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ABSTRACT

This paper presents a literature review on self-regulated learning and then reports two investigations. The two investigations identified situations that seemed likely to afford opportunities for self-regulated learning to occur and followed what parents and teachers did to provide implicit support in these situations. The hypothesis was that the development in students of orientations to engage in self-regulatory effort and to value or even enjoy this experience occurs in part through certain relevant and recurring, elemental activities and interactions with significant others. The first investigation examined the implicit teachings involved in parent-child interactions around homework. It found that homework sessions were catalysts for parent-child dialogue around issues of autonomy and conformity. The second investigation coded high school students' essays for elements of self-regulated learning; most frequently used elements were emotion control, planning, and self-evaluation. The paper concludes that self-regulated learning comes about from the continuing interchange between students and the educating elements of their extended environments--adults and knowledgeable peers, various enacting curricula, and affording activities. (Contains approximately 70 references.) (JDD)

Implicit Teachings and Self-Regulated Learning

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Over the past decade, there has been increasing research on student self-regulation, or self-regulated learning. Two edited volumes by Zimmerman & Schunk (1989; Schunk & Zimmerman, 1994) have catalogued work by proponents and given theoretical direction to this growing area of investigation. The present article provides an historical overview of this construct and its relevance for education, and illustrates some future research directions based on two interpretive investigations.

Historical Background

Much educational research on self-regulated learning conducted up to the present can be tied to scientific interests in improving student achievement that peaked in the 1970s. Process analyses of school aptitude measures opened a window (see e.g., Snow, Frederico, and Montague, 1988; Sternberg, 1988). These studies demonstrated that persons who scored highly on scholastic aptitude tests expended effort differently from persons who scored poorly. High scorers not only used different problem solving, pattern recognition, and inferencing strategies in different ways from

persons who scored poorly, they also applied prior knowledge, managed their time better, and were more likely to monitor and check their work. Part of "working smarter," apparently, was self-regulation of cognition and behavior.

Scores on standardized tests of scholastic aptitude share both sampling and method variance with many school achievement measures. And so the implication was that if assembly and control strategies in the repertoires of high aptitude students could be taught to students whose aptitudes were lower, then the lower aptitude students would be better prepared to apply effective strategies more consistently in school (Snow & Lohman, 1984). To the extent that this occurs, it then follows that students will be motivated by more efficient learning, and eventually gain in academic achievement as well.

These goals have not proven easy to accomplish, as other lines of instructionally relevant research have found. But process analyses of cognitive aptitudes blazed the trail for these lessons, and for parallel work on the motivational and volitional, or conative, processes that affect learning-directed effort (Snow & Farr, 1989). The conative processes include efficacy, attributions, goal orientations, and control of these processes and emotion (Snow, 1989). Research guided by conative frameworks for self-regulated learning demonstrates that the addition of conative factors increases the predictive power of cognitive components when school grades are used as criteria (e.g., Pintrich & DeGroot, 1990; Zimmerman, 1989).

These different frameworks for studying self-regulatory processes share a definition of self-regulated learning that assumes general kinds of learning-related knowledge and academic skills, and emphasizes the inclination to use them appropriately. Self-regulated learning has come to be understood to involve effective cognitive, metacognitive, and conative activity around tasks. And it functions, in principle, to lead students toward various forms of educational accomplishment, under the kinds of conditions that typically exist in schools. Table 1 references some of the different definitions of self-regulated learning that have been offered in the literature.

Insert Table 1 here

One line of research has developed and tested procedures for indexing this construct in educational-psychological settings. A general assumption is that individual differences in self-regulated learning may be captured as information processing regularities within the demands and affordances of complex tasks. That is, both emphemeral self-regulatory processes (such as self-monitoring) and more stable "workstyles" are expected to be established and maintained in part by the situations in which they occur. Existing measures are, most commonly, retrospective self-reports. Some efforts have been made to obtain on-line self-reports and performance-based measures as well. Because construct validity studies have been rare, evidence supporting the current assessment

base for self-regulated learning is not straightforward.

Programmatic research led by Pintrich (Pintrich & DeGroot, 1990; Pintrich & Garcia, 1991), C. Weinstein (Weinstein & Meyer, 1991); and Zimmerman (Zimmerman & Martinez-Pons, 1986; 1989), for example, has focussed on expressed strategy use in academic situations. These researchers collectively find that multifaceted, macro-level measures can be internally consistent, and successfully discriminate high and low achieving students (from late-elementary grades up through college). In contrast, a recently published study by Howard-Rose and Winne (1993) that included retrospective and on-line self-reports in the same database found little evidence of convergent or divergent validity. The measures these researchers obtained from college students during controlled experimental tasks were specifically designed to elicit different levels of self-regulation.

In interpreting their results, Howard-Rose and Winne emphasized the need for improved procedures for recording the process of self-regulation during learning and problem solving, both in action and as it is interpreted by students. Technically, asessments of self-regulated learning based on a battery of measures ought to converge on the construct within a given domain. But the different (and changing) definitions of self-regulated learning, and the different levels of measurement involved when dealing with processes-theoretic models, continue to pose various construct validity challenges.

Although process constructs are difficult to validate, they

are critical for understanding the most challenging educational problems--poor performance, diagnostic remediation, the improvement of teaching (Cronbach, 1989). Lee Cronbach (1989) has written that no performance is fully explained until someone identifies the processes that generated it (p. 155). And so continued analyses of the status of self-regulated learning as a construct appears warranted.

Other educationally relevant research has moved away from analytic and predictive studies of self-regulated learning towards experimentation. Two examples are the work of Harris and Graham in special education (e.g., Harris & Graham, 1985; Harris, 1992) and Bereiter and Scardamalia in writing (e.g., Bereiter, 1990; Bereiter & Scardamalia, 1967). These investigators have focussed on the development of instructional models for teaching self-regulatory principles and strategies to students who need to learn them in subject matter contexts. Table 2 (from Sawyer, Graham & Harris, 1992) presents the Harris/Graham, 8-component model.

