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10. A SOCIAL PERSPECTIVE ON NEW LEARNING

INTRODUCTION

According to Simons (1997), schools need ‘process-oriented instruction’ to let pupils learn in a new learning way. He defines this instruction as: “(...) focussing on the further development of the processes of thinking, learning and self-regulation integrated in regular domain-specific instruction (...) it also tries to hand over responsibility for learning and teaching to the learner gradually.” (o.c., p. 12). With young pupils, teachers initially act as external monitors, but gradual scaffolding and metacognitive guidance help pupils to become self-regulators. Moreover, teachers should organize positive self-evaluation and reflection by pupils (o.c.).

A change towards new learning will also influence the social characteristics inherent in learning and teaching. Compared to traditional learning, qualities of the social behavior of pupils and teachers, but also the social conditions within the teaching and learning situation, will look differently in process-oriented instruction. This will be true in school but also outside school, i.e. at home and in working places.

In this contribution we want to elaborate on social characteristics of, and social conditions relevant to, the new learning approach in educational practice. First, we introduce some theoretical terms to order potentially relevant social characteristics of new learning processes and outcomes. Second, we present different research examples, from different kinds of educational practice. We successively analyze the examples, to illustrate meaningful empirical varieties in the general significance of the social perspective on new learning.

THEORIZING ON SOCIAL ASPECTS OF NEW LEARNING

Learning is embedded in a *social relationship between different actors*, for example between a child and a parent or a teacher, between children within a small group or within a whole class (cf. Kounin, 1970), or between learners within a working place. The social relationship can also be structured in indirect ways, as occurs when a learner or group of learners is interacting with multimedia software. An actor is generally defined as a person, a group of persons, a category of persons, or a medium representing one or more persons, doing something in relation to another actor or partner.

The social behavior of a learner can be analyzed according to *different characteristics* (cf. Mooij, 1997):

- actors involved: the person(s), group(s), category (categories), or medium included;
- content or type: e.g., verbal, nonverbal; psychological, physical; or combinations of these;
- orientation: varying on a scale from prosocial, cooperative to antisocial or aggressive;
- intensity: varying from not intensive or independent, to extremely intensive;
- location: the place, or places, where the behavior occurs;
- duration: from short-term to long-term;
- frequency: how often does the behavior take place in a certain period of time?

The persons or groups involved in learning can show comparable *kinds of social behavior* with the same or different *kinds of intentions*, or different kinds of behavior with comparable intentions. For example, a teacher may use a very conscious and responsible pedagogic strategy to integrate a socially problematic child in positive learning processes with the other pupils, despite the manifest antisocial behavior of the problematic child. This social pedagogic behavior of the teacher may work out positively for the problematic child, but the initial negative learning consequences for the whole group may be large.

The mutual relationship and the respective learning behavior are influenced by the *meanings of the social situation* for the actors involved, whereas these meanings may influence the social behavior and the learning and other outcomes. For example, in a new learning situation a pupil actively constructs his or her learning processes and outcomes, while the teacher supports these construction processes from the beginning at school. In traditional learning the teacher is the most active person.

In designing instructional situations and learning processes, different *levels of analysis* can be used to model or analyze learning processes concerning e.g., social, motivational, and cognitive behaviors and the respective learning outcomes. Different but related kinds of levels, operating simultaneously, can be distinguished (cf. Mooij, 1987):

- first, an intra-individual level is necessary for the analysis of longitudinal, interactional processes integrating for example social, emotional, motivational, cognitive, and metacognitive or self-regulative elements in the development of a pupil;
- second, the individual or pupil level represents the unifying structure for the intra-individual processes on the one hand, and the links with the outside world on the other hand. Here relationships with other persons e.g., parents, a friend from a peer-group, the teacher, other pupils in class, or via a learning medium, have social and emotional functions which also are fundamental to adequate cognitive and self-regulative learning;
- third, the small group level is the level on which a pupil may be integrated to cooperate with other pupils within class, for example;
- fourth, the whole group or class level can be used to practice or develop emotional, social, or cognitive experiences;
- fifth, the school level represents common experiences for the pupils and teachers within the same learning environment and school building. This level

symbolizes the feelings, attitudes, and norms in getting along with each other in e.g., social, behavioral, cognitive, and organizational ways;

- sixth, the neighborhood or community in which the school is situated is relevant for its daily influencing of most of the concrete and practical experiences of pupils, teachers, parents, and peers;
- seventh, in a wider context, societal characteristics and developments are related to the developments on the other levels (cf. also Collier, 1994). An example is the study of Mulder (1996) concerning educational policy;
- eighth, in a still wider context, international characteristics and developments are becoming more and more important.

