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Young Children's Self-Regulated Learning: What Does it Look Like in the Classroom?

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Abstract: This article argues that self-regulated learning (SRL) in the classroom is an inherently social, dynamic, and complex process and that it is crucial to discuss SRL with regard to concrete practices and with a focus on what children actually do and say in classrooms. Current theoretical views on SRL are presented and consensual as well as conflicting aspects are identified. It presents a qualitative study of SRL in first and second grade children using qualitative triangulation of observation and interview. An example from a video observation in this study shows a fine-grained view of a process of SRL. The example which is analysed in detail shows a six-year old first grade student sitting at a table with other children and working on a mathematics task over a period of 30 minutes. In the analysis it becomes evident that this boy is self-regulating continuously and that several processes of complex self-regulation go hand in hand and are interwoven in this day-to-day learning episode. Multiple goals, social goals as well as learning goals are handled and balanced. With reference to the example presented, it is argued that SRL is always social, ubiquitous, not necessarily academically effective, and at times implicit.

Keywords: *self-regulated learning, metacognition, motivation, elementary education, learning processes, learning strategies, qualitative research, grounded theory*

Research on self-regulated learning (SRL) looks into rather commonplace phenomena in day-to-day learning: How and why do students focus on some aspects of their tasks and not on others? When and how do they use a certain strategy? How do they organize their work in the social setting of the classroom? Or, more generally: How do students make decisions in their learning process in constantly changing and interacting contextual circumstances? Even if we are talking about frequent events and even if research on SRL is a vast and steadily growing area, Perry and Rahim (2011) state that "descriptions of teachers and students working in classrooms are rare in research about SRL" (p. 123). They ask not only "what is self-regulated learning?" but also, "what does it look like in classrooms?" (Perry & Rahim, 2011, p. 122). In

the following, I would like to give one answer out of a probably uncountable number of possible answers to the second question and to present one example of SRL and how it unfolds in the classroom. The example is taken from a qualitative study examining SRL in the classroom with children in the first two years of school, aged six to nine years (cf. Wagener, 2010).

In the beginning of this article the theoretical background and contemporary conceptualizations of SRL will be presented. Some conflicting aspects in different approaches will be highlighted. Subsequently, methods and sample of the study from which the example was taken will be described. The example will then be presented and analysed in detail. It will be utilized to elaborate on theoretical considerations in the discussion. Different aspects of SRL are taken up again, aiming at clarifying terms and theoretical positions.

Conceptualization: What is SRL?

SRL is a complex phenomenon that is related to different fields of research in psychology and education. Self-regulation in general is defined as the reflexive and goal-oriented supervision and adjustment of one's own behaviour. It can be characterized as a process that is multifaceted and concerns the individual as well as its social and material environment. Even if there is no simple definition of SRL (cf. Boekaerts & Corno, 2005), there are some common assumptions in research on SRL: Strategic action, metacognition, and motivation are considered to play a part in a learning process that can be labelled as SRL (Artelt, Demmrich, & Baumert, 2001; Winne & Perry, 2000). As defined by Winne and Perry (2000), "'strategic' describes the way in which these learners approach challenging tasks and problems, by choosing from a repertoire of tactics which they believe are best suited to the situation, and applying those tactics appropriately" (pp. 533-534). Additionally, metacognition plays a crucial role in SRL. Metacognitive monitoring provides information that is needed as a benchmark for the regulation of further learning; every regulation needs a prior evaluation to clarify the necessity of regulation and of modification of behaviour, and therefore "metacognitive monitoring is the gateway to self-regulating one's own learning" (Winne & Perry, 2000, p. 540). Associated metacognitive knowledge is knowledge about particular

tasks and how best to address them, knowledge about strategies, cognitive resources, and about own academic strengths and weaknesses. Seeing that SRL is a process that is characterized by its self-directedness it becomes obvious that the motivation of a student to aspire to a specific goal is another vital aspect of SRL. SRL depends on motivation, on students who exert effort, who persist in the face of challenging tasks, and who feel self-efficacy afterwards. In summary, it is "the fusing of skill and will (and dare we add "thrill?") to emphasize that cognition, motivation, and affect are all involved in self-regulated learning" (Paris & Paris, 2001, p. 91).

Historically, research on SRL focused on individual cognitive-constructive activity and on individual differences regarding the use of strategies, metacognitive monitoring, goal-setting and motivation, self-efficacy, and achievement (e.g., Hadwin, Järvelä, & Miller, 2011). Thirteen years ago, Pintrich (2000) developed a consensual definition of SRL after reviewing contemporary models of SRL:

> Self-regulated learning . . . is an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and contextual features of their environment. These self-regulatory activities can mediate the relationships between individuals and the context, and their overall achievement. (Pintrich, 2000, p. 453)

Pintrich (2000) divides the process of self-regulated learning into four phases. The first phase is called forethought, planning, and activation, including goal setting. The second phase comprises the monitoring of the learning process. The third phase includes regulation and control, thus the use of strategies is part of this phase. The fourth phase is called reaction and reflection and consists of all evaluations, judgements, and attributions that are made subsequently to a learning episode. According to Pintrich (2000), the four phases of self-regulated learning can occur in four different areas: cognition, motivation, behaviour, and context. The phases represent a time-ordered sequence but all phases do not take place in every learning process and they do not always happen consecutively (Pintrich, 2000).

This concept is still valid and often quoted. Nonetheless, recent conceptualizations of SRL are becoming increasingly complex, highlighting dynamic processes, social and contextual aspects, and mutual interaction between different aspects of SRL. Butler (2011) asserts that "it is widely agreed that SRL is a multi-componential, dynamic, recursive, contextualized activity that constitutes both individual and social processes" (Butler, 2011, p. 351). Perry and

Rahim (2011) focus on SRL in classrooms and underline the importance of considering the interplay between "contexts – including tasks, instructional practices, and interpersonal relationships in classrooms – and students' engagement in independent, academically effective forms of learning, SRL" (Perry & Rahim, 2011, p.122). Thus, it can be seen as a consensus in the actual discussion about learning that social and contextual aspects are important and have to be considered. Social settings and instructional conditions are not mere circumstances that influence learning – the picture is much more complex with changing dynamics, mutual interference, and inevitable, constant interdependence. Therefore, context and individual, social and individual, teacher instructions, peer interaction, and learning, have to be analysed in their multiple interaction, transaction, and interdependences and not as distinct variables. When reviewing research literature it becomes obvious that there are other aspects that are more controversial or less consistent in the conceptualization of SRL. For the purpose of this article I would like to elaborate on three points.

Is SRL Always Academically Effective Learning?