Insert Table 2 here

This study compared three treatment variations influencing learning disabled students' composition performance. The treatments were designed to differ in the model components shown to estimate the advantages of explicitly teaching self-regulatory strategies. In this and other studies using the Harris-Graham program, positive

results are often dramatic.

Efforts such as these of course parallel the prominent strategy induction research in reading by Palincsar & Brown (1984; Palincsar, 1986; 1991), Pressley and his colleagues (Pressley, et al., 1985; 1989; Borkowski et al., 1990; Brown & Pressley, 1994), and others (Dole et al., 1991). Much of that impressive technical work has been summarized by Michael Pressley in numerous books and articles on the "good strategy user model" (Brown & Pressley, 1994).

The general nature of self-regulated learning has been deemphasized, as experimental evidence increasingly favors more specific iterations derived from process analyses of tasks in subject matter domains. Experiments show that careful cognitive task analyses can be used to identify the necessary knowledge and strategies for accomplishing graduated subtasks, which can then be taught explicitly. Augmenting cognitive strategies with a general model of self-regulation--involving self-instruction and self- and resource-management--seems to aid maintenance and generalization.

This model of identifying key learning and effort management strategies in academic tasks and subject matters, and then developing instructional procedures for teaching them, has also been applied in clinical settings and computer learning, and promoted through classroom teacher or staff training. Results have been evaluated through solid "process-product" field experiments, such as those by Collins et al. (1981), King (1990), Mithaug (1993), and others in samples ranging from preservice teachers to

children with learning disabilities. Qualitative interview and ethnographic studies offer a different form of evidence to support the practical value of explicitly teaching self-regulation strategies in subject matter contexts. Qualitative research also spotlights the numerous teaching and teacher education challenges these efforts entail (Trawick, 1991).

And so over a decade of educational research demonstrates that one way to support improved subject matter competence in school is by explicitly teaching students to regulate their strategic information processing as they confront academic tasks. As Bereiter and Scardamalia (1987) have written, to teach "styles of work, ways of coping with flagging attention or overload of data, ways of getting around conceptual roadblocks and of thinking through questions, ways of orienting to an unfamiliar body of material" (p. 525). Procedures for self-instruction and self- and task-management can be used to support the effectiveness of strategy instruction during classroom teaching, even if we have a fuzzy construct in self-regulated learning.

New Models for Research: Overview

This brief history informs the consideration of new approaches for continued understanding of student self-regulated learning in school and related contexts. The remainder of this article describes two interpretive studies, in which both the theoretical perspectives and situations for investigating questions about self-regulated learning were broadened. This work is intended to

complement ongoing field experiments and naturalistic studies of classrooms in which self-regulation strategies are taught explicitly. Efforts were made to open up new ways of seeing and assessing this construct beyond extant psychometric scales or statistical combinations derived from questionnaire items.

By identifying a class of situations that seemed likely to afford opportunities for self-regulated learning to occur, we then were able to follow closely what the principal actors in these situations--namely, parents and teachers--did to provide implicit support. Table 4 lists examples of the elemental learning situations identified as targets for this research; this list is not meant to be exhaustive, but to reflect a domain of situations that demand some level of student volitional control.

Insert Table 3 here

The idea that self-regulatory procedures may be learned implicitly is not new. However, as Table 2 illustrated, previous research has sought to guage the advantages of explicit teachings by reducing the incidence of implicit prompts through controlled delivery of instruction. In contrast, we wanted to understand how implicit prompts, mediation, or cues come about, and to describe the prompts that occur under these sorts of natural teaching conditions.

Following existing research on parents and families, it can be assumed that children shape parental thinking and behavior just as

they do teachers'; and that, as Larry Cremin (quoted in Leichter, 1974) was known to remark, "What is taught is not always what is learned, and vice versa" (p. 27). A related assumption is that a reasonable number of bounded situations could be identified in which implicit teaching of self-regulated learning seemed likely. These situations might then be seen as task settings just as deserving of careful process analyses as the tasks constituting the kinds of scholastic ability tests that laid the foundation for much of the early research previously referenced.

Our intent in this effort was not only to tell stories, nor to let participants tell stories, but to enter and realize places of academic work. We aimed for precision in capturing participants' own language and voice, but also assumed that, as labor-intensive as they are, videotape data would be essential for "epistemic verisimilitude" (Phillips, 1994). The ability to observe interactions over again seemed critical if we were to form consensual interpretations of the meanings of implicit teachings. Additionally, we anticipated a small window between moments of other- and self-regulation that might be easily missed. With videotapes as stimuli for focussed interviews, participants could provide their own interpretations of behavioral events, giving evidence that any generalizations were also represented by participants themselves.

A critical, enduring question underlying our research is how academic talent comes about. How children come to be students--not, students in the sense of passively taking lessons, but

students in the sense of the Latin "studere," to zealously strive after learning, to study things. For many children, attitudes toward the whole enterprise of schooling may be shaped by the early establishment of particular work orientations or styles. And these stylistic aspects of persons often must be acquired implicitly, without the benefit of deliberate teaching, via text or classroom. For students who miss opportunities to construct self-regulatory models of learning early-on, at home or in the classroom, there may be cues implicit in some extra-curricular activities broadly focussed on the development of independent functioning, or in some secondary-level coursework that looks specifically toward college.

Theoretical Framework

Contemporary social constructivist theory suggests that children learn to become students in the sense just described through interactions with adults around meaningful tasks and artifacts in the school and extra-curricular environment. These situations provide models of self-regulated learning, and coax students to display similar thoughts for inspection, thus helping to establish their internalization (e.g., Vygotsky, 1978; Bandura, 1986). Because environments vary, the precise nature of this coaxing will vary as well: In one situation, the coaxing may look more like courting; in another, it may look more like coaching. In each case, the intent is to evoke a demonstration of thinking or behavior that may then be inspected.

This kind of coaxing has analogues in other arenas besides

school, as a brief personal anecdote attests: I first took note of a child being courted away from adult dependency when I watched my mother-in-law succeed in coaxing my preschool son to dress himself. (Some developmental theorists view the inculcation of increasing numbers of independent actions in preschoolers as foundational for self-regulated academic work later on, e.g. Baumrind, 1987). My husband refers to his mother's approach as "sweet-talkin'."