From pedagogical, educational, and new learning points of view, instructional processes and learning outcomes should be designed optimally for every pupil. However, 'hidden' social characteristics of instructional processes, like continual competition and comparative judgement of learning achievement, counteract positive social and learning development of all pupils in a class or groups of pupils over schools (Ames, 1984; Garnier, Stein, & Jacobs, 1997; Mooij, 1992). To gather information about the validity of this theorizing with respect to new learning, but also to check possibilities to optimize educational practice, we report about different kinds of empirical research. We begin with exploratory research carried out in kindergarten.

DIFFERENCES BETWEEN PUPILS IN EARLY EDUCATION

Three examples

Mooij (1999a, 1999b) carried out observations in five Dutch kindergartens. The qualitative observation was done by event sampling: attention was concentrated on natural processes and effects assumed to be important given the focus on social and cognitive characteristics of pupils, and of the kindergarten situation. Notes were made of relevant events and circumstances. If necessary, personal or situational characteristics, or instructional or didactic procedures, were clarified in short explanatory interviews with the teacher. Furthermore, written and oral information from parents or the teacher could be added to the event observation in class. We present three summaries of 'conspicuous' children and begin with Henry.

Four-year-old Henry is stringing beads. The beads are large, about three cm in diameter. The opening is about 1 cm in diameter, the thread is about 0.5 cm. The stringing activity seems to be too difficult for Henry: he does not bow the end of the thread in the right direction. The teacher sees this and helps him out for a moment. Henry makes a second attempt to string the bead. He fails again and gets angry, drops the appliances on purpose, and walks to a group of pupils nearby. These four classmates are stringing much smaller beads of about 0.5 cm in diameter. Henry knocks on their table and their beads jump around. The teacher quickly intervenes and shows him for the second time how to work with his own appliances. Some minutes later,

however, Henry still cannot do his activity on his own and drops his materials for the second time. He walks again to the table of the four classmates and throws their beads on the floor. The teacher comes running and restores order. The group of four helps in collecting beads. The teacher concentrates on Henry for about one minute, but in her classroom with 32 four-year-old children she can not stay with Henry.

We see that the class situation is a social situation par excellence, characterized by different kinds of actors, with different or common intentions, with different or comparable behaviors, all functioning at the same time. At first Henry adjusts to the social situation as desired by the teacher and tries to string, but the required motor skill is too demanding, also from a cognitive point of view. The teacher assists his learning activities twice, but she has many children in her class and has to neglect Henry now and then. His failure to string on his own leads towards frustration, which is acted out in negative social behavior towards the children who can string. The teacher has not enough time to spend on him, even after his aggressive acts. It seems that Henry clearly is at risk from motor, cognitive, and social points of view. The social and other conditions in his kindergarten situation seem too bad to compensate for his relatively low developmental levels, which can be expected not to improve on their own.

Nina, the second example, is in the same kindergarten class as Henry.

Four-year old Nina is observed while making a puzzle of eight pieces. She cannot bring the puzzle to an end. Her neighbor is nice and helps her out. The teacher happens to see this and tells the two children that the neighbor is allowed to help, but only for one piece. Then the teacher leaves for another child and Nina tries again. The neighbor helps with one piece, but Nina still can not do the rest of the puzzle on her own. Because her neighbor really is nice, after two minutes he again completes the puzzle within about two seconds. The teacher sees this for the second time, comes again, and repeats what she said before. Then Nina crosses her arms and looks outside. After the teacher has gone Nina keeps on neglecting the puzzle, with her head on her crossed arms.

The interpretation is that Nina, in her puzzling behavior, cannot function on the same cognitive level as most of her age mates. Her perception of her relative lack of ability seems strengthened by the repeated assistance of the teacher and her neighbor, and by the circumstance that even this assistance does not help her out. After the second trial she seems to be de-motivated. She withdraws from the activities in class and socially isolates herself.

The next example summarizes the first six months in kindergarten of Paul, a child functioning at developmental levels above most of his peers.

