerable children. The extended scope seemed to strengthen the potential of the approach, particularly with regard to inclusion of vulnerable children. Accordingly, the following year a large-scale project was introduced, and schools and supporting professionals in six municipalities were invited to participate, with positive response at the administrative level from five. During the 3-year project period 17 schools in the North were gradually included.

Processes and outcomes from the project in Stavanger (2001-2004) and the project in Vesterålen and Lødingen (hereafter region North) (2001-2004) are reported together in the following, as the main findings were very similar. However, some important differences existed that will be discussed.

Participants

Persons participated in the projects at two levels: at a structural/administrative level or as active field participants. Some participated at both levels, including all members of the administrative project group in Stavanger, and three members of the group in the North. First grade children and teachers at the 27 participating schools were the main field participants, together with external professionals from the supportive municipal system; and in region North only, speech therapists. At a structural/administrative level, school-management and management for the external municipal professionals were participants. Figure 1 presents an overview of the participants.

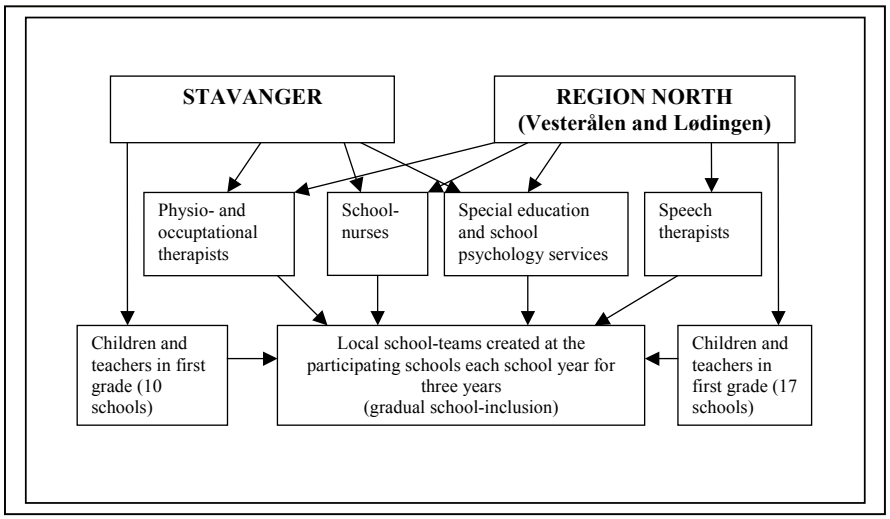

Figure 1: Overview of participants in Stavanger and Region North

Introduction of the projects to participants

Based on the developments in the pilot-project in Stavanger, local ownership was considered a crucial variable for successful implementation of the approach. In order to facilitate such processes the administrative teams in Stavanger and region North arranged a multidisciplinary dialogue conference at the start of the project, inviting teachers and administration from the attending schools and representatives from the external professionals. In Stavanger, many of the participants already had extensive practice from the pilot-work, and the main goal of the dialogue conference was therefore to include new professional groups and create a shared framework for the project. This was mainly done at the conference by letting randomly mixed groups draw their vision of "The best possible school-start" (Chambers, 2002, p.138). The drawings were then displayed, explained and discussed in plenum. Although skeptical to the task at start, unfamiliar as it was, the participants reported that they really enjoyed this process. In summary, the drawings visualized a specter of children growing and developing, taking part in a variety of activities, supported by grown-ups.

In region North, only a few participants had some experience from the pilot project. We therefore arranged the workshop differently, starting with a presentation of ideas and experiences from Stavanger, using a lot of pictures from the participatory weeks, and presented evaluative group-material. We stressed that the work presented must be considered ideas only, and that each municipality and team had to find their own way of applying the approach. In order to facilitate the local processes, the participants were organized into multidisciplinary groups, and encouraged to start the process of sharing ideas and thoughts about how they would implement the approach in *their* community. At the end of the conference many participants expressing excitement and enthusiasm with regard to the work ahead of them.

The main elements of the approach and developments during the project

During the project-period four main elements became parts of the participatory multidisciplinary team approach:

- The participatory week – practical multidisciplinary fieldwork in first grade
- Follow-up activities – activities agreed upon by the local teams after the week
- Supporting lectures and workshops on themes concerning health and developmental issues
- Annual multidisciplinary dialogue conferences – participants reflecting on the activities of the passing school year and planning the next

In the following the four elements and how they developed will be described in more detail:

The field participants created *local multidisciplinary teams* annually at all participating schools and planned, carried out and evaluated *the participatory week* in which the external professionals participated during one week of schooling in first grade, thus assisting and complementing the teacher(s) in each class. Based on evaluations from the pilot-work a few guiding principles were suggested. We recommended that the structure of a normal week at school should be maintained, thus ensuring only small changes for the children to deal with. Some activities could be added or organized differently in order to provide the opportunity for participatory observation indoors and outdoors, during individual and group sessions. We also recommended that the teams made use of the resources of the external professionals when the activities of the week were carried out, thus ensuring active participation.