After hearing me say one morning, "he doesn't dress himself yet," my Mother-in-law proceeded like a whirlwind to get my son to do exactly that. She was ever so happy and light-handed, smiling, lilting-voiced, talking very fast so there's no chance for hesitation, listing the fun things that will happen once "we're dressed and ready to go" (and which would, by implication, be missed if the child demured). She repeated over again as she handed him carefully selected (buttonless) shirts and pants--and demonstrated pulling the shirt over her head, putting arms through sleeves, and so on--that my son would "love" being able to do this himself. Essentially, invitingly coaxing the child toward the behavior she wanted to occur. Waiting patiently for several false-starts and hungup sleeves, she assisted only to avoid escalation, capitalizing fully on my son's evident affection for her.

It didn't much matter that this 4 year-old never really "loved" dressing himself, because he did seem to get a sense of satisfaction from the effort she rewarded: "Thank-you, thank-you, thank-you, she said. Oh, I had so much fun. I loved watching you doing that. You know (note the labeling)--you're a self-dresser

now!"

To my suspicious adult surprise, my son displayed no resentment of this apparent manipulation, despite his initial resistance and asking for my help. Her positive evaluation of course produced smiles, and he even repeated to me on a later occasion "I'm a self-dresser now!"

One possible explanation is that the interchange suggested that self-regulated effort can be pleasurable. As psychologist, Robert Eisenberger (1992), has emphasized, effort--the behavior--is accompanied by an experience (or affective sensation) of effort. And both animals and human beings have instinctive tendencies to experience effort as aversive. Eisenberger has been able to demonstrate through a variety of experiments that this aversiveness is, as he says, "exquisitely sensitive to secondary reward effects" (p.). Both rats and human beings can be conditioned to enjoy the sensation of effort, and this enjoyment can be used to "encourage selection of, and persistence on, difficult academic tasks" (p.), among other things.

An alternative interpretation is that reflected in the interchange were a number of implicit supports for the mastery of self-regulatory behavior. First, the task was cleverly streamlined by the selection of buttonless clothing. It is affording to streamline a task during early learning; and the perception of affordance is motivating. My son undoubtedly noticed the buttonless clothing, because he often used buttons as excuses for why he couldn't dress himself. Second, there were suggestions

that, when one doesn't want to do something, it's useful to look ahead and think about both positive and negative consequences (aka, self-consequating). Furthermore, it was demonstrated that, when learning something new, it helps to experience participant modeling on subtasks (or guided instruction). Message: use available resources. Finally, the labeling provided a model of self-observation and evaluation that this child apparently internalized.

Thus, Eisenberger's idea of "effort training" doesn't capture all the action in coaxing as we might understand it. Importantly, "working smarter" ought to be coaxed or courted as easily as "working harder." As researchers such as Ames (1992), Maehr & Nicholls (1980) and Nolen (1988) have shown, precision and reaching towards personal standards are the preferred objects of self-regulatory effort, not simply being correct or succeeding by outperforming others. A competence rather than a performance model is emphasized (Dweck, 1986).

Again, to coax a child toward self-regulation implies the ecological concepts of evironmental press and affordance (Barker 1968; Gibson, 1979). The self-regulatory abilities are situated, as modern aptitude theory argues, in catalytic tasks and social practices (see e.g., Greeno, 1988; Snow, 1992). Here, the catalyst was a significant adult other than Mom. She selected the right artifacts, and provided well-timed insights about the advantages to be gained from the child's own efforts, both those that were successful and those that needed improvement. In addition to the explicit urging that follow-through would produce pleasure, there

was an implicitly conveyed message that missed opportunities may lead to regret. This adult also refused to "short-circuit" the process by taking over the work for the child.

Patience in refusing to do work for the child is non-trivial. A kind of adult "wait-time" seems necessary but not sufficient something all too few of us busy parents are naturally inclined to display. It may be that it's harder for some parents to cultivate certain styles of independent thought and behavior in their own children. Parents court their children's independence hesitantly, knowing that they risk emotional loss with every gain of this kind. And yet, inquiry into the much-documented "recitation strategy" of elementary school teaching has shown that teachers also assume responsibility for student regulatory work during class (Corno & Snow, 1986). In some cases students seem to engineer this; in others, teachers, like mothers, elect to do the work on their own.

In a 1980 study, Corno found that, although teachers typically set goals, review, and summarize lesson material for students as they teach, third graders can profitably learn to do this for themselves. If that is to happen broadly in schools, teachers will need to include structuring moves in their conceptions of school learning as well as their teaching--that is, they will need to view these elements of lesson structuring as things that are important for students as well as teachers to carry out.

Thus, although research has stressed that self-regulation in schoolwork can be supported through engagement with appropriate curricula and promoted through explicit teaching, other kinds of

self-regulation (that may be foundational for self-regulated learning) are also likely to be cultivated in other contexts. This would be expected to occur, in particular, when the other contexts share certain attributes with school--an authoritative management style in an adult facilitator, a meaningful and well-defined task in which goals involve independent functioning, and so on. We can thus extend McCaslin and Good's (1994 in press) "informal curriculum" for schools to include analogous situations in the larger, informal, extracurricular environment.

Salomon and Perkins (1989) referred to this kind of repetitive, moment-to-moment education on the margins of awareness as "low road learning" (p. 113). They contrasted it with the "high road learning" (p. 113) that occurs through explicitly taught strategies, which again, is the path followed by most existing research on self-regulated learning. To the extent that the important agenda items for research on self-regulated learning have emphasized explicit instruction of self-regulatory strategies in school subjects, these efforts have also underplayed the potential role (be it positive or negative) of implicit teachings.