Upon entering kindergarten, when Paul has just turned four, his mother describes him as clearly ahead of his peers from a very young age onward. His interests and expressions of stages of development are much more

advanced than his actual age. This relatively advanced development is confirmed by the teacher's description of Paul. According to her, Paul has already passed the magical-thinking phase but, in the teacher's words, he 'can be brought back to it'. From the description by the teacher it also appears that the levels of his motor movements, social skills, reading and arithmetic conditions, and language, are high. His achievements are not out of place for a six-year-old pupil in the first grade of elementary school. Yet, after six months in kindergarten, the teacher emphasizes to the mother what Paul cannot do, even when this is not required of a kindergarten child. The teacher's description of Paul's work attitude is also informative. Paul completes all the regular kindergarten assignments because he has to, and his work attitude is average. He is underachieving and shows conforming behavior.

The mother's and teacher's information shows that this blocking of Paul's development in kindergarten soon results in emotional, social, cognitive, and motivational problems (see for details Mooij, 1999a). His problems largely manifest themselves at home, where he is becoming less and less cheerful since he started kindergarten. Emotional instability, more dependent behavior, and demotivation regarding kindergarten have come about. He does not express these feelings at school but to the one person he really trusts, his mother. The teacher does not recognize his behavioral signs of discomfort because she does not 'know' how Paul could behave, or used to behave, at home. In other terms: the social adjustment of Paul in kindergarten is detrimental to his development and potential functioning.

Discussion

The examples show how play and learning behavior of a four-year-old pupil in kindergarten is influenced by his own motor or cognitive activities and aptitudes. Also, social instructional process characteristics including the activities and social relevance of the other pupils and the teacher in class are relevant. The pupil's reactions to learning outcomes, evaluated within this social multilevel context, strengthen specific emotional, motivational, and social behavioral developments and reactions. From the point of view of new learning, the aggressive behavior of Henry can be interpreted as a co-construction of social meanings, based on Henry's actual learning behavior, the learning appliances used, the teaching behavior of his teacher, and the social and learning behavior of relevant other children in his class. In this class, the teacher has more than 30 children to deal with at about the same time. Working with small groups of pupils enhances her span of control, but she still cannot help Henry as much as required given his relative low capabilities.

Comparable research is done by Durkin (1966), Jewett, Tertell, King-Taylor, Parker, Tertell, and Orr (1998), Skinner, Bryant, Coffman, and Campbell (1998), and Walker, Kavanagh, Stiller, Golly, Severson, and Feil (1998). Skinner et al. (1998) state: "That a child can be on a trajectory for school failure by the age of 5 has led us to examine closely how various meanings and practices, which are historically and culturally constructed, work to define both kindergarten teachers

and children, and place them in certain relationships vis-à-vis one another." (p. 307). The research clarifies that, generally, early education teachers experience the 'extra' efforts necessary because of 'conspicuous' children as a very demanding task. However, if these extra efforts do not take place, or only to a low degree, the same kinds of de-motivation and social isolation processes happen with pupils 'deviating' below or above the mean level of their peers, from the beginning in kindergarten.

Another exploration concerns social processes and skills shown by pupils in a small group learning situation in elementary education.

EXPLORING COLLABORATIVE INTERACTION IN SMALL GROUPS

Kynigos (1998) presents qualitative research into the social interaction of collaborative pupil groups in a Greek elementary school. According to this author, Greek education is characterized by a national curriculum, individualized learning, competition between pupils, and dependency on the teacher. Kynigos focuses on small group interaction in computer-based learning activities. Each group has to draw a cat with Logo on a computer screen. In each group three pupils participate, who should rotate roles. The roles are: keyboard controller, record keeper, and activity controller. The social behavior and discussions between four groups of pupils aged 8-11 are analyzed from an insider's perspective, an interactionist perspective, and a social norms perspective. The results are as follows.

First, attention is given to the social interaction within the small groups. At the pupil level, role protection and role claims were contrasted with using threat and criticism as goal strategies. At the relational level, different criticisms of role performance between group members and claims to role change were made. Hardly any coordination of the small group effort, in terms of decision making and action planning, were found. At the small group level, social interaction within groups went in four directions: communication of personal ideas, communication between the group and the teacher, communication between the group and the classroom, and action planning and performance evaluation.