Some definitions refer to SRL as academically effective learning (e.g., Perry, 1998; Perry et al., 2002). This is convincing for those definitions that regard SRL as always directed towards desired and often prescribed learning goals (Schunk, 2001; Zimmerman, 2000). Boekaerts and Niemivirta (2000) and Boekaerts (1999) for example take a different position stating, "The term 'successful learning' does not have any explanatory power" (Boekaerts, 1999, p. 447). If social and emotional goals are included in the definition of SRL, it is problematic to define SRL as academically effective learning. If a student successfully pursues and reaches an emotional goal, he or she might neglect learning goals for this period of time. Students can use self-regulative abilities quite competently, but if they have not prioritized the pursuit of a learning goal this self-regulation will not lead to positive effects on learning outcomes. This means on the other hand that a student who failed to reach a learning goal is not necessarily lacking in self-regulative abilities, he or she might have reached another goal successfully (cf. Boekaerts, 2002). Students can also choose learning goals that differ from the goal the teacher wants them to adopt; a student can pursue the goal of becoming an excellent football player and therefore he or she reduces time spent on homework to the absolute minimum in order to

have more capacities for extensive training; “if my goal is to pass with little effort, I may look like I’m being less effective to someone who assumes that I am trying to learn as much as possible” (Nolen, 2006, p. 230). Judging effectiveness and necessity from an outside perspective as a researcher or teacher becomes extremely difficult if multiple goals are included in the concept. Effectiveness can only be judged depending on the goals that have been set. Not knowing about the goal(s) a student pursues, we cannot ascertain if he or she is successfully self-regulating. The recognition and choice of a compulsory or educationally desired learning goal can be seen as the first step in SRL but I argue that we narrow the analytic grasp of SRL if we only focus on learning processes striving for prescribed learning goals.

Is SRL in Classrooms Scarce or Ubiquitous?

Some conceptualizations define SRL as an advanced and rather sophisticated form of learning that students have to be taught and trained to use. In these definitions SRL is a desirable goal of education (e.g., Paris & Paris, 2001). From another perspective, SRL can also be seen as a more basic process: Winne (2011) states that “learning is potentially continuously self-regulated” (p. 19). Regulation means that learners make decisions; they focus on one thing and not the other, they choose to seek help from a peer or a teacher, they check on something in a dictionary, they use an online tool, or they do not check at all. Even in settings that are not ideal for SRL, where learners do not have choices about what to learn and how to proceed, learners have to make decisions and they have to regulate. Winne (2011) underlines that SRL is inevitable for two reasons, the first is that there are usually multiple contents to learn about, multiple ways to proceed, multiple things to look at, multiple people to listen to and to work with. “The world affords people uncountable opportunities to learn many things but not all opportunities are taken up – people are selective – they self-regulate learning” (Winne, 2011, p. 15). If we optimistically assume that classroom learning also provides several (if not uncountable) opportunities, it becomes obvious that self-regulation is necessary. The second argument for seeing SRL as inevitable is a cognitive argument: Our (cognitive) system has limited capacities; due to this limitation we always have to choose and regulate; “these implications of limited capacity support an inference that SRL is inherent in

learning activities. SRL is natural and learners do it whether taught about it or not" (Winne, 2011, p. 16). This view of SRL as generally inherent in learning considers processes that are likely to be at least partly implicit, which is the next point of discussion:

Can SRL be Implicit?

One controversial point in the definition of SRL is the aspect of implicitness or explicitness of SRL; other terms would be the (un-)consciousness, awareness, or intentionality of SRL. The question of whether SRL is always consciously applied and if all aspects of metacognition are aware, affects the theoretical basis as well as the assessment of SRL. According to some conceptualizations, consciousness is an essential element and correspondingly, Pintrich (2000) argues that if, for example, the activation of prior knowledge happens automatically this is not to be regarded as a part of SRL, "because it is not under explicit control of the learner" (p. 457). However, according to Butler (2002), "questions can be raised about how much 'self-regulation' transpires outside of direct awareness" (p. 61). Winne (2011) writes "cognition is often implicit" (p.18) and he summarizes,

> Learners appear sometimes not to self-regulate because cognition seems to them and to observers to 'run by itself.' This apparent absence of cognition is due to spreading activation across schemas and automated procedural knowledge. Notwithstanding, cognition is still self-regulated. (Winne, 2011, p. 19)

The aspect of consciousness is also an ongoing discussion regarding metacognition, metacognitive monitoring, and strategy choice. Veenman, Van Hout-Wouters, & Afflerbach (2006) point out that implicitness or explicitness of metacognition is controversial (cf. Reder & Schunn, 1996; Schnotz, 1992; Veenman, Prins, & Elshout, 2002). Reder and Schunn (1996) argue that implicit processing is not a marginal phenomenon: "Much of the cognition that is called metacognitive typically operates at an implicit level; that is without conscious awareness. Many of the tasks that are called monitoring are also operating without conscious awareness" (p. 73). Moreover, even if a strategic action itself is conscious or possible to recollect, the reasons for the choice of a strategy are often implicit and unaware, "although we argue that people are unaware of what causes them to select one strategy rather than another,

we make no claims about their awareness of the results of their strategy selections" (Reder & Schunn, 1996, p. 47).

Several models of SRL include processes that have been automatized. For example, according to information processing approaches, the processes of monitoring and adjustment of behaviour can become automatized and unconscious with experience and routine (Winne, 2001, Zimmerman, 2001). In Pressley et al.'s (1987) model of a good strategy user, automation of strategy use is explicitly included, "The good strategy user has automated many of the components" (Pressley et al., 1987, p. 116). Veenman et al. (2006) underline for metacognition that a clear and consistent conceptualization is needed but does not yet exist.

Focusing on SRL in classrooms several questions remain open. What is SRL? Does a student have to be able to verbalize and explain what he or she is doing and why? If for example metacognitive monitoring and checking of results have been learned by looking at a model and cannot be named as a strategy is this still a metacognitive, self-regulative process? Does a student have to be able talk about a strategy with or without prompting?

The Study: Young Children and SRL – one Extended Example

In the following section, a study of SRL in young children will be described regarding aims and methods (Wagener, 2010). After that, not the whole body of data but one example from a video observation in this study will be presented and analysed in detail. The example has been chosen because it enables observation and analysis of a variety of actions and reactions of a young student in his classroom context. The aim is to analyse and illustrate how (self-regulated) learning evolves in this natural setting; processual aspects of SRL are shown and how SRL is embedded in the social setting and the learning environment. Accordingly, also the description of data collection is focused on video observation.

Methodology, Methods and Sample

The study examines young children's self-regulated learning in the first two years of school in Germany. The aim of the study was to develop a fine-grained analysis of young children's self-regulated learning in a naturalistic school setting, recognizing children's thoughts and reflections as well as their actions and routines in their daily learning. Being at the beginning of their school career, these children were still learning to read and to write. Thus, it was impossible to use methods of data collection which require reading or writing skills. A qualitative triangulation of methods and perspectives was applied, using methods of participant observation, video-observation, and interview. Data collection and analysis were done according to the principles of Grounded Theory (Strauss, 1987; Strauss & Corbin, 1994; Strübing, 2004, Muckel, 2007). This qualitative and microanalytic approach was chosen because there is evidence that methods such as self-reports or experiments are likely to underestimate the metacognitive competencies of children (e.g., Whitebread, Bingham, Grau, Pasternak, & Sangster, 2007). Participation in the field was applied as a basic principle in data collection and aimed at obtaining more insight into children's daily practices and their perspective on the matter and at building a trusting relationship to all participants (cf. Wagener, 2010).