The Studies

At the outset of our research, our hypothesis was that the development in students of orientations to engage in self-regulatory effort and to value or even enjoy this experience occurs in part through certain relevant and recurring, elemental activities and interactions with significant others. Again (as was shown in Table 3), we identified examples of situations that seemed

likely to offer particular resources and affordances, in the Vygotskian or Gibsonian sense, and perhaps the possibility of a kind of entrainment to self-regulated effort. We purposely avoided situations in which deliberate teaching of self-regulation strategies seemed likely (for example, following Blumenfeld et al., 1991, we did not study science courses).

A corollary hypothesis was that any phenomenon elicited or promoted in natural contexts and ongoing interpersonal relationships is likely to be associated with emotional responses as well. If early efforts to display aspects of self-regulated learning (such as pursuing goals and managing effort) are affectively toned, then the positive or negative emotions associated with these experiences may promote or inhibit their being demonstrated appropriately later on. Just as parents can pass along "tricks of the schooling game," so they can provide opportunities for children to cultivate positive or negative attitudes towards commitment and followthrough on school goals (Corno, 1989).

Xu's study. In 1990, a TC doctoral student named Jianxhong Xu and I set out to study "doing homework" as a reference task for students' development of volitional control. Just as process analyses of test perfcrmance have added a critical dimension to the construct validity of these measures, so we found that analyzing the properties of interactions used to generate homework provided a richer explanation of performance on homework tasks.

We wanted to identify the kinds of implicit teachings involved in

parent-child interactions around homework, the common elements of this experience that might evoke self-regulated learning, and the purposes, values and beliefs that help to shape those interactive processes.

To do this, Xu videotaped homework sessions and conducted open-ended and stimulated recall interviews with six third graders (8 year-olds) and their parents from a New York City public school. Located on the Upper West Side of Manhattan, the school ranked 36th out of 626 elementary schools on a recently administered standardized reading test.

Selected participants represented various racial/ethnic backgrounds but shared similar middle-income home environments; there were four girls and two boys. The average level of parent education was high (only one of the six families had a parent without a college degree; and in three of the six families, both parents had advanced degrees). We identified families in which parents routinely helped their children with homework, as the major interest was in the nature of parent-child interactions during homework.

Preliminary interviews with teachers indicated that selected students were all working at average to high levels of school achievement. By policy, formal homework assignments began in third grade in this school; at that point teachers assigned homework weekly and/or daily. Assignments range from worksheets to essays. In general, these teachers viewed homework as a tool for reinforcing classroom learning more than as a means for developing

self-regulated learners. Only one teacher recommended that parents use specific procedures to help the students complete homework. The other three teachers said they preferred that parents should help set the environment, but otherwise just be available when necessary.

The data included transcribed videotapes of two different homework sessions per case (spaced a few weeks apart). Tapes were made after Xu conducted home-based interviews with both parents and children. Families were asked to do the homework as they did typically, and sessions were scheduled to obtain tapes of different homework assignments. We audiotaped and transcribed both types of interviews. Stimulated recall interviews with parents and students were conducted immediately following video sessions. Both parties commented on tape segments as they wished and in other cases at our request.

Based on related research, the open-ended interviews with parents and children posed a series of parallel questions on what the typical homework session entailed. Questions asked what was done to set an environment, to startup and complete homework, as well as what the parents did to convey expectations, assess progress, and handle difficulties. Questions were posed to parents and children about their affective responses to the homework experiences they described; they also prioritized homework in relation to other after-school activities.

Cases were written for each family using excerpts from transcripts and interviews from teachers; these were followed by a

cross-case analysis. To preserve the language used by participants, we did not code the qualitative data. When we excerpted responses or comments to illustrate themes, we discussed other possible excerpts that might provide better examples, and alternative interpretations for that excerpt. We tried to have several excerpts that were similar enough in language before we labeled a category, and we stayed close to the subjects' own language in our interpretations. Each case record was read by the parents prior to finalizing the copy, and parent comments were used to revise the text in instances when they wished to challenge or extend our interpretations.

The first identified category involved the meanings of homework from the different participants' perspectives. Second and third categories reflected efforts to arrange the homework environment and tasks and to handle related distractions, respectively. Finally, we labeled a category "ways of managing and handling resources," including time, the child's attention, motivation, and parent and child emotions.

What we found in this study was that the generic task of doing homework was a kind of "safe house" for repeated acts of personal experience with being and becoming a student. It seemed to create a context that encouraged these beginning or novice students to stick with something novel in a familiar setting--the home. As David Lohman (1993) has pointed out, learning new skills in a familiar context affords better opportunities for individuals to see their own role transformations over time, even as they gain

in subject matter mastery. Like the early work on mother-child interaction (e.g., Hess, Shipman, Brophy, & Bear, 1968), Xu's research shows the important role that familiar context plays in capturing cooperation from the child. For these six students, home was a safe haven for picking up a number of self-regulation strategies and for practicing rudimentary attempts at volitional control.

Although the routes that individual families took to this destination differed, constitutive elements were common: First, doing homework was viewed by these educated parents as a life task -- a task with a common history and perceived value. Parents did it; and so do siblings. Moreover, it is not something that stops as one moves away from school. As one parent indicated, we continue to "do homework" on any topic or interest throughout our lives. This father said, "I see homework as a stepping stone to other things; you must complete a task." As is the case with other life tasks--such as parenting, a common history can be a source of support for novices as they confront inherent difficulties.

Parents also gave personal meaning to the homework task by modeling and defending appropriate expectations and responses: "All right, think of it as we're just practicing. Let's see how many you know and how many you don't know. We'll work on the ones you don't know first, ok?" Another mother said, "You have to do this just like I have to pay my bills, or do things that I don't always enjoy." This mother's comment during her interview was "This is part of the deal of school...I am trying to get Ardy to see that

oneday he'll grow up and his boss will say you have to do X, Y, and Z..."

Table 4 shows a video segment in which a mother struggled to get her son to read some text to her.

Insert Table 4 here

The child refers to a prior conversation in which he and his mother had talked about how she used to motivate herself when she had trouble with homework. These novice students profited from shared experiences expressed by parents during frustrating moments; such experiences seemed to help them come into or stay with tasks.