Second, all small groups shared some social interaction patterns. The first pattern is group-think (members strive towards consensus while failing to evaluate realistically all options and alternatives available). The second is demand for teacher intervention e.g., provision of information, direction about how to proceed, or management. The third pattern is role conflict and vagueness (resolved by role rotation, role sharing, role suitability, and role assignment). The fourth refers to small group and classroom social norms. Given traditional Greek education, the pupils felt relatively lost in the collaborative work. Kynigos writes: "(...) there was a natural tendency to avoid confrontations with situations requiring deep thought, accepting uncertainty, experimenting and exercising creativity (...) Since pupils lacked wide and lengthy exposure to the concepts, practical skills and role models for effective collaboration and how it works, collaboration at a group level seemed to take the form of individualistic coexistence and interaction characterized by role confusion. (...) In fact, it seemed that the social norms related to positive and

negative social behavior had emerged from a background characterized by low frustration tolerance and impatience.” (p. 15).

Kynigos (o.c.) concludes that social interaction and the building up of social skills within a collaborative small group may lead towards an uneven role distribution, with negative consequences for group members and undesired learning processes and outcomes. He relates these processes to the usual classroom processes in Greek education.

It seems that, in order to promote collaboration between pupils in a stable and longitudinal way, social, cognitive, and self-regulatory instruction have to support the development of desired social skills and cognitive and other outcomes. In the next two sections we present examples of such planned instructional changes within small groups.

SOCIAL AND COGNITIVE COACHING IN SMALL GROUPS

Exploratory talk in elementary school

Wegerif, Mercer, and Dawes (1998) develop two educational software programs to coach the use of ‘exploratory talk’ in small group work in elementary school. The pupils are aged between 9 and 10. These English researchers propose and use seven pragmatic ground rules for exploratory talk. The first three rules should bring the group together, rules 4 and 5 focus on explicit reasoning, rule 6 is based on collaborative problem solving, and rule 7 reflects empirical research on working with children. The rules are, respectively:

1. All relevant information is shared;
2. The group seeks to reach agreement;
3. The group takes responsibility for decisions;
4. Reasons are expected;
5. Challenges are accepted;
6. Alternatives are discussed before a decision is taken;
7. All in the group are encouraged to speak, by other group members.

The effectiveness of each coaching program was evaluated in target-class groups and in control groups by videotaping small groups working together on Raven’s reasoning tests. Within the context of the first program, in the area of citizenship, Wegerif et al. (o.c.) show that combining software design with off-computer coaching of exploratory talk enhances the quality of social interactions between pupils at the computer. With respect to the second science program the researchers demonstrate that computers can be used to stimulate collaborative learning and to direct this social-cognitive learning towards curriculum goals.

Constructive social structuring of learning activities in small groups of pupils may thus enhance both social and cognitive learning outcomes. In the next section curricular structuring is used to support the cooperation in small groups.

Adaptive curriculum and cooperative learning in secondary education

A series of projects by Terwel and his coworkers (see below) focussed on social and cognitive competencies of pupils in small group cooperative settings. In each project a pre-test / post-test / control group design was used. The numbers of pupils varied between about 400 and 800. The experiments were conducted in secondary education in the Netherlands.

In a first project a mathematics curriculum was developed. The main characteristics of the curriculum reflected learning in real-life contexts, in small cooperative groups. The outcomes showed that pupils in the experimental groups out-performed the pupils in the control group (effect size .22). However, low-achieving pupils profited less from cooperative learning than high-achieving pupils (Terwel, 1990; van den Eeden & Terwel, 1994).

In the second project an instructional model (AGO-model) was developed in which whole-class instruction, learning in small cooperative groups, and individual work, were combined. This model is a whole-class model allowing for pupil diversity through ad hoc remediation and enrichment within small groups, on a daily basis. The AGO-model consists of the following stages:

1. Whole-class introduction of a mathematics topic in real-life contexts;
2. Small-group cooperation in heterogeneous groups of four pupils;
3. Teacher assessments: diagnostic test and observations;
4. Alternative learning paths depending on assessments consisting of two different modes of activity:
 - a) individual work at individual pace and level (enrichment), in heterogeneous groups with the possibility of consulting other pupils, or;
 - b) opportunity to work in a remedial group under direct guidance and supervision of the teacher;
5. Individual work at their own level in heterogeneous groups with possibilities for pupils to help each other;
6. Whole-class reflection and evaluation of the topic;
7. Final test.