Data collection: Qualitative triangulation.

Data collection was conducted in three steps. In the first step, learning processes were observed with participant observation and documented with running records in three classes in different German primary schools. In the second step, one focus class was chosen and video observation was undertaken in this class. Finally, interviews were conducted in the same class. Different methods of data collection were used to capture different aspects of self-regulated learning in young students. Interviews are a way of learning more about their thoughts and reflections, whereas observation in a naturalistic setting can be a way of learning more about children's self-regulating and metacognitive abilities in daily practice (Winne & Perry, 2000). Video observation allows the analysis of self-regulated learning in the process and 'on-line' and enables an in-depth analysis of what children do and say in learning

situations. The focus in video observation is on self-regulated learning as an "event" (Winne & Perry, 2000). It enables the analysis of how self-regulated learning evolves in a situation, and how it is fostered or inhibited by other events or interactions. Observation can inform about different processes that go hand in hand or occur consecutively. Children were filmed at their group tables of four to six students to cover individual as well as social processes. Using video observation it was possible to cover the complexity of social interaction and task-related action (e.g., Huhn, 2005). Except for the presence of the researcher and the video camera no alterations in the classroom situation and classroom routines were made.

The sample.

The main body of data, most of the participant observations and all video observations and interviews, were collected in one focus class. In this class, 22 children, 12 boys and 10 girls, 11 children from first year and 11 from second year aged from 6 to 9, were educated together. They were observed during mathematics and German lessons. The chosen class was one from a regular elementary school in northwestern Germany. The school had deliberately chosen to educate children in the first and second year of school together in one class, due to pedagogical considerations.

Primary school children in this area have limited possibilities of choosing between different schools and they are normally assigned to one school according to their place of residence. Thus, even if the school differs from most other schools in the region by educating children from first and second year in one class, the children are selected only by their place of residence. The catchment area of this school can be described as rather typical for a town in northwestern Germany and as somewhat mixed regarding socio-economic background.

This focus class was chosen because children worked independently more often than in other classes, they had some choices in their work and these situations should make self-regulation more likely (Zimmerman, 2008). Another argument was that according to the concept of the chosen school, older children were allowed and encouraged to assist younger children. It was assumed that this would also influence interaction in the classroom, and that

research might benefit from observing these interactions possibly being situations of co-regulation (Hadwin et al., 2011).

Data analysis.

Data were analysed consecutively in an iterative research process. It is important to note that analysing in Grounded Theory is an interpretative and heuristic process. Thus, coding is much more than linking data to prefixed terms and categories, it is a way of gaining an analytical understanding of what happens in the data (e.g., Berg & Milmeister, 2007, pp. 186-189). Coding is also more than describing data. It is not a way of paraphrasing what happens, but it is used for conceptualizing data in theoretical terms. Coding procedures were applied with the aid of AtlasTi, a computer program for qualitative data analysis that has been developed for use in Grounded Theory research (e.g., Friese, 2012; Kuckartz, 2010).

In the analysis, inductive and deductive methods were combined. Concepts that are central to SRL were used to build codes such as "Use of criteria for evaluation" or "Evaluation of personal skills". They were integrated in further analysis as preliminary codes and it was reassessed whether they fit the data. This procedure was regarded as a means of linking the developing view on young children's self-regulated learning to existing theoretical frameworks, and to systematically search for further indicators for self-regulative processes in the data. Inductive coding procedures (e.g., Strauss, 1987) were used to complement the analysis and to extend the theoretical view on SRL. Later on, Pintrich's (2000) model, which describes chronological phases of SRL that are supposed to encompass the process of SRL was used for building codes. The four phases were applied as codes on data and it was checked whether these codes could be applied on data and if they could be grounded in data. As it has been described in Grounded Theory, all former theoretical concepts were used with scepticism until they proved to be appropriate. Coding procedures and categories were regularly discussed in a team of researchers.

The Example

The chosen example focuses on one boy from first grade who mainly works on his own. This boy reveals what he is doing and thinking in a given moment not only by his actions but also by conversing loudly. He talks to himself, to other children at the table, and to his teacher. The whole sequence takes 33 minutes; it is presented here in full length. According to the teacher's judgment, George is an imaginative, creative student whose overall achievements in school are on an average level.

The situation and the task

The setting is called "mathematics workshop" and this workshop takes place several times a week. There are numerous different tasks with material in a room next to the classroom and all children are allowed to choose between them. When they have started with one task, they are supposed to continue with it until it is finished. After that they can choose a new task freely.

All the tasks in the mathematics workshop are rather short, not very complex tasks. They can be solved alone and need no cooperation. Children have some freedom of choice in choosing between the different tasks, choosing a workplace, choosing a partner, or choosing to work alone and often there is a possibility for self-evaluation included. They are free to ask the teacher or other children for help and support if necessary. The tasks are from different parts of mathematics education. There are calculation tasks or small mathematical problems. In the following example, the children are working with geometric shapes. The task is one in a series in which children learn about basic geometric two-dimensional shapes, squares, rectangles, triangles, and circles and how they can be combined to build bigger shapes or patterns. Tasks are, for example, about rebuilding given shapes as in the game Tangram or about identifying and building symmetrical patterns. The task in this situation was an additional task the teacher had explained to the children outside the video focus; there was no written task description. The children were supposed to develop new and bigger patterns built out of geometric tiles and after this they should reproduce and draw these patterns with the aid of a stencil. The task seems to be rather open and it is not prescribed what kind of patterns the

children are supposed to build; no criteria for evaluating the quality of possible solutions are named within the video recording.

The actual classroom situation is affected by some disturbance. There had been some disciplinary problems and discussions with another teacher at the beginning of the day. The children in the class are still somewhat agitated; the head teacher is rather irritated and less composed than usual. Furthermore, the discussions had caused some delay and in the lesson presented; the head teacher decides to skip P.E. and to go on with mathematics. This adds to the disturbance. Some children are upset and start discussing and protesting.

The data

The analysis focuses on two boys, George and Stephan, from first grade who have chosen each other as partners. In several situations in the data, children are working on a task and simultaneously they comment on what they are doing. They sometimes do so in interaction with other children or the teacher, but they also talk to themselves without expecting anyone else to listen or to react. This is also the case in the following example: George is talking frequently, sometimes in soliloquy, sometimes addressing others, and sometimes these two ways of speaking seem to merge. Thereby, he provides an insight into his thinking and learning.