Team evaluations showed that physiotherapists frequently organized and lead gymnastics or out-door sessions, school-nurses taught on health promoting themes such as "our body", "what to eat", and occupational therapists introduced fine-motor programs and activities. Detailed planning of the week was carried out within each local team, and each team created their own particular week based on available resources and their choices of themes and activities.

Before the participatory week, the children's parents received written and oral information, and were encouraged to make contact with the multidisciplinary teams with regard to issues they wanted to discuss. These issues could concern school environment, groups and classes, or individual children. Only a few parents took this opportunity. After the participatory week the parents received written information and evaluation of the activities that had taken place.

During evaluation of the participatory week the local team decided on *follow-up activities* at different levels. Frequently reported follow-up activities at school-level were improvement of schoolyards and restructuring of staff-resources. At group level, guidance from external professionals on chosen themes and implementation of particular health-promoting programs were reported, and on an individual level deciding on the need for further assessment/intervention for children was most frequently reported. Each team evaluated follow-up activities at the end of the school year.

While the participatory week and follow-up activities had been elements in the Stavanger pilot model, a third element gradually developed in the North. This region is scarcely populated compared to the South of Norway, with long distances between towns and villages. As five municipalities were involved, the administrative team suggested the arrangement of regional seminars to go along with the practical fieldwork. In our opinion, this held the potential of building professional competence regarding vulnerable children and health promoting issues for the whole region. A multidisciplinary conference focusing on

developmental disorders and commonly applied assessment and intervention strategies was arranged the first year, with profession-specific in-depth seminars on chosen themes as follow-up. The participants evaluated the combination of theory and field-practice as valuable and complementary, and the first author suggested a similar strategy to the administrative team in Stavanger. During the following two years this element was added in the South as well.

Based on the success of initial dialogue seminars annual arrangement of such reflective conferences became another new element added to the original framework. During these conferences, evaluative techniques from the PLA-framework (Chambers, 2002; Pretty et al., 1995) were used in both regions. The administrative teams arranged the dialogue seminars and summarized the evaluative group material.

In the Stavanger region only, an additional fifth element developed during the project-period. Evaluations from the first year's dialogue conference showed that the participants asked for strategies to include the parents more actively, as only a few parents contacted the multidisciplinary teams. After brainstorming we suggested a "participatory day" during the spring-semester *before* school-start. All parents and children are routinely invited to their local school at this time, being told what is going to happen at the actual school-start. We decided to make use of this established structure, but to organize it differently, with one main goal: Building relations between children, parents, teachers and external professionals. Accordingly, the chosen activities had to be inviting, fun, sharing and informative. The following year two schools piloted our suggestion, with details planned locally. Examples of activities from the introductory day were play and movement activities for children and parents led by physio-and occupational therapists, and "open café ", which meant that the parents could get a cup coffee and mingle with each other and professionals such as the school-nurse and staff from the special education/psychology services. Importantly, at the start of the arrangement the external professionals were introduced by school-administration to the parents as the teachers' collaborators, and the following year's multidisciplinary work was outlined. The parents warmly welcomed these arrangements, and we received comments from parents from both schools telling us that their children enjoyed the day and wanted to start school right away. The external professionals reported an improved parental anchoring for the work the following school year. During the project-period this element was added at an additional two schools in Stavanger.

With regard to financial issues, the projects in Stavanger and in region North were primarily based on the re-structuring of existing resources. In Stavanger no extra funding was applied at all. To cover the arrangement of regional lectures, professional groups outside the project were invited and paid a certain amount, while all arrangements were free for project participants. Due to a more expensive infrastructure in the North the municipalities involved and the regional teaching administration shared the cost of seminars and expenses for participants in the administrative group.

Figure 2 shows the main elements of the approach and how it was carried out during one school year:

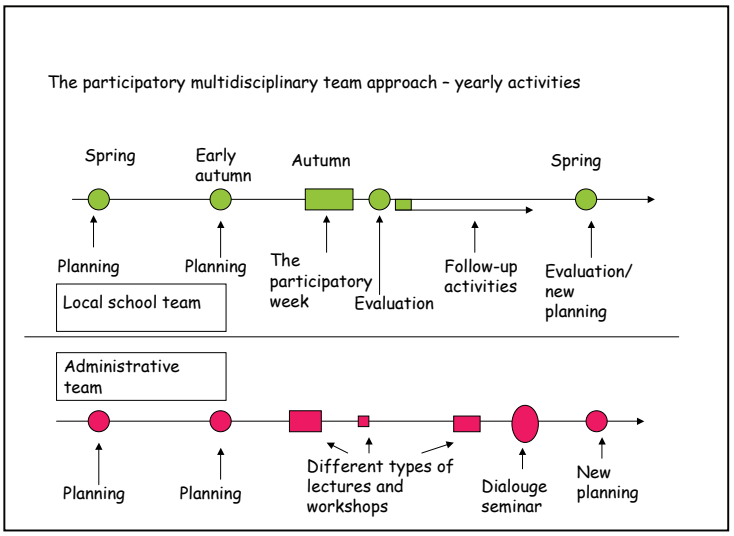

Figure 2: An overview of yearly activities in the local school teams and the administrative teams