The model provides for diagnostic procedures and special instruction and guidance by the teacher in a small remedial group for low-achieving pupils. In this project an effect size of .68 was found. Low-achieving pupils profited less from learning in small groups than high-achieving pupils (Terwel, Herfs, Mertens, & Perrenet, 1994).

In a third project a modification of the AGO-model was used (Hoek, Terwel, & van den Eeden, 1997). Pupils were trained in social and cognitive strategies for problem solving from real-life contexts in cooperative groups. Special attention was dedicated to the analysis of differential effects for high- and low-achieving pupils. The outcomes show the expected positive effects (effect size .52). In addition to this main effect, the low-achieving pupils in the experimental condition out-performed their counterparts in the control group, so the special training and remedial instruction of low-achieving pupils had a compensating effect.

The aim of the fourth study was to assess the effects of the social and cognitive training as combined in one program. This integration of programs should be more

powerful than the separate social or cognitive program in the third study (Hoek, van den Eeden, & Terwel, 1999). It turned out that combining the two strategies benefited the high achievers rather than the low achievers. This seems reasonable in view of the high cognitive demands made by the integrated program. Low achievers in particular seem to profit from strategy training as long as the instruction is not too complex and as the student composition of the small group allows for a rich learning environment in which high achieving students can serve as role models.

The conclusion is that characteristics of the experimental programs seemed to produce positive social and cognitive outcomes by using real-life situations and learning in small co-operative groups (see also chapter 3). The promotion of learning by training social and cognitive strategies seems to be an attractive avenue for further development and research, in particular to support low-achieving pupils. These experiences are in line with other studies, for example, Cohen (1994), Cohen and Lotan (1995), Good, Mulryan, and McCaslin (1992), Slavin (1997), and Webb and Farivar (1994).

Changing social, didactic, and organizational characteristics on the school and class level can also be used to realize desired learning outcomes with pupils. In the next section we give two examples.

SOCIAL AND CURRICULUM DEVELOPMENT WITHIN THE SCHOOL

Multilevel intervention to support prosocial pupil behavior

Mooij (1999c, 1999d) hypothesized that social-pedagogical school characteristics and social-pedagogical and didactic class characteristics influence the development of a pupil's social behavior from the moment the pupil starts school. Covariables assumed to be relevant were the pupil's social behavior in class 1, that is the initial social competence, and variables related to the home situation and friends (cf. Garnier et al., 1997). So variables from the school level, class level, individual level, and the intra-individual level, were hypothesized to influence the development of a pupil's social competency. Changing school and classroom characteristics by intervention measures in a prosocial or cooperative direction should then effect prosocial changes in the social behavior of the pupils in the course of time, while controlling for the covariables or other potential sources of influence. Figure 1 models this hypothesis.

Interventions were carried out in four experimental secondary schools with pupils scoring high on aggressive behavior, whereas three comparable schools served as control schools. In both types of schools pre-tests were held in 1995 with pupils in the first grade (aged about 12) and teachers in grades 1 to 4; in all schools post-tests were held in 1997 with pupils in grades 1 and 3 and teachers in grades 1 to 4

Figure 1. Theoretical model with main concepts on school, class, pupil, and intra-individual levels

To realize the intervention, within each experimental school a working group on 'social behavior' was set up among teachers and school staff. If possible, the same occurred with respect to 'cognitive learning behavior'. Within each working group, teachers were given tasks to work out a set of classroom rules put forward by the pupils themselves, to pay attention to the formulation of rules in 'positive' ways, to increase pupils' responsibility for and control of their 'own' rules and the changing of these rules, to work on positive didactic rules with the pupils; or to transform regular school tasks into a more individually based curriculum with more attractive didactic features, including small group work to vary social processes during lessons. Concepts of rules and examples of curricular renewals were presented to the whole school team by the working groups, to inform other teachers about what was done, how, and why. Parents were also informed about the pedagogical, procedural, and didactic developments and changes. Finally, the new characteristics and ways of functioning were included in school policy documents.

The intervention processes and results were rather school specific (Mooij, o.c.). The main quantitative effects of the intervention on the development of a pupil's social behavior are rather clear. First, after controlling for the pre-test and a covariable in school year 1, intervention effects were found with the prediction of being a perpetrator of aggressive behavior at school, outside school, and criminal behavior, in year 3. Fewer or hardly any intervention effects were found with victim variables.

