Promoting Effective Task Interpretation as an Important Work Habit: A Key to Successful Teaching and Learning

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In this article we argue that to be successful in an academic arena, students must adopt a consistent approach to completing academic work (i.e., a work habit) that includes very carefully interpreting the demands of tasks that are presented to them in schools. To clarify why task interpretation is so critical to student success, and is thus an important instructional objective for teachers, we begin by presenting two vignettes illustrating links between task interpretation and students' successful engagement in academic work. Then, we take a step back to describe what we mean by academic work and engagement and to explain how and why students' knowledge about, conceptions of, and interpretations of tasks are so foundational to performance. We also describe how students' task interpretation breaks down and why such breakdowns often occur. Finally, we close by advancing practical suggestions for teachers regarding how to structure activities, instruction, and evaluation to promote students' adoption of task interpretation as an important work habit in the pursuit of effective learning.

Sally is teaching a ninth grade English class. Her goal is for students to learn how to write various kinds of paragraphs. After showing some examples and talking with the class about the structure of a narrative paragraph, Sally asks the students to write one themselves. She writes the assignment on the chalkboard as she explains it to the class but notices that quite a number of students start talking to each other while her back is turned. As students work on the assignment, Sally circulates around the room. She reexplains the task to some students and reminds others to focus on their work. She notices that many students seem lost and that only a few students are doing a good job of following her very detailed instructions.

Amy is an eighth grade student taking science. One day, Amy arrives home with her science textbook and instructions to answer the questions at the end of Chapter 6. Amy sits down, turns her book to the end of the chapter, finds the first

Teachers College Record Volume 106, Number 9, September 2004, pp. 1729–1758

0161-4681

> *question and looks for key words. She then searches for those key words in the chapter to find information relevant to the question. She copies the information word for word onto a piece of paper, then moves onto the remaining questions. When she is challenged by her teacher the next day, who asks if she has answered the questions in her own words, Amy replies that she does not need to understand the information. She shows her teacher how she has received 100% on each of her previous homework assignments, which she completed in the same way.*

Taken together, these two vignettes illustrate how students' successful learning is dependent on their adopting a consistent approach to completing academic work (i.e., a work habit) that includes carefully interpreting the demands of activities or tasks they are assigned (Butler, 1998b; Cartier, 1997; Cartier, Plante, & Tardif, 2001). In the first scenario, Sally struggles to engage her students in writing well-structured narrative paragraphs. She is chagrined to find that, although she carefully describes narrative paragraphs and explains assignment expectations, her students still do not seem to understand the purpose of the activity or focus their efforts constructively. In the second situation, although Amy's teacher no doubt intended for students to learn concepts from reading and then apply the ideas to answer homework questions, Amy's interpretation of the task led her to focus instead on searching for particular words and then transcribing sentences from text. In both cases, students' ability to complete their work as teachers intended was undermined by their failure to productively interpret tasks.

Because of the critical role that task interpretation plays in successful learning, in this article we focus on what teachers can do to promote more effective task interpretation by students. We begin by taking a step back to define the kinds of academic work typically given to students. Next, we describe students' engagement in terms of a model of self-regulated learning (Butler & Winne, 1995). These two discussions set the stage for defining what we mean by task interpretation and for explaining how and why task interpretation is an important work habit foundational to successful learning. As part of this discussion, we specify how successful task interpretation is dependent on students' knowledge about, conceptions of, and strategies for interpreting task demands. We also describe research documenting how students' task interpretation breaks down and why such breakdowns often occur. We close by advancing practical suggestions for teachers regarding how to structure activities, instruction, and evaluation to promote more focused and successful learning.

DEFINING ACADEMIC WORK

At a general level, *academic work* can be defined as the work students are given in schools (Doyle, 1983). Even more broadly, Entwistle and Tait

(1995) define academic work in terms of the environment in which students learn: "The term *learning environment* has been used to describe the whole set of learning opportunities which are provided within a course: lectures, small group discussions, individual(s) tutorial, set reading, assignments, tests, and the increasing variety of learning resources becoming available through technology-based learning" (p. 99). Within schools, it is teachers who establish the learning environments within which students work. For example, teachers select instructional methods (e.g., lectures, small group discussions); the purpose, structure, and components of learning activities (e.g., a writing assignment); and evaluation practices (i.e., standards against which work is assessed). It is within learning environments that teachers have the potential to influence students' construction of knowledge and competencies within and across domains. Learning environments shape the approaches students adopt for learning, and ultimately learning outcomes (Entwistle & Tait, 1995).