Cycles of action and reflection

As already described, the projects were based on the methodological framework of action research as a participatory process and aimed at the development of useful, practical knowledge (Foote Whyte, Greenwood & Lazes, 1991; Reason & Bradbury, 2001). Good action research is considered a developmental process that emerges over time, alternating between action and reflection (Brydon-Miller, Greenwood & Magiure, 2003; Coghlan & Brannick, 2001; Stringer, 1999). As a consequence, the nature of knowledge obtained during this process is dynamic and evolving, or "a verb rather than a noun" as described by Reason and Bradbury (2001, pp. 2).

Several cycles of action and reflection took place at different levels in our projects. Cycles of action and reflection concerning developmental processes of project design are already described. The following gives an overview of other important cycles of action and reflection:

- Action and reflection in the local school-teams
- Action and reflection within groups of external professionals
- Action and reflection through regional dialogue seminars
- Action and reflection in the administrative project teams

The work carried out by each local school-team each school year was organised as a continuous cycle of action and reflection: 1) The team planned the participatory multidisciplinary week of action. 2) Practical team actions took place during the actual week 3) The team reflected and evaluated the week 4) The team decided on and carried out follow-up activities 5) The team evaluated the follow-up activities 6) New team planning of actions for the next school-year.

Similar cycles of action and reflection were also organised each year within each external group of professionals: 1) Each professional group planned how to use the available resources during the particular school-year 2) The group reflected on specific professional contributions during the participatory week 3) Chosen activities were carried out during the participatory weeks, followed by group reflections on what worked well/what did not.

The annual dialogue conferences provided an opportunity for people from the different local teams and municipalities to meet and reflect on the project face-to-face. Last years activities were presented and discussed, and new actions suggested and implemented. As such, the dialogue seminars facilitated the spreading of local ideas and good practices, as well as demonstrating difficulties and how to avoid/overcome them.

The work-processes in the administrative teams also became organized as natural circles of action and reflection. As these teams were responsible for summarizing local and regional evaluations, writing preliminary reports and implement suggested changes on a regional level, we will describe the evaluative circles specifically. We asked the local teams to evaluate each participatory week according to "what went well" and "what can be improved", and recommended the use of a simple Sun/Cloud diagram as evaluative technique. We collected and summarized the local material, and as a further evaluative step, we categorized data in the main categories "outcomes" and "processes", into suitable subcategories. Finally, we added data from the dialogue conferences and professional group evaluations, and made annual summarizing reports. Preliminary reports and project material were sent by e-mail to the local participants, and also made available on the Internet (Iversen, 2003). We encouraged all participants to comment on available preliminary evaluation.

As a further evaluative step, the first author was asked to summarize, analyze and compare evaluative material from both regions. In order not to be "blinded" by being so close to the evaluative processes, I felt the need for reflective input from the outside. I therefore put together two reflective teams; one internal which consisted of a teacher and a physiotherapist with extensive field-practice, but with no involvement as administrative team members, and one external which consisted of three professionals with no involvement in the project, but with extensive knowledge about children with developmental difficulties as well as competence with regard to general health issues. I asked them to read and discuss evaluative material, and during our reflections, we made use of the following analytic techniques: Drawings, time-lines and matrixes after models from Pretty et al. (1995) and the tree-diagram outlined by Wolcott (2001, pp. 90). In my opinion, the application of visual evaluative techniques made it easier to capture the developmental processes of issues such as competence building, project organization, services to vulnerable children and implementation of health promoting programs and activities. Data from 52 different weeks of participation and 6 dialogue conferences were analyzed.

Outcomes

Project outcomes are summarized in the following:

Improved relations and increased contact between participants

This main outcome was emphasized by the participants in all local team reports, and underscored during each dialogue conference in Stavanger and the North. "It is much easier to contact external professionals. After all, when you have spent time outdoors together, playing with the kids, you know that

person in a different way" is one statement from a dialogue conference exemplifying the typically reported relational changes. Several of the participating schools emphasized that increased contact between the schools and external professionals improved relations in general. A school-administrative in the North put it this way, commenting on improved relations with the physio- and occupational therapy service: "Even though we have been localized just across the road from each other, we hardly ever talked. Now we talk all the time."