Second, personal continuity of social behavior scores in the first year was more important than either covariable effects or intervention effects. This finding underlines the primacy of individual 'social variables' compared to environmental influences on a person's social behavior (cf. Goleman, 1995). It also makes clear that preventing antisocial behavior, or promoting prosocial behavior, should begin as early as possible in a child's life (cf. Walker et al., 1998).

Third, home variables such as talking with parents about leisure time and school in year 1, and positive school experiences in year 1, had a prosocial effect, whereas the degree of problematic behavior of friends in year 1 had an antisocial effect on the development of a pupil's social behavior.

It was also found that, at the intervention schools, the prediction at the pre-test was generally higher than at the control schools, whereas the mean effect was lower. This outcome led to the interpretation that the pupils scoring highest on antisocial behavior at the pre-test should receive more personal attention on top of the group attention they received in the intervention. Social die-hards seem to need both group and personal support to behave more prosocially, from the beginning in school onwards.

Finally, from a longitudinal point of view, parents and peers did play a role in influencing a pupil's social behavior. They should therefore be included systematically from the very moment a pupil starts school. Strategies to integrate home and peer variables in optimizing ways can also profit from other research (cf. Cowie, 1997; Farrington, 1993; Lim & Deutsch, 1996).

Fractal learning in a cooperative school: The impact of individual differences

Huber (cf. Herold, Landherr, & Huber, 1997) supervised a project concentrating on the use of cooperative learning to overcome the organization of teaching according to school subject matter areas (cf. Ratzki, Keim, Mönkemeyer, Neißer, Schulz-Wensky, & Wübbels, 1996). The goal was to develop and implement cooperative learning, which changes the organizational structure of teaching as well as the roles of teachers and pupils. Because similar structures and processes are created within all organizational units, from staff level to the level of cooperative teams of pupils, these researchers call their model a *fractal* model of teaching and learning.

An organizational framework was developed to meet the demands of modern conceptions of active learning (self-regulatory competencies; cf. Stern & Huber, 1997), of employers (action competencies), and of information society (media competencies). All pupils of grade 12 were assigned to three so-called 'learning islands'. These units comprehended subject matter areas which, from the point of view of a particular overlapping theme, offer optimum opportunities for creating linkages. In grade 12, pupils may for instance access the topic of 'energy' under the perspectives of natural sciences / mathematics, linguistics, and social sciences.

A team of teachers introduced the overlapping topic ('energy') in the form of a general overview. This introduction served as an 'advance organizer' (Ausubel, 1974) and accentuated the linkages between formerly isolated subject matter areas. The pupils took turns as inhabitants of each of the learning islands. Like in a modified version of Jigsaw learning, each pupil had to complete the assignments of one of the disciplines represented on the learning island. So he or she became an 'expert' concerning the particular subject matter area. Other pupils on the same learning island became experts for the other subject matter areas. Later, back in their 'basic teams', they shared their different expert knowledge, teaching each other and learning from each other with increasing self-responsibility. The teachers

were available during this phase of learning, as moderators of group dynamics or learning procedures and - if necessary - as the real experts in their particular subject matter domain.

Most interesting among the empirical results were interactions of cooperation and individual uncertainty- versus certainty-orientation. Pupils used a small rating scale to evaluate the cooperative processes in their learning groups. Significant differences between the ratings indicated that uncertainty- as compared to certainty-oriented pupils experienced to a higher degree that their team mates understood and accepted their suggestions, were more convinced that they influenced decisions, and were more content with their share in the group's decision making.

This kind of orientation-treatment-interaction was investigated in detail in another study including 209 students (Huber, Scholz, Kahlert, Schmidt, Standke, & Stauche, 1995; cf. Huber & Roth, 1999). Individual uncertainty orientation versus certainty orientation was assessed with a 15 item rating scale. Three clearly uncertainty oriented pupils and three clearly certainty oriented pupils were identified in each classroom. They were confronted individually *and* in homogeneous groups of three with comparable tasks from three subject matter domains: German, Social Studies, and Mathematics. After small group sessions each member had to complete a questionnaire assessing the social climate during the small group work. The pupils' activities were videotaped and transcribed. Later these transcriptions were analyzed by the software tool AQUAD Five for Windows (Huber, 1997).