Along with Vygotsky (1986), George's way of speaking to himself can be regarded as self-talk or inner speech which is not yet internalized. In Vygotsky's view self-talk is a basis for higher order thinking skills. Self-talk or "egocentric speech develops along a rising not a declining, curve; it goes through an evolution, not an involution. In the end, it becomes inner speech" (Vygotsky, 1986, p. 228). Comparing children between the age of four to six years, self-talk has shown itself to become less frequent with age and children aged six generally start preferring inner speech (e.g., Patrick & Abravanel, 2000). Thus, George who is using self-talk extensively at nearly seven years might be rather late with the internalization of his self-talk; the extent to which he allows insight into his thoughts by his talking is rather exceptional in the data. There are several other children using self-talk, but not so extensively. Georges says what he is thinking and describes what he is doing and his self-talk gives the impression of being a natural think-aloud measurement.

An overview of the situation: "I Am Building a Huge Pyramid!"

In this lesson, George and his partner Stephan have chosen to work together. They are talking about a task they call "building patterns" but they are both kidding around and laughing. The teacher joins them and assists them in organizing their work. George is not listening to the teacher but Stephan is. The teacher continues to give instructions to Stephan and George is left on his own. In this situation, George starts his own task, laying new patterns with geometric tiles. He then specifies the task and decides to build "a pyramid". This does not mean that he is building a three-dimensional pyramid; he is forming a two-dimensional bigger triangle out of small triangles. After having finished, he specifies and changes slightly this goal of building a pyramid and then starts anew several times. He works on this task until the end of the lesson.

In the following, the situation will be described in more detail; quotations will be presented and analysed. For clarity of presentation the situation is separated into five parts; the five parts succeed each other at a stretch. Headlines given for each part represent topics that are focused on in the analysis.

Part 1: Getting the Work Started: Defining the Task and Setting Goals

Description of the situation.

In the first part of this situation George and Stephan are singing, laughing, and playing around with their material. They are also joking about the task. As they are quite loud, the teacher intervenes. Stephan quickly changes his activities and behaves more seriously whereas George goes on joking and does not seem to be moved by the teacher's reprimand. The teacher is talking to the boys to help them begin their work. He addresses both boys grammatically, but in the end he focusses his assignment on Stephan, explaining and specifying a task and helping him to obtain the required material. Meanwhile, George is shifting tiles on his plate, saying that he knows how to do his task. George starts working silently. The teacher asks George to move over and therewith he makes sure that Stephan has enough space to work on the table. Apart from this, the teacher does not interfere with what

George is doing. The teacher leaves the table and George announces that he is going to form a pyramid.

Analysis.

Two aspects will be focused on in the analysis of this initial part of the situation. The first aspect is the way the boys discuss the task and make fun of it. The second aspect is the way the teacher handles the situation. As already mentioned, the exact assignment of the initial task is not available. However, for the learning process it is most interesting how the children co-construct and redefine the task. George and Stephan refer to "patterns" as they are fooling around and arguing light-heartedly about their task. Asked by the teacher what they are doing, Stephan says that they are supposed to create patterns on a sheet of paper. An interesting aspect is that George is playing with this seemingly rather open and undefined task. He has obviously noticed that the task is easy to solve if it is taken literally. Putting two squares together George announces, "cornered squares, this is already a pattern." He underlines this argument when the teacher is asking about the task: Teacher: "Well, what are you doing here?" George: "This is already a pattern." Stephan: "We are supposed to make such patterns, on a sheet." George: "But this is a pattern."

George demonstrates that the term pattern is not very specific and that nearly everything might be called a pattern. He is showing that the task can be solved easily and he insists on making his point. Is he reflecting on the task and labelling it as too unspecific or too easy? Or is he just reacting to a situation that is easy to make fun of? Whichever is the case, he shows an understanding of the task and its difficulty or its incompleteness. He shows metacognitive knowledge and uses it for his advantage.

As the situation evolves, George specifies the task for himself. This is done by aiming to make "nice patterns" first and then by aiming to build a "good pyramid". George is not only able to make fun of this task and find an easy way out by working to rule, he can also fill in the blanks by specifying creatively what he has to do and therewith, possibly, fulfilling the task according to the teacher's intentions. This shows a student's competence in handling task assignments; George can handle an incomplete task. He complements the task by setting goals for his learning and thereby he masters one step toward being labelled a self-regulated learner.

What does the teacher do? The teacher intervenes in this situation in which two children are not working, but talking and disturbing other children. He tells them that they are too loud and then supports them in getting their work started. After the first reprimand, the teacher is mainly addressing Stephan, who responds to him immediately. George, who is more resistant at first, is left to his own resources. However, soon thereafter George is redefining the task for himself, saying, "I think I know how." George then starts working and focusing on the task. How can the teacher's intervention be interpreted? Was it surrendering to a student who is not listening, starting with the student who is compliant or was it knowledge that this was the best way to foster both students' learning? The teacher supports the boys' learning by interrupting their fooling around, helping them organize their workplace, and making sure that both students have the material they need. He offers instrumental help to Stephan and meanwhile, he lets George manage on his own. Whether well-chosen strategy or chance, it works: Stephan starts working according to the teacher's assignment and George's self-regulatory process evolves as he is left on his own with a task that needs specification. George defines his own task and sets his goals, rather exemplary for a beginning phase of self-regulated learning (cf. Pintrich, 2000).

Part 2: Working on the Task, Talking to Oneself and to Others

Description of the situation.

George announces that he needs further tiles and that he is going to make a good pyramid. He addresses Stephan and the teacher, telling them that he is doing well and that it is possible to build a pyramid. He starts putting tiles together and comments on his work by calling it "interesting" and "cool". Having finished his first pyramid, he shows it to Stephan, calls his pyramid "very nice", and announces that he wants to make a bigger pyramid. He starts putting all the pieces back in the box. George tells the teacher that it is possible to make a pyramid that is even bigger. The teacher acknowledges that he can do that.

Analysis.

One aspect that becomes evident in this part of the situation and continues to be prominent later on is that George is talking audibly about what he has done, what he is doing, and what he is intending to do. Sometimes George is talking quietly to himself, several times he addresses Stephan or his teacher, and sometimes it is not clear to whom he is talking. Often he is talking loudly so that all children at his table can hear him. These sequences can be analysed with the focus on what he is saying and which processes and thoughts are revealed therewith, but another aspect is the phenomenon as such.

An example which can be analysed as self-talk can be found in the opening paragraph of this sequence, where George says, "I need thin pieces. Out of them I can draw a good pyramid." Regarding the content of what George is saying, it is the expression of his planning directed towards his goal. He is talking about the material he needs for reaching this goal, the material he has to look for in the next step. In the following sentence George addresses Stephan and then the teacher, "look, Stephan, really good. Stephan, I need such a thin piece. Oh, Mr X [teacher], with them I can try to put together a real, good pyramid."