We also observed that homework assignments were tackled in a social arena where they were both streamlined and embellished in various ways to keep up interest. Parents read newspapers to identify articles their child might enjoy writing about; they watched the evening news with the child, took notes, and discussed how to prioritize items and make them the basis for homework reports. One father began to learn Spanish himself and suggested that they put Spanish words around the kitchen walls to help them both remember. Parents also embellished tasks by using personal examples to illustrate points or by graphing progress. One mother made an assignment checklist and checked each one off as it was completed.

It was interesting to us that several times we observed parents pressing children to show how they knew their answers were

correct: "So, in order to help her, I had to watch her do it." "Show me how you know that's the answer." "I see an error; can you spot it?" One mother said during stimulated recall, "Now it's time for him to do the actual homework. We have discussed the article at length, and he understands, and I am separating myself from him." In some of the grounded dialogue anyway, children were urged to support both conjectures and actions. This parent-child dialogue was teaching leveraged into the home--a situational resource that helped to shape self-regulated effort.

In addition to modeling how tasks can be adapted and checked, these children were courted through the homework process. Parents coaxed and invited; they sweet-talked, offered incentives, and provided choices. For example, all of the parents let their children decide in which order to complete assignments. Four parents discussed why they let their children choose what to do first: "It's his homework;" "It gives them some sense of ownership;" "It's her responsibility, not mine;" and "Children should be able to make those decisions." Some parents set higher work quality standards than others and--yes--cajoled or yelled when those standards weren't met. Most commonly, however, parents established rules and then modeled effective use of resources and procedures; attention was paid to both scope and detail. For example, in 4 of the 6 households, a labeled location was established for homework-related materials and assignments (a "homework box"). In all 6 families, parents emphasized with the children that work should be checked for both content and form.

As a consequence of these efforts by parents, three of the children were observed to setup their materials and begin to work without parental prodding. Even the other three, who needed parental reminders, were able to explain to us how their parents supported their work--in arranging the workspace and in time management. Five of the children chose locations in their apartments that best enabled concentration and minimized distractions. Four children gave examples of using self-reinforcement to control their concentration during homework: one child repeated a self-motivating phrase that we observed her father saying on a prior occasion when the work was difficult: "look on the bright side." Another child said in her interview that she knew she needed to learn to manage her time better and tried to do what her "Mom did when she helped with her homework"--look over the assignments to see what had been done and what remained to be completed. One girl said when she didn't feel like doing homework she thought of how she'd feel not bringing it to class (bad); and, that if she did it, she could watch t.v. (and that would feel good). Another girl was quoted as routinely trying to make her "boring" homework more interesting. All six children were observed self-instructing and breaking tasks into subtasks.

In instances when the quality of parent-child interaction seemed to deteriorate (either in taped sessions or as reported in interviews), the typical response was to stop the work and try again later. When demands were too great, parents said that concentration and cooperation suffered. One father acknowledged

that he had a short temper when his daughter made mistakes. His daughter learned to sense his impending withdrawl and to ask her stepmother for help instead.

In various ways, these parents conveyed to their children the conflicting emotions that underlay their commitments to help with homework. In interviews and through behavior, each parent expressed the view that helping was important to the child's school success. Yet, at the same time, four of the six displayed resentment over the significant amounts of time this took, and the strains it placed on relationships with their children. One mother said she felt that her "whole life right now" revolved around doing homework. Clearly, parents have a vested interest in seeing that their children learn to self-direct their own studying.

Because both time and other resources (of people or materials) were limited, they were not abused. Just as in the classroom, distractions had to be be managed: For these New York City third-graders, who live in apartments, do homework in kitchens while siblings play nearby, and endure the various sounds of City streets, coming into the task involved averting many environmental as well as motivational and emotional distractions. Only so much could be done by parent or child to filter out environmental distractions, however. In the end, it was up to each child to buckle down and follow-through. Although parents--like most teachers--initially stood back to wait for that to happen, when it did not happen, the streamlining, the embellishment, and the coaxing could become quite strong.

It seemed to us that, regardless of the apparent ease or difficulty of the assignments, homework sessions were catalysts for parent-child dialogue around issues of autonomy and conformity: Parent: "Concentrate on your work, and get it done now, while you're awake." Child: I hear noises outside; may I go to another room or somewhere far away from the window?" Parent: "If she is having trouble and is daydreaming, I tell her, "come on, let's get busy." Parent: "I try to get her to come back and sit down, because getting a snack breaks her concentration."

Depending on the meanings each family ascribed to homework, dissonance was more or less resonant. (The tape segment in Table 5 was representative of the struggles that sometimes ensued.) In the stimulated recall interview for this segment, the Mother was quoted as saying, "I try to get him focussed on the choices...I felt it was important for him to do the exercise, to read something and try to retain it, to remember it, and not have me read it to him." Of course it doesn't take keen eyes to see struggles; in attending to these, we probably missed other things. Also, these data give no insights about what dissonance around homework might mean in the long run. Five of the 6 students did report that they preferred other after-school activities to homework and would like to spend as little time on homework as possible. Four of the six parents found the experience to be stressful more often than not; and, four of the six children said they disliked many homework assignments, even though they believed that homework was important to doing well in school. In general, homework quality was high, and

this was reflected in teachers' comments. However, it may be important that these homework assignments were all traditional reinforcement activities for classroom tasks, rather than independent projects that might be used by teachers to bring "work at home" back into the classroom.

We think this study reinforces the value of the ecological notion that education includes yet moves beyond the physical dimensions of schooling (Bronfenbrenner, 1979; McDermott et al., 1984). Self-regulated learning does not necessarily come about from "life in classrooms" (Jackson, 1968/1990). Our evidence is clear that these students learned some things about self-regulated studying through the challenges of everyday experiences with homework. If this is a form of "naive" knowledge being acquired partly through implicit teachings, then it seems important that future research consider the educational consequences and implications of informally developed models of self-regulated learning. This implication holds for the ways that parents might most profitably assist with homework, but it also holds for teaching.