The building of positive relationships was not restricted to the professionals, but also included the children. We registered that the role of active participation made it easy for the external professionals to naturally "blend" with the teachers. The children readily accepted the extra grown-ups who took part in their ordinary day, asking us for practical assistance, eager to hold our hands when we went for walks and so on. About 1500 children took part during the 3-year project period, and we received less than a handful reports on individual children who reacted negatively to the presence of extra grown-ups. At a dialogue conference the third author, an experienced specialist in special education, pointed to the fact that the initial building of positive relations with vulnerable children in a natural environment provided an improved basis for contact with those in need of further services. Explaining one particular case-story, a boy with severe behavioral difficulties, he said "The fact that we already knew each other made further assessment so much easier for both of us. I was not an unknown possible threat; I was the guy he had been playing with."

Implementation of health promoting programs and activities

The issue of physical activity was strongly focused in both regions. On school level, the participants reported the following outcomes:

- improved teacher competence
- longer periods available for outdoor activities
- improved school-yards
- increased frequency of physical activity inside the classroom
- purchase of better and more varied equipment
- increased use of near-by outdoor areas and more time spent outdoors
- movement classes as follow-up activity

Physiotherapists were strongly involved as consultants, and participated at all schools in Stavanger, and at 12 of 17 schools in the North. Over time, we learned that the teachers had to be able to easily replicate the activities introduced in order for these to "survive" the week and become an integrated part of their repertoire and competence. As an example, we introduced several long ropes to each group, which were used for various skip-roping games in the schoolyard and as climbing ropes during outdoor classes. These activities readily became a part of the ordinary structure.

Another motor aspect that received a lot of positive attention was a fine motor programme directed towards preparation for improved writing. The program "Write Dance" (Voors, 1995), a progressive music and movement program for development of pre-writing and writing skills, was introduced during the participatory week at a majority of the schools in Stavanger. In region North, an introductory workshop was arranged at regional level, and 15 of 17 schools reported to have implemented it as a follow-up activity. Occupational therapists were mainly responsible for the implementation.

At the schools with participating school-nurses (7 of 10 schools in Stavanger, 12 of 17 schools in region North), diet, self-care and emotional health issues were focused through activities such as role-play, drawings and group-discussions. A few schools in region North also implemented more extensive programs that focused on diet as a follow-up activity, while two schools in Stavanger implemented the program "Reaching young Europe". The particular aims of this program are to promote social skills in young children, learn to express emotions and to respect oneself and others, and to provide emotional support to peers. Mishara and Ystgaard (2000) evaluated the program as significantly improving social competence in young children. During the last dialogue conference another three schools asked for the program to be implemented.

Professionals from the special education/psychology service participated at all schools in region North and at 7 of 10 schools in Stavanger. They focused primarily on issues such as how to lead groups and classes competently, classroom relationships and peer-interaction, inclusion of vulnerable children, and how to deal with particularly "demanding" groups and children. At some schools, structured follow-up supervision was implemented on themes such as "how to lead groups and classes", "children with attention deficits", "children with different cultural backgrounds", "children with behavioural and emotional problems". The teachers evaluated the lectures and supervision as enhancing their competence. However, while most schools that received supervision on how to lead groups and classes evaluated this positively, two schools reported that the teachers felt being "checked" and told "how to do things., and in turn responded negatively. When we looked into these cases, we discovered that the external professionals involved had not been properly introduced to the basic principle of local ownership and shared responsibilities, and had applied a more traditional supervising role.

In region North, speech therapists participated at some schools, with a reported increase in teacher awareness and competence regarding speech and language issues. School-teams that did not include speech therapists emphasized that they missed this competence. Limited resources prevented speech therapists to participate in Stavanger.

Increased professional as well as multidisciplinary competence

Table 1 summarizes the themes of the regional lectures/work-shops that were arranged during the project period.

Table 1: The main themes of the regional lectures and seminars and the attending groups of professions

Themes	Attending professions
Classroom relationships	Teachers
Multiple Intelligences	Teachers
Reading and writing in first grade	Teachers
Motor development and learning	Multidisciplinary
Movement and writing	Multidisciplinary
Physical activity in first grade	Multidisciplinary
Neuropsychological assessment	Multidisciplinary
Children with ADHD	Teachers, multidisciplinary
Children with behavioral and emotional difficulties	Multidisciplinary
Movement Assessment Battery for Children	Physio- and occupational therapists
Wechsler Intelligence Scale for Children –III	Special education and school psychology services
Motor difficulties in children with ADHD	Physio- and occupational therapists

Participants in both regions evaluated the combination of practical skills and theoretical knowledge as valuable and complimentary. Teachers emphasized increased knowledge and practical skills concerning children with various developmental problems and disorders. Increased knowledge and practical skills with regard to general health and developmental issues was also extensively reported. External professionals pointed to insight into everyday school life as particularly important, which in their opinion resulted in more complete, but also more targeted interventions. All participants evaluated the exchange of knowledge and skills between professions positively. The followings statements from a dialogue conference illustrate how participants described the learning that took place:

- Teacher, commenting on an outdoor class: "The physiotherapist suggested that we should take a different route, leaving the track, walking through the under woods. Of course this increased motor challenges and stimulated motor learning for the whole group; we had just followed the track as a routine."
- Physiotherapist, commenting on a movement session: "We learn from taking part in activities together. When we were in the gym, the professional from the special education services commented on behaviour and interaction that I did not notice at all at the time, but now her comments make completely sense"

- School-nurse, commenting on observing a child with severe developmental problems whom she knew from earlier health controls: “Now I know exactly the structure of his day and the type of challenges he faces. It makes it easier for me to advise his parents regarding health issues”.