When establishing a given learning environment, teachers conceptualize and sequence academic work. As part of this process, they design activities for students with the aim of fostering particular academic work habits and learning outcomes. For example, in our case example, Amy was asked to read a chapter and answer questions at the end. Amy's teacher no doubt designed this activity with the intent of fostering Amy's effective approaches to learning science, along with comprehension and application of important concepts. Unfortunately, our example illustrates that learners do not always approach activities as teachers intend (Butler, 1998a; Cartier, 1997; Wong, 1999).

Many learning activities require students to coordinate completion of one or more interconnected but separable tasks. For example, Amy's learning activity required her to coordinate completion of three types of tasks: reading (e.g., of the chapter), problem solving (i.e., to interpret and generate answers to questions), and writing (e.g., crafting responses). Consistent with this analysis of Amy's academic work, within this article we use the term *activity* to refer more generally to an assignment presented by a teacher. The term *task* refers more specifically to the internally coherent subactivities required within many learning activities (e.g., reading, writing, learning, problem solving).

Researchers have defined key features of academic tasks in varying ways. For example, Winne and Marx (1989) detailed three features of tasks, namely content (e.g., domain-specific content to be covered, necessary strategies), setting (e.g., available resources, instructions), and presentation (e.g., medium and format for the final product). Meichenbaum and Biemiller (1992) defined classroom tasks "as a 'program' or a list of instructions for carrying out actions with specified materials, usually leading to an expected outcome" (p. 21). They identified three task features: task functions, task

content, and task affect (i.e., a child's feelings about the task, the product, or his or her ability to complete the task). Note that this latter definition of tasks highlights the dual roles of cognition and affect in learning.

Definitions of tasks are also embedded within research on metacognition (e.g., Brown, 1980, 1987; Butler, 1998b; Flavell, 1976, 1987). We suggest that, within this literature, most definitions of academic tasks reflect one or more of three features: task purpose, task structure, or task components (see Table 1). For example, a writing task (e.g., writing a letter to a politician to protest closure of a community centre) can be defined in terms of the task purpose (e.g., writing to express an opinion to a politician), the task structure (e.g., criteria for what counts as a good, persuasive letter; how a letter is typically structured), and task components (i.e., a componential breakdown of the writing task as requiring planning, drafting, editing, and revising). As we discuss later, students' successful interpretation and navigation of academic work depend on their having productive metacognitive knowledge about tasks in each of these three areas.

DEFINING ENGAGEMENT

In this article, we seek to describe how students' interpretation of tasks represents an important work habit that is foundational to successful task engagement. To further our argument, we need to take a step back and define what we mean by engagement. As Paris and Paris (2001) note, although researchers have defined engagement in various ways, most "include meaningful and thoughtful approaches to tasks" (p. 93). Consistent with this common thread, in this article we focus on aspects of student engagement that involve active and reflective self-regulation of performance within learning environments.

Thus, drawing on models of metacognition and self-regulation (e.g., Borkowski, 1992; Butler & Winne, 1995; Corno, 1993; Zimmerman & Schunk, 2001), we define student engagement as students' active, reflective coordination of learning processes (i.e., self-regulation) in light of metacognitive knowledge and motivational beliefs and in the context of academic work. Thus, we associate engagement with self-regulation in action, as situated within an instructional context (Zimmerman & Schunk, 2001). To elaborate on this definition, imagine for a moment that students are presented with a particular task (e.g., writing the letter protesting closure of a community center). According to descriptions of self-regulated learning, engagement in this task would comprise the following recursive phases: task interpretation (i.e., carefully deciphering the requirements of the particular task), planning (i.e., setting objectives, selecting approaches for managing the writing task), enacting (i.e., implementing selected strategies),

Table 1. What Is Task Interpretation?[1]