Educational research has paid much attention recently to naive models in subject matter areas such as the sciences (Nussbaum, 1983). We have learned that naive models are often brought to bear with mixed effects in school learning; they're also resistent to restructuring by formal instruction (Nussbaum, 1983). It seems likely that naive models of self-regulated learning will be called forth by students in classrooms (see also Bereiter, 1990). Future

research ought to explore this conjecture and determine whether these models are foundational for learning more formal models explicitly, or whether they need to be confronted and restructured if formal models are to prevail.

The second study to be described examined another of our reference situations for investigating questions of implicit teachings and self-regulated learning--the senior high school humanities course.

Randi's study. This work was also carried out by a Teachers College doctoral student, Judy Randi. Randi is a high school Latin teacher in Connecticut with experience in school-based research. When we sought to enlist some teachers to investigate hypotheses about implicit teachings and self-regulated learning in relevant situations, Judy came to mind. Perhaps because this was not dissertation research, and the study was conducted without the strictures of external funding, Judy and I were able to work somewhat unconventionally. The result was, as Judy said, "limited by perspective but unlimited by structure."

Unlike the homework study with Xu, which we co-designed and I directed as the principal investigator on a grant, Randi was able to pursue data collection with only occasional input from me. Her work was much more "systemic" in the sense used by Gabi Salomon (1991). Systemic research is commonly designed to impact practice or to inform educational policy. Pragmatics prevail over control, and results are often suggestive rather than definitive.

For Randi's study, I provided some readings in the area of

self-regulated learning (Judy was relatively unfamiliar with this work before we began). She and I also discussed the sense in which self-regulation may be learned implicitly through literature, film, and other activities. We talked about the enduring themes of self-reliance so focal for high school Humanities curricula--quests, persistence, resiliancy, and commitment--and how these are conveyed, at least in the intellectual sense, through literature and film. We began to develop what might be called a curriculum-embedded view of teaching for an understanding of self-regulated learning.

Randi began to correspond with me about how she planned to pursue some of the hypotheses we discussed with her 12th grade Advanced Latin class at a local public high school. This was a small class of 10 average to below-average achieving students. Latin is an elective across all four years at this school; however, some low-performing students are counseled into Latin, in hopes that it will improve their achievement.

Judy mailed me lesson plans, notes from a journal recording her observations of students' participation in groups and other class activities, lists of readings and films, and projects she thought to pursue. She sent videotapes of the class working on projects. She wrote about what she observed in the process, and sent along student work samples. Occasionally, I requested that she administer a particular measure or assign a specific piece of work in her class that I felt would yield interesting data, but mostly Judy collected data on anything that might relate to self-

regulated learning and its development in her classroom.

Judy located one self-report measure of self-regulated learning in the staff development literature (Marzano, 1992). In administering this measure to her students, Judy invited them to explain their responses rather than just circle numbers. This led to many interesting comments about problems with rating-scale reports--many items were viewed by these students as task-specific and dependent on energy levels at the time. Some students wanted to expand five-point scales to ten.

Also, Judy successfully captured on videotape several of the experiences that evoked self-regulatory effort in her students. Figure 1 shows how the group responded to an assignment in which they were asked to create an imaginary person who embodied the five Roman qualities exemplified by characters in the Aeneid--loyalty, perseverance, seriousness of purpose--and to discuss the conflicts that one person experiences in attempting to give equal weight to all these personal qualities.

Insert Figure 1 here

The group invented "Fred," the volunteering judge (the Figure shows how Fred spent his time). Judy presented the students with dilemmas for Fred that arose from conflicting obligations--what if Fred's wife were ill and he had to teach, and so on. The students described a number of strategies that Fred could use to handle the conflicts. Judy's comment following this activity was that it got

from her students "just what she wanted to happen, because if they could do it for Fred, they could do it for themselves."

Student work samples from Judy's unit on quests culminated with a short "critical incident" essay in which students were asked to identify a quest in their own lives, articulate their reasons for following it, and the consequences. They also identified obstacles along the way (the full assignment is presented in the Appendix). Students brought drafts into the classroom for discussion and revision before turning them in. We coded students' papers for 13 identifiable elements of self-regulated learning, including strategy and resource use, planning, monitoring, and evaluating consequences, handling obstacles and balancing conflicting goals. Nine of the 10 students wrote papers with at least 10 of the 13 coded elements. Eight students used at least one element more than three times. The most frequently used elements were (a) emotion control, (b) planning and (c) self-evaluation. The following excerpts from the students' papers illustrate the kinds of data this task provides:

> Since my freshman year, I have done everything I could to get into West Point. This has been a dream of mine ever since I could remember (motivation control)...A few weeks ago, I received a letter stating that I was fully qualified for admission to West Point. Just knowing that I have made it this far has made this process worth it (metacognition: monitoring and evaluating).

And:

> I took a deep breath and tried to start again (emotion control) when I froze. I couldn't remember what I was writing and didn't know where to begin. I had encountered my second obstacle, writer's block...I could quit and give up on college or I could go back to the desk and tackle that horrible monster of a computer (metacognition: evaluating options). I thought pensively about what to do when I decided how important this one essay was to my future and I was going to defeat this (motivation control).

We think that Judy elicited this many elements of self-regulated learning from her students through a combination of the particular curriculum and instructional activities she provided leading up to the culminating assignment. The final assignment was homework used in what Clifford Hill (1992) calls the prospective rather than the retrospective sense--that is, to bring into the classroom something each student had done in life.

Finally, in Judy's journal, where she recorded observations related to self-regulated learning whenever she made them, we find excerpts such as the following:

> Might it be helpful for teachers to have conditional knowledge about the use of implicit and explicit teaching of SRL? It seems to me that there are times when it is more effective to teach SRL implicitly and other times when explicit instruction is more effective...

> I think back to my student who didn't realize the advantage in predicting what resources she would need. Explicit instruction in resource use would alienate her since she was convinced her way was best. Shince she is an especially sensitive and perceptive student, implicit instruction and modeling would eventually bring her around. But some students need explicit instruction and labeling from the beginning because they are unable to pick up subtleties...are unaware of their own thinking, insensitive to feecback, etc...