Improved services for vulnerable children

The participants from all attending schools reported that the approach improved transition for vulnerable children, and emphasized that the approach created opportunities for early intervention. In an interview with the special education/psychology services in the North, they estimated that vulnerable children could be helped 1- 2 years earlier compared to the traditional referral method (Holden interviewed in the Norwegian journal “Spesialpedagogikk”) (Nilsen, 2004). The external participants underscored that it became easier to get a complete picture when they participated in ordinary activities together with the child in natural environments. The practical fieldwork was also reported to provide opportunities to focus on children’s strengths and resources. “It is so easy to become trapped within a traditional medical framework, looking for difficulties only”, is a statement from one group-discussion, highlighting this issue.

The teachers in both regions reported that the multidisciplinary teams frequently confirmed their worries about particular children. Such confirmation made the teachers feel safer with regard to trusting their own observations, and improved their understanding of vulnerable children.

An important goal emphasized by the local teams was, if possible, to provide teacher intervention in a natural environment with supportive consultation by external professionals as a first step for vulnerable children. If this approach did not succeed, or if the child in question had an obvious need for additional assessment and intervention, standard municipal referral procedures were applied.

For children with severe diagnoses or confirmed problems before school-start, participants pointed to the approach as a valuable tool for providing social inclusion and individualized education from the start. The attendance of the multidisciplinary team made the establishment of necessary structures and support for this group of children easier, which improved the quality of school-start. An occupational therapist explained how the participatory week affected school-start for a girl with cerebral palsy: “Knowing the team would be there, took pressure off the parents and me. I had an opportunity to be with her over time, and carefully observe and discuss her needs with her teachers and physiotherapist in the classroom setting, not just exchanging information at a formal meeting”.

The original pilot-work in Stavanger strongly focused on children with developmental deficits, and motor problems in particular. Participants with extensive field-practice from Stavanger reported that the inclusion of professionals from the special education/psychology services enhanced possibilities of taking care of children with social and behavioural/ emotional difficulties as well as children with cognitive and attention deficits. They also pointed to the fact that many children with minor difficulties, who otherwise would not receive services from the supportive municipal system, were helped through the multidisciplinary fieldwork. Reported examples were physically or socially passive and/or inexperienced children who needed a certain amount of extra attention in order to become more active and assertive. “Just

talking the children's needs over with the teachers and give some advice make a difference" one external professional explained, "this ensures focused teacher attention to the particular child, and many of them need just this extra focus in other to learn and develop, a formal referral is really not necessary."

Processes – developments over time

When data were analyzed over time, a change towards actively searching for strengths and resources was detected. During the project-period we registered that participants gradually became more resource oriented. At the last dialogue conference in both regions participants emphasized that helping schools and teachers becoming aware of strengths and resources, without neglecting difficulties, had to be the main focus. We registered this increased awareness of resources at a general as well as an individual level. Positively confirming teacher practice and school structures, when appropriate, gradually became an explicit focus. Suggestions on how to share smart ideas and good practices from one school to another gradually also became more explicitly expressed. The external professionals were often member of more than one team, which over time provided opportunities for diffusion of good practice. With regard to individual children, the participants reported that observing the child in many different situations made it easier to get a complete picture and discover resources: "He struggles in order to maintain attention in class over time, but during movement classes he enjoys himself so much, has a great sense of rhythm, and bursts with energy which positively influence the rest of the group", is one example from a local team evaluation in which the first author took part as an ordinary field-participant.

Closely connected with the process described above, the role of the attending external professionals was intensely debated and changed over time. At the start of the project the external professionals primarily focused on individuals and vulnerable children in particular. At later stages, the participants described the role of the external professionals as providing practical on-site teacher support on group- and individual level, as well as more general system support.

Interrelated to the processes described, the implementation of general developmental and health promoting strategies gradually increased, and was reflected in the types and numbers of reported lectures and workshops. Importantly, professionals who participated over time expressed an increased awareness concerning the fact that the most vulnerable children benefited in particular from implemented general improvements. As such, individual and general intervention strategies stood out as strongly integrated: "The child with severe attention deficits of course needs individual intervention strategies, but the intervention is much more likely to succeed in a learning environment with high teacher competence on how to lead groups and classes, within well-defined structures, and when those who take care of him are competent with regard to general aspects of developmental disorders" (extract from a dialogue conference).