Task	Metacognitive Knowledge About Tasks			Conceptions About Tasks	Self-Regulation in Action	
	Task Purpose	Task Structure	Task Components		Task Interpretation	Planning, Enacting, Monitoring, & Evaluating
Writing	Writing to express a given meaning or to evoke some feeling or understanding for an intended audience	• Criteria for judging writing quality (e.g., organized, interesting, coherent, clear, evocative, original) • writing conventions • genres • text structures	Planning Drafting Editing Revising	Writing is about communicating to an audience; Writing is about grammar and spelling	Actively interpret the task to identify the purpose (audience, content, criteria, expectations), and the required structure and components	Select and enact planning, drafting, editing, and revising strategies
Reading	Reading purposes vary. Examples: • pleasure • to find specific information • to understand a story • to learn concepts	• Criteria for judging reading outcomes • writing conventions • genres • text structures	Previewing Predicting Questioning Reading Reviewing Summarizing	Reading is about constructing meaning; Reading is about decoding words; Reading is about finding specific information	Actively interpret the purpose of reading, criteria for judging performance, and text conventions, genre, and structures	Select and enact pre-reading, reading, and comprehension checking and building strategies

Learning	Learning purposes vary. Examples: • building automaticity on basic skills (e.g., word decoding) • memorizing facts or details • constructing conceptual frameworks	• Criteria for judging learning • structure of learning materials (e.g., lectures, videos, texts, websites)	Articulating prior knowledge Rehearsing Connecting Elaborating	Learning as quantitative increases in knowledge; Learning as memorizing; Learning as the acquisition of facts; Learning as abstraction of meaning; Learning as interpretation to understand reality	Actively interpret the task to identify the learning purpose, criteria for successful performance, the structure of learning materials, and necessary task components	Select and enact knowledge activation, knowledge construction, knowledge consolidation, monitoring, and/or self-assessment strategies
Problem Solving	Find a solution that reflects a conceptual understanding of relevant domains and addresses the central issues defined in the problem	• Criteria for judging problem solving performance • what to look for to help in interpreting problems	Representing the problem Devising a solution plan Executing the plan Verifying the solution	Solving problems requires matching formulas to problem types; Solving problems requires understanding and applying concepts	Actively frame information in terms of underlying concepts, determine what needs to be known, and necessary task components	Select and enact strategies for representing and solving the problem, and for self-checking

[1]This table is designed to show the conceptual distinctions between the concepts introduced in this paper, and shows illustrative examples of each. We have not tried to comprehensively represent all theoretical perspectives related to each concept.

monitoring (i.e., keeping track of progress in relation to objectives), and evaluating (i.e., generating feedback for oneself on how things went). Describing students' engagement requires analysis of the quality of their participation in these interdependent phases (Butler & Winne, 1995). As students gain in experience with tasks, working repeatedly through these phases, they begin to develop habitual ways of working (i.e., work habits) that they adopt whenever confronted with academic work.

Why is task interpretation so important to successful task performance? Our description of effective task engagement provides an answer to that question. As Butler (1998b) explains, "efficient learners are aware of task requirements and direct their learning activities accordingly" (p. 288). During the first phase of engagement, task interpretation, students decipher the requirements of a given task. Then, students self-regulate all further learning activities based on their interpretation of task demands (Butler & Winne, 1995). For example, students' interpretation of tasks drives their planning (e.g., objectives they set), the strategies they select and implement, and the criteria against which they judge their performance during monitoring and self-evaluation. Therefore, if task interpretation is absent or faulty, learning is derailed. A student may work diligently and hard, but his or her efforts will not be productively focused on intended learning goals. Thus, successful task interpretation is foundational to focused engagement in tasks and ultimately success in school. It follows that, to be successful, students must adopt an approach to academic work that habitually includes attention to interpreting tasks.

TASK INTERPRETATION WITHIN LEARNING ACTIVITIES

In this section we provide a more detailed analysis of task interpretation as it is carried out within a learning activity (see Figure 1). Note first that, as we stressed earlier, students' engagement in learning is impacted by the learning environment, which includes the activities and tasks that are given, how instruction is provided, and evaluation practices. The implication is that teachers influence students' task interpretation (for better or worse) by virtue of how they structure learning environments. We return again to this important point later in this article. But for now we focus attention on defining how task interpretation unfolds once students are confronted with an activity, composed of one or more task(s). We begin by clarifying the relationships between metacognitive knowledge, conceptions about tasks, and task interpretation. Then we elaborate on how task interpretation is one important work habit that is a key part of self-regulation in action. We close this section by highlighting how motivational beliefs interact with task interpretation to shape the quality of students' task engagement.