In this excerpt Judy articulates the need for instruction tailored to individual differences among students (Cronbach & Snow, 1977). Generally, Judy's observations had this dual emphasis of: (a) data collected on student progress toward self-regulated learning, and (b) the ways that she (the teacher) analyzed and used that data to focus students on what she felt needed to change. Notably, I think, the combination of data generated from this one classroom case involves precisely the sort of multimethod assessment, multievent sampling, and comprehensiveness of measures that have long been promoted by measurement specialists concerned with construct validity. But it wouldn't have come about if we had not worked as we did.

Instead of the careful triangulation and constant comparison seen in more traditional case studies, Judy Randi offers us what might be called a "color field" case study, in the sense of a color field painting. To paraphrase one writer's description of this

technique (Flanagan, 1994), the Randi case is "framed by the limits of the research and her own observations, and bounded by the immediate context" of this classroom and curriculum. Like a color field painting, "There is no structural focus, no vanishing point to tease the inner eye with the illusion of dimension...It is this limitation of perspective, however, that allows entry to the two-dimensional world of the classroom as Judy Randi saw it. Like her, we researchers have no privileged information, no interpretive asides to clue us in. With only this teacher for guidance, we too become participants. We have no choice..." (p.21).

Randi and I hope this case will be useful for other constructivist-minded teachers who wish to integrate themes of self-reliance from literature, art, music, and biography into their regular curricula, and to experiment with student projects and other procedures for documenting self-regulated learning (Randi & Corno, 1994).

One question to consider in this kind of work with teachers is, How far out on the systemic scale of research can one go and still refer to what's being done as research? The workstyle that Judy and I adopted was very different for both of us. It didn't feel like research to me because it was so open-ended and teacher-directed. I, as a collaborator rather than a principal investigator, abrogated authority for the design, conduct, and analysis of data. Randi wrote me that she "assumed she would be asked to collect data on certain things or to teach particular lessons." She said she, "thought the real research was yet to

commence because you never prescribed a treatment nor articulated a plan for collecting data."

Interestingly, under current conceptions of self-regulated learning, each of the qualitative investigations I have described could be said to have provided a doctoral student with opportunities to engage in self-regulated learning. However, in a very real way, Randi's study was much more affording for self-regulation than was Xu's. It struck me that we came full circle. The experience collaborating with Judy Randi was like doing homework together--we both learned a lot implicitly, working in what Joyce Epstein (1994) calls a "cooperative discovery" rather than a "monitoring" mode.

This dyadic work with one teacher has come to be referred to as collaborative curriculum making or innovation. Judy Randi's dissertation (Randi, in progress) is developing this idea more fully, placing special emphasis on research methods that teachers themselves devise to study questions of classroom teaching and learning. These methods differ from those of traditional research in several ways, but one important difference is that they seem to reflect functions served uniquely by classroom teachers, such as the conscious efforts that teachers make to understand their particular students and to use that knowledge for tailored instruction.

Lieberman (1993), Richardson (1994), Clandinin (Clandinin & Connelly, 1991), and others who study teacher education have taught us much about the importance of breaking down the hierarchy of the

transmission model. Building on the work of researchers such as these, Randi has refined the thesis that teachers innovate by reconstructing research-based models and practices in their own terms for their own circumstances, thereby making such practices their own. She expects that knowledge about teaching and learning could be advanced if even a few of these many innovations were documented and evaluated through collaborative research in which psychological reasoning is closely connected with educational practice.

Conclusion

The precise nature of self-regulated learning has been the object of much attention of late. There is an old Buddhist saying, "Do not undervalue attention; it means interest and concern." Self-regulated learning is, apparently, something useful for school students to be able to do. But, in coming to grips with what self-regulated learning is, educational researchers face a tension: More specific definitions draw sharper boundaries among phenomena, helping to distinguish domains of psychological functioning and the constructs within them (Izard, Kagan, & Zajonc, 1984, p. 4). In the case of self-regulated learning, where underlying psychological functions mix as constituents, the definitional boundaries are harder to discern.

Perhaps, as with other situationally grounded psychological constructs, self-regulated learning comes about from the continuing interchange between students and the educating elements of their

extended environments--adults and knowledgeable peers, various enacted curricula and affording activities. Self-regulated learning is not a synonym for intelligence; neither is it, as McCaslin and Good (1994 in press) have argued, really, learning by oneself. There were self-regulated learners before researchers knew what to call them; they must have become that way through implicit teaching.

As Schunk & Zimmerman (1994) note in the final chapter of their new volume, future directions for research on student self-regulation ought to tease out the developmental origins of this complex capability, and how it builds (or fails to build) over time and personal experience. New research will benefit from a longitudinal perspective on what teachers and parents do to promote or inhibit self-regulation in children, and efforts must be made to uncover positive ways to influence this process. It is in the spirit of recommendations such as these that the previously described work proceeds.

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Table 1.

Some Definitions of Self-Regulated Learning.

Zimmerman (1990)	Systematic use of metacognitive, motivational, and behavioral strategies; responsiveness to feedback regarding the effectiveness of learning; and self-perceptions of academic accomplishment (p. 14).
Iran-Nejad (1990)	Changing one's learning intentions from those aimed at optimizing the conditions for encoding and retrieval under other-regulation to those aimed at optimizing the conditions for understanding and personal growth under (both spontaneous/ dynamic and executive) self-regulation (p. 594).
Gitomer & Glaser (1987)	A strategic response to perceived difficulty; recognizing limitations on knowledge resources and taking time to make the transformations necessary in a problem space to permit one to operate well (pp. 310-311).
Pintrich & Garcia (1992)	A latent variable that is defined by students' use of deeper processing strategies like elaboration and planning as well as their use of metacognitive control strategies (p. 13).

Table 2.

Characteristics of Strategy Instructional Condition (from Sawyer, Graham & Harris, 1992).