Main challenges

Available time, available professional resources and the effort of building supporting organizational infrastructures were reported as the main constraints in both regions. The time- and resource issue

particularly concerned the attending external professionals, as municipal professional health and special education/psychology resources are limited and workloads heavy. The amount of attendance during the participatory week varied between groups of professionals, and in region North, between municipalities. When discussing the time-resource issue, many participants claimed that even though the ideal of complete participation during the whole week rarely could be obtained, each professional group had to decide on an acceptable minimum standard (such as taking part at least two days). Limited external resources also put extra demands on team planning and exchange of information during the participatory week, with a reported need for well-defined local team structures.

In the administrative teams we recognized the crucial importance of system acknowledgement and system organization at different levels. Data from region North that involved several municipalities clearly showed that a well-established infrastructure at a municipal level facilitated the approach. At the end of the project period we therefore recommended that multidisciplinary administrative teams were established in each municipality.

A different type of reported challenge was establishing and maintaining a true participatory approach among the participants. As already reported, we considered teacher ownership as the crucial variable for implementing the approach, but when new groups of professionals were included, it became clear that they also had to get a feeling of being fully included as equal participants. We discovered that such inclusion took time. The approach represented a very different way of working together, and while some persons thrived on changes and challenges, others needed to "see for themselves" in order to be properly included. Differences between groups of professionals could also be detected: While school-nurses and physio- and occupational therapists seemed to have become active participants rather easily, suggesting and leading various activities during the week, the role of professionals from the special education/psychology services were reported as less well-defined and more individually variable. Professionals taking part during the complete project-period also stressed that although established at the start, a participatory approach could not be taken for granted over time. Members of the teams changed each school year, and each team had to create and develop their own way of doing things. As such, even though structure and smoothness of external attendance improved over time, new people needed to be introduced to the basic principles of the approach.

Viewing the potential of the approach in a broader framework

As judged by the participants over a 3 year period, the participatory multidisciplinary team approach appeared to hold the potential to improve multidisciplinary relationships, to increase focus on developmental and health issues, to develop professional knowledge and practical skills, to increase support to local educational staff, and to provide a better school-start for vulnerable children. We consider these outcomes as methodological robust, as they were reported from all participating school-teams in both regions, and they were also in line with findings from the initial 4-year pilot-work in Stavanger.

Viewing the findings in a health- and developmental promoting framework, the issues of physical activity, diet and aspects of emotional health were strongly focused, with positive changes reported in school structures and teacher competence. In order to obtain long term physical and emotional health benefits, early intervention is recommended for all these target areas (Mishara & Ystgaard, 2000; Missiuna et al., 2003). Based on the findings from the projects, it is reasonable to believe that multidisciplinary on-site intervention at school-start holds the potential of promoting health on a general basis, thus reducing risk factors and preventing early onset of life-style induced difficulties.

When the children start school, they are still within the developmental time-span of extensive neurobiological changes (Hadders-Algra, 2002; Johnston 2003). Plastic cerebral reorganization occurs through a process of activity-dependent refinement and pruning of synaptic connections (Bailey, 2002; Lebeer, 1998). If targeted interventions are applied at an early age, they are therefore more likely to succeed (Johnston, 2003; Lebeer, 1998). The approach that we applied holds the potential of providing early support for children with developmental problems, thus maximizing their neurobiological potential for learning, based on early-targeted interventions.

Viewing the approach from the educational perspective of inclusion (UNESCO, 2003), the participants reported that it became easier to include and build supportive structures for children with all types of problems, disabilities and disorders. In Stavanger, inclusion of the parents was also reported to improve when we specifically focused on building positive relations between children, parents and professionals. Based on a literature review on inclusive school programs, Dymond (2001) highlighted a participatory approach to implementation of inclusive programs as a key element. Reporting from the Australian Starting School Research Project, Dockett & Perry (2001) emphasized that starting school is not just an individual experience, but a community issue and responsibility. In our projects, implementation of the approach depended on the restructuring of limited resources from the municipal health and educational services. Consequently, other professional activities had to be reduced. However, community benefits in terms of increased inclusion during this major transitory period, with possible positive long-term effects for the children and families involved, is a strong argument in support of applying the resources needed.

Viewing the projects from a PAR perspective, two main factors seemed to promote the potential of the approach:

- The application of participatory strategies that favors local creativity and ensures local ownership
- The building of organizational infrastructures and application of systematic working procedures at different levels, with support available to local multidisciplinary teams

At a first glance, these two aspects may seem rather contradictory, as factor 1 highlights the importance of local freedom and ownership, while factor 2 highlights the development of structures and application of working procedures. However, the two factors can be understood as complimentary. The crucial importance of local ownership and method flexibility reported, which stimulates and allows for local solutions, are in accordance with findings from other community based participatory action research projects (e.g. Bostock & Freeman, 2003; Ho, 2002; Hughes, 2003; Leff, Costigan & Power, 2004).