In the total sample there was no difference in intelligence between uncertainty- and certainty-oriented pupils. The German language task was a low structured task. As expected, an analysis of decision making during preparation for an oral presentation about 'Our life in 10 years' time' showed hardly any difference between uncertainty- and certainty-oriented pupils when working individually, but very important differences when working in small groups. If each pupil had to decide on his or her own about the topics of presentation, there were hardly any interactions between demands of the situation and personal prerequisites in terms of individual tendencies to analyze controversial issues versus maintenance of one's own point of view. However, if the learning situation was characterized by challenging controversies, that is, when the pupils had to solve their task in small groups, these contradictory tendencies became important in decision making, leading to poorer processing of the task by certainty-oriented pupils.

In the social sciences case, a medium structured task, the pupils had to organize optimum small groups of four to five pupils each in their classroom. The task offered fewer degrees of freedom for decision making because the characteristics of class mates are well known, so there are no unlimited combinations of team members. Consequently, there should be less ambiguity and challenges in decision making. The researchers found fewer pronounced differences between frequencies of categories in individual and group situations. Uncertainty-oriented pupils elaborated more on their suggestions than did certainty-oriented pupils when working on their own. The transcriptions of the pupils' thinking-aloud in individual sessions and of group discussions were analyzed to find out how the pupils assigned class mates to particular small groups. Uncertainty-oriented pupils

tried to arrange well achieving teams, whereas certainty-oriented pupils tried to minimize controversies by assigning team members primarily according to the perspective of social relations.

As a last and well structured task, the pupils had to solve mathematical word problems individually and in small groups. Typical mathematical tasks in school at this age level are highly structured and do not define a situation of uncertainty. It is not clear whether an individual problem-solver or a group of problem-solvers will be able to find the solution. As expected, there were no differences at all between uncertainty-oriented and certainty-oriented pupils in individual as well as in team situations.

Within the context of the school-wide intervention, learning in small groups of pupils therefore instigated different processes in uncertainty-oriented vs. certainty-oriented learners. Interestingly, the differences in decision making faded out with increasing structure of learning tasks, as the theory of uncertainty tolerance suggests. The most remarkable differences were found in the lowly structured language task (preparing for an oral presentation in German), minor differences in a social sciences task (arranging learning teams in their own classroom), and no differences in well structured tasks of solving mathematical problems.

In the following section we illustrate a potentially next step to realize new learning.

AGE-INTEGRATED CURRICULUM AND PUPIL-BASED EDUCATION

Bergqvist and Säljö (1998) report about participant observation carried out in grades 1-3 of four elementary schools in Sweden. The schools use an individualized curriculum in an age-integrated classroom and the pupils are aged seven to nine.

The researchers concentrate on pupil and teacher cooperation in talking about the pupil's weekly planning and working, or, in new learning terms, about learning to self-regulate the schoolwork. Their qualitative observation reveals that many responsibilities are conveyed from the teacher to the pupil. The researchers conclude that different intellectual, organizational and procedural skills were demanded from the pupils. Those who were considered successful were talked about by the teachers as 'good at planning'. So planning in itself became a target.

Bergqvist and Säljö (1998) therefore show that social, pedagogical, and learning roles are intricately related to the didactic, curricular, social, and schoolwide organization of both teaching and learning. Of course, age-integrated working is not restricted to using an individualized curriculum. Working with small groups is also attractive (see also Lando & Schneider, 1997).

Mooij (1995, 1999a, 1999b) argues that optimizing kindergarten and school effects first of all requires a positive and open pedagogical school climate. All persons in school should get along with each other in respectful and prosocial ways (Alschuler, 1980). Pedagogically, the educational situation should promote the harmonious growth and support of every pupil on all relevant aspects e.g., cognitive, social, emotional, creative, athletic or sensory-motor, and motivational characteristics. To direct this school developmental process, Mooij (o.c.) develops five theoretical guidelines to support the functioning of each pupil and teacher and

to prevent traditional problems of marginal pupils in particular. These guidelines are:

1. Promote prosocial and pedagogical rules and procedures;
2. Use an intake procedure for every pupil;
3. Combine free play and instructional lines in the curriculum;
4. Use quality criteria to support each pupil from the beginning;
5. Plan and evaluate educational transformation on different levels.

Education according to these guidelines can be called 'pupil-based education' in which the social and cognitive competencies of all pupils are being promoted, from the beginning in early education. For this reason an intake procedure was developed, using research results based on 966 four-year-old children (Mooij & Smeets, 1997; cf. Tymms, Merrell, & Henderson, 1997; Walker et al., 1998).