Component	DT	SRSD-WESR	SRSD
Preskill development	+	+	+
Conferencing			
Metastrategy information	+	+	+
Discussing pretest performance and graphing	-	-	+
Discussion of strategy			
Five steps	+	+	+
Self-instructions	-	+	+
Explicit self-regulation procedures	-	-	+
Modeling			
With self-instructions	-	+	+
With explicit self-regulation procedures	-	-	+
Mastery of strategy steps	+	+	+
Mastery of strategy steps and self-instructions	-	+	+
Collaborative practice			
Strategy and self-instructions	-	+	+
Explicit self-regulation procedures	-	-	+
Independent practice	+	+	+
With feedback	-	+	+
With explicit self-regulation procedures	-	-	+

Note. DT = direct teaching.
SRSD-WESR = self-regulated strategy development without explicit self-regulation instruction.
SRSD = self-regulated strategy development.
+ = component present
- = component absent.

Table 3.

Examples of Elemental Activity Structures Affording Opportunities for Self-Regulated Learning.

- Reading relevant children's literature (e.g., *Little Engine That Could; Katy and the Big Snow*).
- Responsibility for household chores.
- Doing homework
- Participating in extra-curricular projects and clubs (e.g., science fair, community volunteer work, school newspaper).
- Supported pursuits of individual interests or talents (e.g., a sport, an instrument, a program for gifted students).
- Secondary-level coursework in humanities.

Table 4.

Excerpt from Videotape Data, Xu Homework Study.

P: OK, I give you two choices: You can either read by yourself and jot down important ideas, or you can read aloud to me. Which way do you think will help you understand more?

C: You read to me.

P. (*Smiling*) Um, no.

C: I'll forget, Mama. I'll forget it if I read it . . .

P: How do you think you will remember it when I read it? By what?

C: By watching other people (*laughs*).

P: (*Laughs*) No, uh-uh, wrong answer. Do you either want to read to yourself or . . .

C: What was the same thing [that happened] with your mama? You couldn't remember, you say . . .

P: Yeah, sometimes it's hard for me, but I learned it, do you know how I learned to do it?

C: Ummm. (*Looks at book*)

P: Come on, sweetie . . . Whose work is this?

C: (*Laughs*) Yours.

(*Two more rounds of urgings by parent and child trying to get parent to read.*)

P: Come on. I'll help you with the hard words . . .

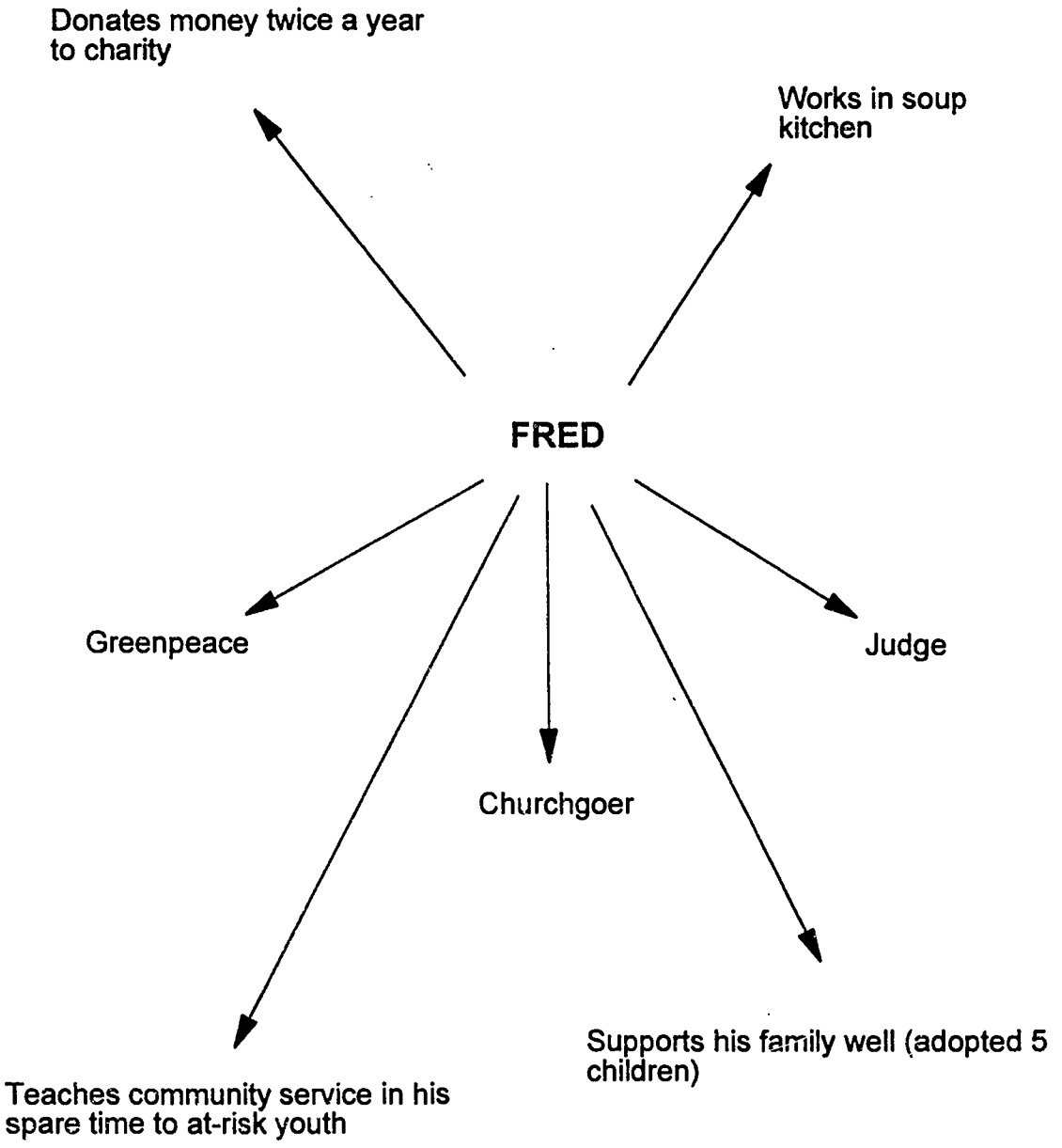

Figure 1. Group construction of imaginary character, "Fred" (from J. Randi).