Looking at the video, one aspect is striking: George does not look up once. He addresses the teacher and his schoolmate verbally, but he seems to be speaking to himself exclusively. On the video, the teacher is not even in sight. Stephan is sitting beside George but George does not look at him; he does not shift his body towards Stephan. He is obviously not expecting any reaction from the teacher or his friend. He just goes on working. With regard to the content, George repeats what he needs to enable him to go on working and at the same time he monitors and evaluates what he has done so far, expressing again his goal of making "a real, good pyramid". As the teacher approaches the table shortly thereafter George does not address him again, he simply continues arranging the triangles. This supports the interpretation that he does not really intend to talk to the teacher.

Thereafter, George is planning to make a bigger pyramid. He tidies up his table and prepares it for the new or literally expanded task. He then addresses the teacher again and this time he looks up in the direction of the teacher, speaks out loud and gets a reaction, George: "Mr X [Teacher] I can also make an even bigger pyramid. That's possible. Teacher: "You can also do that."

George is talking to himself, sometimes even when he is verbally addressing someone else. Nonetheless, the last quotation shows that he can obviously differentiate and clearly and successfully address others. This indicates that George uses other people in his self-talk as imagined respondents, but he also knows how to interact and communicate successfully.

Speaking to himself, George is evaluating and praising his work. Positive self-talk is proposed as a motivational strategy that fosters learning and helps to overcome difficulties (Pintrich, 2000; Wolters, 2003). George is using this strategy successfully; he is working constantly and contentedly, and he is not disturbed by other children.

Part 3: Setting New Goals and Planning Carefully

Description of the situation.

Addressing the teacher, George adds that he can also make a smaller pyramid or the smallest one that is possible. The teacher does not react. Stephan and George begin to discuss the smallest pyramid. George builds a pyramid out of four triangles and says that this is the smallest one. Stephan argues against it; he holds one triangular piece up and says that this is the smallest pyramid. George raises objections and says that the pyramid has to be build out of (different) pieces and should not simply be on hand. George clears away the triangles and comments that he should not leave the tiles on the plate because he is making a large pattern which has to look nice as well. George then leaves his work and goes to the toilet. Coming back, he continues immediately. He says that he has not yet finished clearing away all the tiles, which is necessary to be able to make a large pyramid. George starts to build a pyramid made with red and blue triangles; he comments on what he needs in order to continue and presents his intermediate results as interesting and cool.

Analysis.

George develops and verbalizes a new goal: building the smallest pyramid possible. His former partner Stephan reacts and both boys present a solution quickly. Confronted with

Stephan's solution and the fact that his partner's pyramid is smaller than his own, George works out a rule that corresponds to his initial idea and to his solution of the task. This indicates that George evaluates different ways of solving the task, and based on this he elaborates a rule that fits his intentions of how the self-set task has to be completed. This development and verbalization of a rule reveals metacognitive abilities. In this situation it might also be regarded as a useful strategy that serves to save face and preserves George's social position. Thanks to this rule, he has not lost this competition. Stephan does not argue; both boys are content and continue with their tasks. Handling this situation quietly and quickly shows social competences. In doing so they also handle different, probably competing goals, social goals and learning goals.

George has the goal of building a pyramid that is larger than the one he has made before. For this reason, he says, he has to clear away all the tiles so that he has enough space for this pyramid on the plate, "But I shouldn't put them here, because I am making a huge pattern just now. It has to be lovely as well." Thus, George is planning and preparing for his new task. This time, not only the size of the pyramid is relevant, but another, an aesthetic criterion is added and applied; the pattern has to look "lovely". Returning from the toilet, George immediately starts with his work and continues to comment on what he is doing in spite of being out of breath, "I still haven't put everything away so that I can make a huge pyramid. I must do it, so that there is space for, huge pyramid, pyramid, pyramid, pyramid."

Tidying up and organizing his workplace is a strategy that he considers necessary for being able to reach his goal. When George has finished putting away the tiles he immediately starts working on his new pyramid, putting the first triangles down at the bottom line of the plate. Therewith, he really saves space to enable himself to meet his goal. Both strategies, tidying up and starting at the bottom of the plate, can be seen as the result of planning processes aimed at the goal of making a big pyramid.

Later on George specifies how he intends to realize the aesthetic criterion. He addresses Stephan saying, "I am building a pyramid which is super colourful. It has two colours, red and blue." His choice of words seems to be strange; he announces that he is building a pyramid that is colourful and then he adds that it has (only) two colours. What he does not mention is that he is putting red and blue tiles alternately. Thereby, he meets his criterion of building a nice pyramid and addressing Stephan again, he self-evaluates that his pyramid is interesting and cool.

Part 4: Monitoring

Description of the situation.

George has finished the base of his pyramid. He has one triangle in his hand and draws an imaginary line from the left side of the socket up to the prospective top and goes down to the right side of the base. He says that this is how big the pyramid will become and that it will be a huge pyramid. One of the other boys is annoyed by George's frequent comments, but George continues working. He says to himself that he is doing great and then he explains what he is doing, first putting the triangle upright and then upside down. He tells Stephan, who is not saying a word, that he should not disturb him and then says that he is concentrating well.

Analysis.

This sequence shows what can be described as an ongoing monitoring process. While he is still working on his task, he estimates how big his pyramid will become by using the base as a starting point, saying, "It will be that big. Stephan, I am drawing a giant pyramid." George performs metacognitive monitoring of his work successfully, using an adequate strategy for estimating how big his pyramid will become and he presents what he is doing to his fellow students. He predicts that his pyramid will be great. Subsequently, George judges the overall quality of his work ("great") and then monitors and explicates the basic principle of how he has to proceed, "Do you know how I do it? One upright and one upside down and so on. Now I have to put one upside down." He thereby demonstrates his metacognitive awareness and procedural knowledge of the task affordances and he is obviously able to verbalize what he has to do to fulfil the task. The last domain of monitoring in this part is George's monitoring of his own concentration, "I'm concentrating super good." This situation evolves in a discussion with Stephan about who is doing more difficult work and who is concentrating better. It could be argued that George's appraisal of his own concentration is a way of publicly presenting his work and boasting about it and that it is more likely to serve a social function in his relationship to Stephan than being a real monitoring process. On the other

hand, from an outside perspective, George can be supported in what he is saying. He is concentrating well, particularly if compared to his fellow students and if the circumstances and the classroom situation at the end of this video sequence are considered.

Part 5: Continued Announcement and Control of Context

Description of the situation.

George goes on building pyramids, telling himself and other students that he is doing so, stressing that he is doing great, and that he is doing it all alone. He estimates once again how large his pyramid will become by drawing an imaginary line. At this time, some children in the class are becoming louder and are declaring a strike because of the cancelled P.E. lesson. At first, George is not disturbed by the other children's protest and the resulting disturbance. After a while he asks what the matter is, but then he interrupts the child who answers, saying that he has to get on with his task and that he has to concentrate hard. He is a bit distracted by what is happening around him, but he continues with his task nonetheless. In the end, he has no triangles left. He asks the teacher for more triangles, gets some but they are used up soon thereafter. At this time the other children at the table are not working anymore and they comment on George's problem. George starts a new pyramid and again praises his work. The teacher asks the children to tidy up. The lesson and the video recording finish.