Since 1995, 14 Dutch kindergartens annexed to elementary schools are cooperating to realize pupil-based education (cf. Mooij, 1999a, 1999b). Their goal is to develop age-integrated schooling, to transform traditional education into a child-friendly system for all pupils (see also Entwisle & Alexander, 1998). A computer program is being developed to support both pupils and teachers. Instructional lines in the prototype are made up of different educational play and structured learning contents: motor behavior, social-emotional development, projects, language, (preliminary) arithmetic, (preliminary) reading, and (preliminary) writing. Activities or tasks within each line are visually represented by a photograph of the object as present in class. To stimulate pupils adequately, variations of the same lines refer to different developmental levels e.g., regularly developing pupils, pupils who need remedial activities, or pupils who are advanced on the topic of the line. A pupil's progress can be checked regularly by integrating diagnostic tests and normalized or standardized achievement tests in the instructional lines. The test scores are quality indicators of a pupil's school career which, controlling for his or her entrance levels, express the rate of a pupil's progress over the course of time.

The software acts like a planning and registration system for both pupils and teacher. The pupil gets more responsibility for his or her own learning processes while the program, partly substituting the teacher, assists and manages the learning progress. The main advantage is that the teacher can concentrate more on the pupils who really need her or his assistance. Moreover, the didactic and organizational structure of the play and other activities is being supported. The frontiers between kindergarten and elementary education can be changed into age-integrated, continuous developmental paths.

Accurate information about the social processes taking place between the pupils, between the pupils and the teachers, and at home, can be obtained by using another computer program (Mooij, Mooij, & Smeets, 1997). With 9 to 15 year-olds in elementary and secondary education this program measures the type and amount of pro- and antisocial behavior e.g., bullying, the places where the behavior occurs (at school, outside school, at home), as well as actions taken against antisocial behavior. The results are recorded and percentages are compared per class and over a number of classes, both cross-sectionally and longitudinally. Specific results can be used as a standard for reaching agreement between the pupils and the teacher

with respect to reducing future degrees of antisocial behavior. In this way the pupils are given more responsibility with respect to their positive social behavior. When the program is completed regularly e.g., once within each quarter of a year, the pupils' self-evaluation can show progress in a prosocial direction which can stimulate the improvement in social skills for the next measurement.

CONCLUSIONS

The information in this chapter supports the view that social, emotional, cognitive, and self-regulative characteristics are essential in process-oriented instruction. Relevant variables play a role on different levels in both the teaching situation and the learning situation. Intra-individual processes, pupil level processes, small group processes, class processes, and school processes, but in particular interactions between characteristics on these levels, are relevant. Social and other variables from these different levels interact with each other in different ways, at about the same time. Simultaneously, outside-school influences from the home situation and from peers are important. A first conclusion is therefore that longitudinal, multivariable, and multilevel theorizing is required to model and test instructional and learning processes and outcomes within the new learning approach.

Second, while controlling for beginning competencies of a pupil, relationships between intra-individual and pupil level characteristics on the one hand, and social, instructional, and curricular or organizational characteristics on the pupil, small group, class, school, regional, national, or international level on the other hand, can be used to analyze, evaluate, or plan, the quality of education for a pupil, a small group of pupils, or a class or more pupils (see also Cronbach, 1983). Such quality indicators are essential in e.g., pedagogical, didactic, and organizational policy processes, and in the determination of policy effects on these different levels. Here new learning could also play an important role in the future.

Third, educational practice can profit from this quality-oriented methodological strategy. From the above we learn, for example, that a pupil's social and emotional behavior partly depends on social relationships, processes, and effects within the small group or class, including the teacher herself or himself. The relevance of this point is that, with respect to social and emotional measures in particular, much observation and screening occurs in kindergarten and elementary school (Laevers, 1992). Because this effort is concentrated on individual pupils only, the group-dependency of the pupil's behavior seems to be excluded which may lead towards false conclusions. For example, in the case of Henry the teacher may concentrate on his aggressive behavior, that is on the symptom instead of on the cause of his aggression. What is really needed, of course, is a change or reduction in the number of children in the class. This number should be based on the quality of the social and other characteristics of the children actually present.

Fourth, experience in developing educational practice teaches us that prosocial and constructive new learning processes should be developed in collaboration between teachers and school staff, pupils, researchers, and parents or caretakers. These partners have their own complementary roles and competencies in the required developmental processes (cf. Hatch, 1998).

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