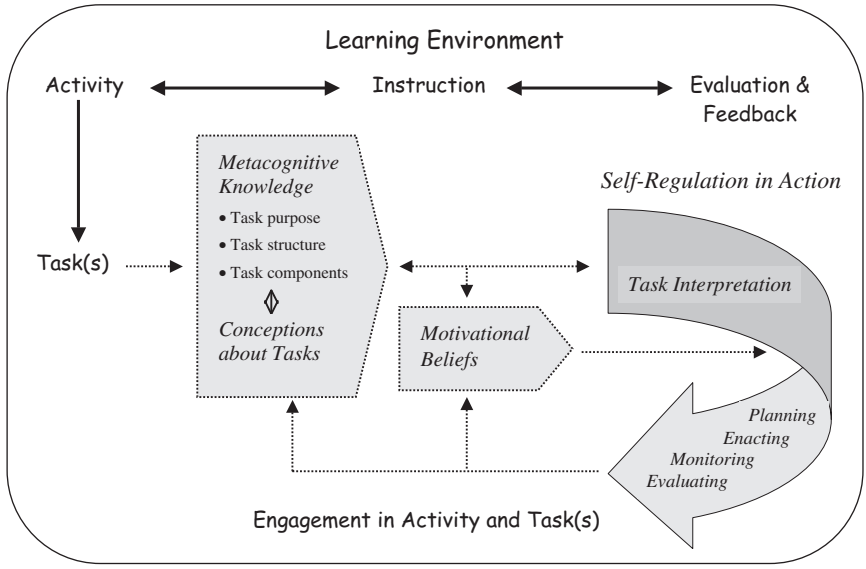

Figure 1. Students' Interpretation of Tasks in the Context of a Learning Activity.

TASK INTERPRETATION AND METACOGNITIVE KNOWLEDGE

Researchers have described how, over time and through experiences in school, students develop knowledge about academic contexts on which they base their approaches to academic work. For example, Corno (1989) defined classroom literacy "as a process of coming to know the commonly acknowledged structures and functions of classrooms and of being able to use this knowledge productivity in the social and academic roles that classroom define" (p. 30). As part of the knowledge that students construct, students develop metacognitive knowledge (i.e., knowledge about knowledge), which influences their approaches to academic tasks.

In his early definition of metacognition, Flavell (1987) defined three types of metacognitive knowledge, namely person, task, and strategy variables, that influence students' approaches to academic work. Person variables reflect students' knowledge about themselves and others as learners, and about learning generally. Strategy variables reflect students' knowledge about how, when, and where particular learning strategies should be used. Finally, task variables reflect "students' understanding about relationships between task characteristics and associated processing demands" (Butler, 1998b, p. 280). Flavell argued that person, strategy, and task variables interact to shape how students engage in tasks. Students construct

metacognitive knowledge over time, out of their successive experiences with academic work (Butler, 1998b; Paris, Byrnes, & Paris, 2001). They draw on that metacognitive knowledge when self-regulating performance in the context of any particular task (Zimmerman & Schunk, 2001).

In this article, we focus particularly on how students' metacognitive knowledge about tasks plays a key role in task interpretation and therefore engagement. Further, earlier we argued that tasks can be defined in terms of three interrelated characteristics: task purpose, task structure, and task components. Therefore, in this section, we elaborate our point that to be successful students must have productive metacognitive knowledge about tasks reflective of each of these three qualities.

Metacognitive Knowledge About Task Purpose

Different types of tasks (e.g., writing, reading, learning, problem solving) have different purposes, and, moreover, within a task category (e.g., reading or writing), a variety of purposes might be relevant. For example, purposes for writing might include self-reflection, expressing one's feelings in a poem, arguing to save a community center, or demonstrating knowledge about a particular topic. Writing can even be used as a learning tool with the purpose of building conceptual knowledge (e.g., Prain & Hand, 1999). Similarly, reading tasks generally require extracting meaning from text. But consider how purposes differ when reading a comic book for pleasure, a novel for a literature study, or an expository text. Learning itself is yet another kind of task within which many purposes are possible. For example, students may need to memorize a poem or understand reasons underlying the fall of the Roman Empire. As a final example, consider the purposes underlying problem solving. Problem solving can actually serve as a strategy for achieving different learning purposes (e.g., to master an algorithm; to extend understanding of how a concept applies). But within any given problem-solving task, the purpose also reflects the goal for solving that particular problem (e.g., to find the number whose square root lies between 3 and 5). That goal can only be defined by considering the concepts underlying the problem in relation to the questions, issues, or challenges posed within the situation. Successful writers, readers, learners, and problem solvers are sensitive to task purposes (Wong, 1991, 1999). Strategic learners draw on their metacognitive knowledge about task purposes when interpreting task requirements and then modulate learning activities responsively to match different purposes (e.g., using mnemonic strategies to help in memorizing a poem, focusing on connections between concepts to understand historical processes) (Butler, 1998a; Butler & Winne, 1995).