Analysis.

Monitoring and evaluating his work, George mentions another argument and a criterion that supports his appraisal: he has completed his task all alone. He tells this to Tina, a girl from another table who comes over and looks at his pyramid, saying, "I'm making a pyramid, all alone. Look, it will be – that big." An interesting point in this last part of the situation is the way George seeks to influence and control his environment in order to continue working. This strategic behaviour is used purposefully to shield his concentration and his advancement, to keep himself working successfully. As already described, there are a plethora of possible

distractions present in this situation. George does not seem to notice or care at first. When another girl comes to his table, George looks up, asking her what the matter is. But as soon as she starts to talk, George says, “Wait, I have to do this. I have to concentrate hard. “ After that, George goes on working and when another student touches his plate he says, “No, don’t disturb me. I, that is, that will be my pyramid.” George exerts control over his environment successfully. The student leaves the table, and even if there is still some turbulence around him, George continues working. At this time he is the only child in the focus of the camera who is working. Even as the teacher approaches his table and praises his pyramid, George does not react but continues searching for triangles. Finally, he runs out of triangles. The other children comment on this and make more or less serious proposals. George puts away all the tiles but then again he restarts his work making a last pyramid until the lesson is finished.

Summary

The learning situation in this example was not ideal. There were several distractions but in spite of this unfavourable situation George is performing SRL. We can observe a young student who is working on a task and talking about it, who regulates and evaluates his learning. After having finished one task he immediately starts with a new, slightly modified one, he sustains his focus and concentration under difficult conditions, and he actively and strategically influences and controls his environment in so doing.

SRL in different phases of a learning process

George’s work can be described in the terms of Pintrich’s (2000) model of SRL and the four different phases of SRL. Each of the phases distinguished by Pintrich (2000) can be found in this example: Phase 1: George defines and co-constructs the task by specifying it and sets himself a goal. He makes plans, organizes his workplace and the necessary material for fulfilling his goal(s). He activates his interest by using motivating expressions and adjectives. Phase 2: While he is working, George uses monitoring frequently. He monitors what he is

doing and what he has done so far, he estimates the size of his pyramid, and he evaluates the quality of his concentration. Phase 3: George motivates himself by praising his achievement and using positive self-talk as a motivational strategy. Additionally he seeks plaudits from his peers and his teacher and seeks to be recognized for what he is doing. He verbalizes a systematization of what he has to do to fulfil his task (Part 4, George, "one upright and one upside down"), he strategically organizes his workspace and his material, and he controls his social environment to meet his goals. Phase 4: George evaluates what he is doing; he judges the overall quality of his work, his results, and also his cognitive processes (cf. Pintrich, 2000; Wagener, 2010). Additionally, he develops new goals based on these evaluations (bigger, smallest, colourful pyramid) and starts anew with planning and preparation (phase 1). George shows metacognitive knowledge by making fun of the task, by describing task affordances, by developing goals, and by applying various criteria for evaluating his work.

SRL as a social process

In the beginning of the example George has a partner but the teacher interferes in this social setting and the boys start working independently. George does not seek help, and there is no longer, intense interaction with other students or the teacher; the learning process is rather solitary but it is an inherently social situation and social aspects play an important part. Social aspects become visible when George is making use of his partner and the teacher as imagined respondents in his self-talk. George also genuinely presents his achievements; he actively seeks to fulfil his need of being recognized for what he is doing by using his social environment as an audience. Towards the end of this situation, George actively controls his environment to enable him to go on working; he handles and controls disturbances, reacts to social necessities, trying to strike a balance between social affordances and task affordances. Social goals like 'sustaining relationships', 'being better than someone', 'being seen and recognized by someone for something', or 'impressing someone' are relevant in this situation parallel to task related goals and learning goals. This strongly supports the notion that self-regulated learning in classrooms is always part of a social process in which there are always diverse, dynamic, interacting influences and multiple goals that have to be considered (e.g., Butler, 2011; Hadwin, Järvelä, & Miller, 2011; Perry & Rahim, 2011).

Discussion: What does this tell us about SRL?

Perry and Rahim (2011) emphasized that approaches are needed that "attempt to capture complex interactions and transaction among the individual, social, and contextual dimensions of SRL in classrooms" (p.123). The example presented shows one attempt to cover this complexity. It shows a young student working on a real task, in a real context (cf. Perry & Rahim, 2011) and is one example taken from a small-scale qualitative study, showing how one boy acts, talks, and thinks in his learning process. No claims are made regarding quantity or probability of behavioural patterns or thoughts. Further, more varied, and even more detailed analyses in different contexts, different domains, and different age groups would be valuable. Aspects of gender or ethnic background are not analysed in this study; and with regard to SRL on a micronanalytic level this is still a desideratum (cf. Bussey, 2011; McInerney, 2011). The analysis of nonverbal indicators of SRL could be strengthened which is an important methodological issue especially with regard to young children (e.g., Whitebread et al., 2009). However, the fine-grained approach presented clarifies what SRL can look like in classrooms (cf. Perry & Rahim 2011, p. 122) and it shows how individual agency and social processes interact (Butler, 2011). The example will now be used to elaborate on theoretical issues of SRL mentioned in the introduction.

Is SRL academically effective?

The boy in the example successfully reaches several goals he has set for himself. These goals are mainly learning goals that are clearly related to mathematics and geometry as school subjects. Even if there are some social goals that become apparent in between, he seems to be regulating, focused mainly on these learning goals and, referring to this, what he is doing is quite effective. The learning goals that are mentioned and pursued in this situation are short term goals. Seeing that the boy builds four different triangles and reaches several different goals in half an hour it becomes obvious that these are not carefully planned long term learning goals, they are rather quick and easy to reach. That leads to the question whether these goals are challenging for George. According to Hadwin et al. (2011) challenge episodes are likely to initiate self-regulation and strategic action; they are defined as "points in time

when learners get stuck or confront a problem" (Hadwin et al., 2011, p. 80). Which challenges is George facing in this situation? George has to develop his own task and his own task-related goal. He has to handle lack of space and lack of material and he has to manage and control distraction. Yet, these challenges are not primarily cognitive challenges. Looking at possible mathematical challenges, George seems to manage his task rather easily. He is not doubtful or hesitant, he talks about his work confidently, he does not face any mathematical difficulties. These are indicators that George has chosen tasks that are relatively easy to solve for him, that do not confront him with severe cognitive challenges. George obviously does not risk failure on this level. The repeated and quick solution of similar tasks can give the impression of routine and repetitive work. However, George slightly changes criteria each time; he gives the impression of being emotionally engaged in his work. The choice of adjectives he uses to describe what he is doing does not indicate dull repetition. Building experiences and also routines can be important goals of learning, of doing exercises.