However, maintaining a participatory approach over time is a continuous challenge. Due to the time-span of the project, the importance of keeping the participatory principles ”alive” became important. Our findings point to some factors that need to receive a continuous focus: The method has to be properly introduced to new participants in order to ensure ownership. The notion of local “re-creation” as opposed to “replication” has to be established as a basic idea. Along this line of thought, the approach must be allowed to change and develop based on continuous participatory reflection and action. As emphasized by Simmons and Gregory (2003) and Senge and Scharmer (2001), knowledge obtained through grounded action must remain open to modification and transformation in new settings.

However, with so many different participants involved at various levels, local flexibility, growth and creativity needed a framework of structure and predictability in order to flourish. In their description of learning communities and organizations, Senge & Scharmer (2001) pointed to the systematic building of supporting infrastructures as crucial in order to succeed. Our project required supportive structures at a regional, municipal and professional level, and even at each local school. System acknowledgement was also crucial in order to achieve and maintain the necessary re-structuring of available professional resources.

An important strength of the approach seems to be the face-to-face interaction between children and different groups of professionals in natural environments. From their research on effective school transition programs, Dockett & Perry (2001) pointed to the building of relationships between all participants as crucial in order to succeed. As such, and underscored by Gustafsen (2001) and Senge & Scharmer (2001), the development of methods and arenas that facilitate that all participants get to know each other holds the potential of developing effective partnerships and learning networks.

Further developments of the approach

At the end of the project-period the participatory multidisciplinary team approach was established as standard procedure in the five municipalities involved in region North. In Stavanger, the fourth largest city in Norway, implementation is currently being planned at all elementary schools, and the inclusion of a new group of external professionals, the social services for children, is piloted at two schools (2005 – 2006). The approach has been introduced in other cities and municipalities, and in 2005-2006 seven schools in Bergen, the second largest city, is applying the approach. Based on an introductory conference in 2003 the middle-sized municipality of Hå has applied the approach as standard procedure. Bradbury and Reason (2001) highlighted pragmatic questions regarding practical outcomes as a key issue when quality and validity of participatory action research is evaluated. The continuous growth and diffusion of the approach from the initial pilot-work at one school in 1997, give support to the choice of PAR strategies and PAR projects as valuable in order to promote multidisciplinary teamwork and learning, in our case with the ultimate goal of enhancing the quality of school start for all children.

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References

Bailey, D.B. (2002). Are critical periods critical for early childhood education? The role of timing in early pedagogy. *Early Childhood Research Quarterly, 17,* 281-294.

Batch, J.A., & Baur, L.A. (2005). Management and prevention of obesity and its complications in children and adolescents. *The Medical Journal of Australia, 182,* 130- 135.

Bostock, J., & Freeman, J. (2003). 'No limits.': Doing participatory action research with young people in Northumberland. *Journal of Community & Applied Social Psychology, 13,* 464-474.

Bradbury, H., & Reason, P. (2001). Broadening the bandwidth of validity: Issues and choice-points for improving quality of action research. In P. Reason & H. Bradbury (Eds.), *Handbook of action research. Participative inquiry and practice* (pp. 440- 447). London: Sage Publications.

Brydon-Miller, M., Greenwood, D., & Maguire, P. (2003). Why action research? *ActionResearch, 1,* 9-28.

Cantell, M.H., Smyth, M.M., & Ahonen, T.P. (2003). Two distinct pathways for developmental coordination disorder: Persistence and resolution. *Human Movement Science , 17,* 413-431.

Chambers, R. (1997). *Whose reality counts? Putting the last first.* London: Intermediate Technology Publications.

Chambers, R. (2002). *Participatory workshops. A sourcebook of 21 sets of ideas & activities.* London: Earthscan Publication Ltd.

Coghlan, D., & Brannick, T. (2001). *Doing action research in your own organization* .London: Sage Publications.

Dewey, D., Kaplan, B.J., Crawford, S.G., & Wilson, B.N. (2002). Developmental coordination disorder: Associated problems in attention, learning, and psychosocial adjustment. *Human Movement Science, 21,* 905-918.

Dockett, S., & Perry, B. (2001). Starting school: Effective transitions. *Early Childhood Research & Practice, 3(2).* Retrieved December 17th, 2004, from http://www.ecrp.uiuc.edu/v3n2/dockett.html

Dymond, S.K. (2001). A participatory action research approach to evaluating inclusive school programs. *Focus on Autism and Other Developmental Disabilities, 16,* 54-63.

Foote Whyte, W., Greenwood, D.J., & Lazes, P. (1991). Participatory action research. Through practice to science in social research. In W. Foote Whyte (Ed.), *Participatory Action Research* (pp.19-55). Newbury Park, CA: Sage Publications.