Metacognitive Knowledge About Task Structure

To be successful, learners must know more than just the purpose of tasks. They also need to understand how academic tasks are structured. For example, researchers have documented links between students' metacognitive knowledge about writing structures and the quality of their writing (e.g., Englert, 1990; Wong, 1999). One aspect of students' structural knowledge about writing is their awareness of the qualities of comprehensible text. Depending on a given writing task, these qualities can include appropriateness, coherence, structure, and unity (Armbruster & Anderson, 1988; Gordon, 1990), and/or thematic salience, clarity, organization, vocabulary choice, and syntactic structure (Butler, 1995, 1998c; Gordon, 1990; Wong, 1999). Students' knowledge about writing structures also encompasses their knowledge about text structures and genres (Englert, Raphael, & Anderson, 1992; Gordon, 1990). For example, good writers understand that narrative texts are structured around setting, plot, and resolution and that expository texts are structured using predictable organizations (e.g., enumeration, comparison/contrast, cause/effect) (Gordon, 1990). Strategic writers draw on knowledge of writing structures when interpreting the demands of writing tasks.

As is described in Table 1, reading, learning, and problem-solving tasks also have underlying structures. And again students' metacognitive knowledge about task structures influences how they interpret task demands. For example, like good writers, strategic readers are also aware of text structures and typical writing conventions. This knowledge not only helps them extract meaning while reading but also influences task understanding. A reader who is knowledgeable about story structures, for instance, will be in a better position to define detailed goals for reading (e.g., to consider the setting, plot, and resolution) than is a student without that knowledge. Similarly, a reader who knows that textbook chapters often start by outlining learning objectives may draw on that knowledge to define goals for a given assignment. As do strategic readers and writings, successful learners and problem solvers also draw on metacognitive knowledge about task structures to aid in interpreting task requirements. For example, knowledge about how problems are typically posed aids in interpreting the purpose of problems (e.g., what a question is asking). Knowledge about criteria for judging effective learning and the structure of learning materials influences how students interpret the demands of learning tasks (Cartier, 1997; Prain & Hand, 1999).

Metacognitive Knowledge About Task Components

In addition to knowledge about task purpose and structure, effective learners construct metacognitive knowledge about typical task components. For

example, good writers know that writing tasks typically play out in four interlocking and recursive stages, namely planning, drafting, editing, and revising (Englert et al., 1992; Flower & Hayes, 1981; Wong, 1999). They also understand the importance and purpose of each of these stages (e.g., what planning is for and how it helps improve writing). Note that metacognitive knowledge about task components is linked to but conceptually separable from metacognitive knowledge about strategies. Students draw on metacognitive knowledge about task components when interpreting task demands (e.g., deciding that they need to do planning, drafting, or revising when writing). But their understanding of task components does drive students' selection of strategies (e.g., students will only select strategies for planning if they recognize planning to be a key phase in the writing process).

Researchers have also identified key components in other types of academic work. For example, reading comprehension tasks require previewing, predicting, questioning, reading, reviewing, and summarizing (Dole, Duffy, Roehler, & Pearson, 1991; Palincsar & Brown, 1984). Students aware of these task components are more likely to develop a differentiated understanding of task demands. Steps in problem solving in math include "orientation (assessing and understanding the problem), organization (identifying goals and subgoals, global planning, local planning), execution (behavior to conform to plans, monitoring progress), and evaluation (evaluation of decisions and results of executed plans" (Pugalee, 2001, p. 237). Notice that the components of problem solving mirror key processes in self-regulated learning as we have defined them here. We would add that, to be successful, learners must have knowledge of the components of self-regulation that underlie successful completion of all types of academic work.