George was able to administer control over challenges by choosing his goal. Control over challenges has been identified as an important task feature for promoting SRL (Perry, 1998). Consequently, it offers the possibility of choosing easy tasks. Children do not necessarily choose difficult and challenging tasks, and it can be perceived as satisfying and rewarding in a school context to get something done quickly (Wagener, 2010). In this case, with the available data, it cannot be established whether the tasks George has chosen are too easy for him, if he is doing something he has been able to do for years. Thus, looking only at the results of his learning, his academic effectiveness cannot be assessed reliably.

Nonetheless, looking at the learning process, the regulation itself can be regarded as very effective based on two arguments: first, comparing George's behaviour to his classmates at the same table, George's time-on-task is much higher; second, the process of SRL can be clearly recognized; different phases, different procedures and strategies become visible and audible.

Instructional approaches and trainings with a focus on improving young children's learning often conceptualize SRL as inherently academically effective (cf., Paris & Paris, 2001). Nonetheless, if children choose goals that are not described in the curriculum, regulation is not effective from a teacher's point of view but possibly from the child's point of view (e.g., Nolen, 2006). For research on SRL this means that the assessment of individual goals is crucial and that it is central to recognize and appreciate multiple and also social goals

(Boekaerts & Niemivirta, 2000). From an analytical and empirical perspective it is not beneficial to focus only on desired processes and desired outcomes. Getting the full picture enables the understanding of complexity, interaction, and transaction. I argue that for the analysis of the process of SRL and the dynamic of multiple goals and complex interactions, academic effectiveness is not a useful analytical category. Nonetheless, from an instructional perspective it can still be crucial to motivate children to strive for imposed learning goals.

Is SRL ubiquitous?

The situation that was observed here was analysed as an ongoing learning process with constant regulation. According to this view, there was no break or interval in which regulation ceased. Making fun of a task and even going to the toilet can be part of this process and are not necessarily separate from it. Different activities are the result of competing and intervening goals. SRL in classrooms is always about handling multiple goals and prioritizing them with probably constant and therefore ubiquitous rearrangements due to constantly changing personal, social, and contextual circumstances. Based on this, SRL can be seen as ubiquitous, as a never-ending process of regulating and making decisions (Winne, 2011). Even if students do "nothing", it can be in the pursuit of a social or ego-protective goal (Boekaerts & Niemivirta, 2000).

Is SRL used consciously?

In the situation presented, a young student was talking extensively about what he was doing. The indicators for processes of SRL that have been used, quoted, and analysed are mainly verbal and additionally behavioural indicators. Verbalizations are in principle conscious; however, what George is saying is not a retrospective summary of his work as we would have in interview data or in other self-report data. We examine a boy using self-talk which he does regularly while he is working. In this example, he also uses positive self-talk as a motivational strategy - praising and cherishing his work (cf. Pintrich, 2000; Wolters, 2003). However,

George would probably not name this as a strategy in a retrospective interview. George also uses monitoring; he administers an estimation of the height of his pyramid for planning purposes or perhaps for motivational purposes as well. Would he be able to tell us why he initiated monitoring at that point? It would be interesting for future research to try out stimulated recall interviews with young children, but working on tasks in daily classroom situations children might also apply internalized and automatized procedures. Pressley, Borkowski, & Schneider (1987) underline that "it is generally recognized that most of human performance is a mixture of automatic and controlled components" (p. 117). This means with regard to classroom practices that it can be difficult to ascertain for teachers as well as researchers whether a step in a learning process is implicit or explicit, conscious or unconscious. Based on the data and along with Winne (2011) it is argued that SRL is a mixture of automatic and controlled components and that implicit and explicit subprocesses are always involved. This would mean that it is important for future research to establish the relationship between these subprocesses in young children and to ascertain what this means for education and for fostering reflection on one's own learning processes in SRL.

Conclusion

Young children can and do self-regulate, pursuing personal goals and interacting in the complex social environment called school. Based on this study and on the example, I argue that SRL in the classroom is inherently social and not necessarily academically effective; it is ubiquitous and at times implicit. These aspects, which are inconsistent in different models, should be made clear when discussing SRL.

If we take the notion of "self" seriously, SRL can be a rather fundamental approach to learning. SRL is about agency in learning processes and thereby about agency in big parts of children's and adolescents' lives. It is also about recognizing and appreciating students' agency which is not invented by educational researchers or conceded to students by teachers. According to Bandura (1986) it is this agency that makes us human. Successful self-regulation relies on agency and on students who can and do choose their own goals and strive to reach them. However, school has learning goals as a priority; these learning goals are prescribed and fixed, and not arguable by a learner's (or teacher's) choice. Even if some

teachers and their classrooms lay their emphases on SRL and on individual standards for learning, we have to keep in mind that the school system as such is typically organized in a way that supports social comparison rather than individual pathways. Learning in classrooms is not only embedded in social contexts of peers and teachers but also in institutional, cultural, and political circumstances. We should not ignore these structural conditions but integrate them in the analysis and discussion of SRL in the classroom (Rogoff, 2003; Turner & Patrick, 2008).

References

Artelt, C., Demmrich, A., & Baumert, J. (2001). Selbstreguliertes Lernen [Self-directed learning]. In Deutsches Pisa Konsortium (Eds.), PISA 2000. Basiskompetenzen von Schülerinnen und Schülern im internationalen Vergleich (pp. 271-298). Opladen: Leske & Budrich.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall.

Berg, C., & Milmeister, M. (2007). Im Dialog mit den Daten das eigene Erzählen der Geschichte finden. Über die Kodierverfahren der Grounded Theory Methodologie [From dialoguing with data to finding one's own way of telling the story. on grounded theory methodology coding procedures]. Historical Social Research, 19 (Suppl.), 182-210.

Boekaerts, M. (2002). Bringing about change in the classroom: strengths and weaknesses of the self-regulated learning approach - EARLI Presidential Address, 2001. Learning and Instruction, 12, 589-604.

Boekaerts, M., & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. Applied Psychology, 54(2), 199-231.

Boekaerts, M., & Niemivirta, M. (2000). Self-regulated learning. Finding a balance between learning goals and ego-protective goals. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 417-449). San Diego, Ca: Academic Press.

Boekaerts, M. (1999a). Self-regulated learning: where we are today. International Journal of Educational Research, 31(6), 445-457.

Bussey, K. (2011). The influence of gender on students' self-regulated learning and performance. In B. J. Zimmerman, & D. H. Schunk (Eds.), Handbook of Self-Regulation of Learning and Performance (pp. 408-441). New York: Routledge.

Butler, D. L. (2011). Investigating self-regulated learning using in-depth case studies. In B. J. Zimmerman, & D. H. Schunk (Eds.), Handbook of Self-Regulation of Learning and Performance (pp. 346-360). New York: Routledge.

Butler, D. L. (2002). Qualitative approaches to investigating self-regulated learning: Contributions and challenges. Educational Psychologist, 37, 59-63.

Friese, S. (2012). Qualitative Data Analysis with ATLAS.ti. Thousand Oakes, CA: Sage Publications Ltd.