Gustafsen, B. (2001). Theory and practice: the mediating discourse. In P. Reason & H. Bradbury (Eds.), *Handbook of action research. Participative inquiry and practice* (pp. 15-26). London: Sage Publications.

Hadders-Algra, M. (2002). Two distinct forms of minor neurological dysfunction: perspectives emerging from a review of the Groningen perinatal project. *Developmental Medicine and Child Neurology, 44,* 561-571.

Hart, E., & Bond, M.(1995).*Action research for health and social care. A guide to practice.* Buckingham, Philadelphia: Open University Press.

Ho, B.S. (2002). Application of participatory action research to family-school intervention. *School Psychology Review, 31,* 106-120.

Hughes, J.N. (2003). Commentary: Participatory action research leads to sustainable school and community improvement. *School Psychology Review, 32,* 38-43.

Iversen, S. (2003) *Økt tverrfaglig kompetanse: Ressursuker i 1.klasse [Enhanced quality of school-start: The participatory multidisciplinary team approach]*. Retrieved October 2nd, 2004, from http://www.ppdvl.no

Johnston, M.V. (2003). Brain plasticity in paediatric neurology. *European Journal of Paediatric Neurology, 7,* 105-113.

Kadesjö, B., & Gillberg C. (1998). Attention deficits and clumsiness in Swedish 7-year-old children. *Developmental Medicine and Child Neurology, 40,* 796-804.

Lebeer, J. (1998). How much brain does a mind need? Scientific, clinical and educational implications of ecological plasticity. *Developmental Medicine and Child Neurology, 40,* 352-357.

Leff, S.S., Costigan, T., & Power, T.J. (2004). Using participatory action research to develop a playground-based prevention program. *Journal of School Psychology, 42,* 3-21.

Lindstrøm, M., Isacsson, S.O., & Merlo, J. (2003). Increasing prevalence of overweight, obesity and physical inactivity. *European Journal of Public Health, 13,* 306-312.

Mishara, B., & Ystgaard, M. (2000). Exploring the potential for primary prevention. *Crisis, 21,* 4-57.

Missiuna, C., Rivard, L., & Bartlett, D. (2003). Early identification and risk management of children with developmental coordination disorder. *Pediatric Physical Therapy, 15,* 32-38.

Nilsen, H.F. (2004). Spesialpedagoger på klassetur. [The special education and school psychology services take part in outdoor activities] *Spesialpedaogikk, 10,* 28-29.

Pretty, J.N., Guijt, I., Thomson, J., & Scoones, I. (1995). *Participatory learning and action. A trainers guide.* London: International Institute for Environment and Development, Participatory Methodology Series.

Reason, P., & Bradburdy, H. (2001). Introduction. In P. Reason & H. Bradbury (Eds.), *Handbook of action research. Participative inquiry and practice* (pp. 1-14). London: Sage Publications.

Senge, P., & Scharmer, O. (2001). Community action research: Learning as a community of practitioners, consultant and researchers. In P. Reason & H. Bradbury (Eds.), *Handbook of action research. Participative inquiry and practice* (pp. 238-260). London: Sage Publications.

Simmons, O.E., & Gregory, T.A. (2003). Grounded action: Achieving optimal and sustainable change. *Forum: Qualitative Social Research, 4, (art. 27)* retrieved January 5th, 2005, from http://www.qualitative-research.net/fqs/

Stormont, M., Espinosa, L., Knipping, N., & McCathren, R. (2003). Supporting vulnerable learners in the primary grades: Strategies to prevent early school failure. *Early Childhood Research & Practice, 5(2).* Retrieved November 15th, 2004, from http://www.ecrp.uiuc.edu/v5n2/stormont.html

Stringer, E.T. (1999). *Action Research.* (2nd ed.) Thousand Oaks, CA: Sage Publications.

Stringer, E.T., & Genat, W.J. (2004). *Action research in health.* Upper Saddle River, NJ: Pearson.

UNESCO, (2003). *Overcoming Exclusion through Inclusive Approaches in Education. A Challenge & A Vision. Conceptual Paper.* United Nations Educational, Scientific and Cultural Organization. Paris: UNESCO.

Van Staveren, T., & Dale, D. (2004). Childhood obesity: Problems and solutions. *Journal of Physical Education & Dance, 75,* 44-50.

Voors, R.O. (1995). *Skrivedans, eller hvordan frie bevegelse blir til konkrete linier, alderen 5- ca 8 år [Write Dance]*. København: Klitrose.

White, G.W., Suchowierska, M., & Campbell, M. (2004). Developing and systematically implementing participatory action research. *Achieves of Physical and Medical Rehabilitation, 85, (Suppl 2),* S3-12.

Wolcott, H.F. (2001). *Writing up Qualitative Research* (2nd ed.). Thousand Oaks, CA: Sage Publications.