Hadwin, A.F., Järvelä, S., & Miller, M. (2011). Self-Regulated, Co-Regulated, and Socially Shared Regulation of Learning. In B. J. Zimmerman and D. H. Schunk (Eds.), Handbook of self-regulation of learning and performance (pp. 65-84). New York: Routledge.

Huhn, N. (2005). Mit Video einen Blick auf Verhaltensmuster konstruieren. Überlegungen für eine visuelle Interpretation von Videografien [Construction of behavioral patterns via video: Reflections favoring a visual interpretation of videos]. In G. Mey (Ed.), Handbuch qualitative Entwicklungspsychologie (pp. 413-434). Köln: KSV.

Kuckartz, U. (2010). Einführung in die computergestützte Analyse qualitativer Daten. Wiesbaden: VS Verlag. doi: 10.1007/978-3-531-90664-5

McInerney, D. M. (2011).Culture and self-regulation in educational contexts: Assessing the relationship of cultural group to self-regulation. In B. J. Zimmerman and D. H. Schunk (Eds.), Handbook of self-regulation of learning and performance (pp. 442-464). New York: Routledge.

Muckel, P. (2007). Die Entwicklung von Kategorien mit der Methode der Grounded Theory [The development of categories in Grounded Theory Methodology]. Historical Social Research, 19 (Suppl.), 211-231.

Nolen, S. B. (2006). Validity in assessing self-regulated learning: a comment on Perry & Winne. Educational Psychological Review, 18, 229-232. doi:10.1007/s10648-006-9016-1

Paris, S. G., & Paris, A. H. (2001). Classroom application of research on self-regulated learning. Educational Psychologist, 36(2), 89-102.

Patrick, E., & Abravanel, E. (2000). The self-regulatory nature of preschool children's private speech in a naturalistic setting. Applied Psycholinguistics, 21, 45–61.

Perry, N. E. (1998). Young children's self-regulated learning. The Journal of Educational Psychology, 90(4), 715-728.

Perry, N. E. & Rahim, A. (2011). Studying Self-Regulated Learning in Classrooms. In B. J. Zimmerman and D. H. Schunk (Eds.), Handbook of self-regulation of learning and performance (pp. 122-136). New York: Routledge.

Perry, N. E., VandeKamp, K. O., Mercer, L. K., & Nordby, C. J. (2002). Investigating teacher-student interactions that foster self-regulated learning. Educational Psychologist, 37(1), 5-15.

Pintrich, P. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. Pintrich & M. Zeidner (Eds.), Handbook of self-regulation (pp. 451-502). San Diego, Ca: Academic Press.

Pressley, M., Borkowski, J. G., & Schneider, W. (1987). Cognitive Strategies: Good strategy users coordinate metacognition and knowledge. Annals of Child Development, 4, 89-129.

Reder, L. M., & Schunn, C. D. (1996). Metacognition does not imply awareness: Strategy choice is governed by implicit learning and memory. In L. M. Reder (Ed.), Implicit memory and metacognition (pp. 45-78). Mahwah, NJ: Erlbaum.

Rogoff, B. (2003). The cultural nature of human development. New York: Oxford University Press.

Schnotz, W. (1992). Metacognition and self-regulation in text-processing: Some comments. In M. Carretero, M.L. Pope, R.J. Simons, & J. I. Pozo (Eds.), Learning and instruction. European research in an international context, (Vol. 3, pp. 365-375). Elmsford, NY: Pergamon Press.

Schunk, D. H. (2001). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theoretical perspectives (2nd ed., pp. 125-151). Mahwah, NJ: Erlbaum.

Strauss, A. (1987). Basics of qualitative research. Cambridge: University Press.

Strauss, A., & Corbin, J. (1994). Grounded theory methodology. An overview. In N.K. Denzin & Y.S. Lincoln (Eds.), Handbook of qualitative research (pp. 273-285). Thousand Oakes, CA: Sage Publications.

Strübing, J. (2004). Grounded Theory: Zur sozialtheoretischen und epistemologischen Fundierung des Verfahrens der empirisch begründeten Theoriebildung [Grounded theory. On the social-theoretical and epistemological foundation of the method of empirically based theory formulation]. Wiesbaden: VS.

Turner, J. C. & Patrick, H. (2008). How does motivation change and why does it change? Reframing motivation research. Educational psychologist, 43(3), 119-131. doi: 10.1080/00461520802178441

Veenmann, M. V. J., Prins, F. J., & Elshout, J. J. (2002). Initial learning in a complex computer simulated environment: The role of metacognitive skills and intellectual ability. Computers in Human Behavior, 18, 327-342.

Veenman, M. V. J., Van Hout-Wouters, B., & Afflerbach, P. (2006). Metacognition and learning: conceptual and methodological considerations. Metacognition and Learning, 1, 3-14. doi:0.1007/s11409-006-6893-0

Vygotsky, L.S. (1986). Thought and language. Cambridge, MA: MIT Press.

Wagener, U. (2010). Young children and self-regulated learning: A qualitative classroom study. Oldenburg: BIS.

Whitebread, D., Bingham, S., Grau, V., Pasternak, D.P., & Sangster, C. (2007). Development of metacognition and self-regulated learning in young children: The role of collaborative and peer-assisted learning. Journal of Cognitive Education and Psychology, 3, 433-455. doi:10.1891/194589507787382043

Whitebread, D., Coltman, P., Pasternak, D.P., Sangster, C., Grau, V., Bingham, S., Almequad, Q., & Demetriou, D. (2009). The development of two observational tools for assessing metacognition and SRL in young children. Metacognition & Learning 4, 63-85. doi: 10.1007/s11409-008-9033-1

Winne, P. H. (2001). Self-regulated learning viewed from models of information processing. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theoretical perspectives (2nd ed., pp. 153-190). Mahwah, NJ: Erlbaum.

Winne, P. H. (2011). A cognitive and metacognitive analysis of self- regulated learning. In B. J. Zimmerman and D. H. Schunk (Eds.), Handbook of self-regulation of learning and performance (pp. 15-32). New York: Routledge.

Winne, P. H., & Perry, N. E. (2000). Measuring self-regulated learning. In M. Boekaerts, P. P. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 535-566). San Diego, CA: Academic Press.

Wolters, C.A. (2003). Regulation of motivation: Evaluating an underemphasized aspect of self-regulated learning. Educational Psychologist, 38(4), 189-205.

Zimmerman, B. J. (2000). Attaining self-regulation. A social cognitive perspective. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.), Handbook of self-regulation (pp. 13-39). San Diego, Ca: Academic Press.

Zimmerman, B. J. (2001). Theories of self-regulated learning - An overview and analysis. In B. J. Zimmerman & D. H. Schunk (Eds.), Self-regulated learning and academic achievement: Theoretical perspectives (2nd ed., pp. 191–226). Mahwah, NJ: Erlbaum.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. American Educational Research Journal, 45, 166-183. doi:10.3102/0002831207312909