In sum, students' metacognitive knowledge about tasks should encompass productive understandings about three interrelated features: task purpose, structure, and components. All three are essential for students' successful navigation of academic work. For example, a strategic learner with a clear vision of purpose can engage in work more efficiently and strategically if he or she also understands how the task is structured and typical task components. Similarly, to engage in a task flexibly and strategically, knowledge of task components is not enough (Mayer, 1998). Nonroutine problem solving, or nonroutine completion of any task for that matter, requires the ability to strategically control and monitor learning activities in light of task purposes (Butler & Winne, 1995; Mayer, 1998). Indeed, educators have emphasized the importance of having students understand a whole activity in relation to its purpose if they are to understand the parts (e.g., Barab & Duffy, 2000; Brown, Collins, & Deguid, 1989; Lave, 1991; Lave & Wenger, 1991).

TASK INTERPRETATION AND CONCEPTIONS ABOUT TASKS

In the previous section, we suggested that students construct metacognitive knowledge about tasks based on their cumulative experiences in learning environments. As an extension of their metacognitive knowledge, learners develop, explicitly or implicitly, conceptions about the nature of academic work (McCrindle & Christensen, 1995; Säljö, 1979). In this article we use the term *conception* to refer to the underlying schema students construct that represents their understanding of the nature of a learning task. These conceptions are more foundational and generalized than is students' metacognitive knowledge about particular task variants.

For example, consider two contrasting conceptions that students might hold about what it means to write. Some students conceive of writing tasks as fundamentally about communicating to an audience; other students develop conceptions that writing is about neatness, spelling, and grammar (Wong, 1991, 1999). Similarly, students can understand reading to be about deriving meaning from text or as about decoding print. Another example comes from the work of European researchers who have investigated university students' conceptions of learning. For example, building from the work of Säljö (1979), McCrindle and Christensen (1995) describe five hierarchically organized conceptions of learning: (1) a quantitative increase in knowledge, (2) memorization, (3) acquisition of information to be retained or used in practice, (4) the abstraction of meaning, and (5) an interpretative process aimed at the understanding of reality.

In our model (see Figure 1), we suggest that students' task conceptions drive their interpretation of a given activity and, correspondingly, how they self-regulate learning. For example, over time, students might come to associate problem solving in math with memorizing and matching formulas to different types of questions. A learner who held this conception would approach problem-solving tasks by memorizing links between specific algorithms and features of questions. In contrast, an alternative conception of problem solving would be as flexibly applying concepts to understand the world and answer important questions. A learner with this conception would be more likely to represent a problem in terms of underlying principles to derive possible solution strategies. Interestingly, the relationship between conceptions and metacognition is reciprocal because although more generalized task conceptions are grounded in metacognitive knowledge, conceptions in turn influence subsequent re(constructions) of metacognitive knowledge through their impact on self-regulation. Thus, for example, math problem solving grounded in either of the previous conceptions, if apparently successful (even if just on the surface), would serve to reinforce the underlying task conception and support construction of corresponding metacognitive knowledge about the purpose, structure, and components of math problem-solving tasks.

TASK INTERPRETATION AND SELF-REGULATION IN ACTION

In this section, we focus attention more directly on the process of task interpretation. In the model we are proposing (see Figure 1), we suggest that task interpretation should be a reflective activity that transpires as part of self-regulated learning in action and that becomes part of how students come to habitually approach academic tasks (i.e., a work habit). In other words, we define task interpretation as the first, critical step in self-regulation that sets the direction for all further learning (Butler, 1995, 1998c; Butler & Winne, 1995). To clarify and defend this perspective, in this section we elaborate our definition of task interpretation as a self-regulating process (Brown, 1980, 1987; Butler, 1998b; Wong, 1999).

When confronting academic work, self-regulated learners start by interpreting task demands and then direct further learning activities accordingly (Butler & Winne, 1995). But successful task interpretation itself requires a number of reflective and strategic activities. These activities include actively searching for clues that might reveal task demands, interpreting written materials or instructions to decipher expectations, accessing and evaluating the applicability of previously constructed metacognitive task knowledge, thinking about a particular teacher's usual expectations, and integrating these sources of information to derive criteria for planning, directing, and evaluating performance. It follows that, to be effective, learners need to develop explicit strategies for task interpretation (Butler, 1993, 1995, 1998c).

For example, consider Sally's students in our previous example who were asked to write a narrative paragraph. Ideally, students in Sally's class would have developed the habit of interpreting task demands as a first step in task engagement. Strategic students in Sally's class would have attentively listened to and recorded Sally's instructions to make sure they had ample information about the task (searching for clues). They would have carefully analyzed task demands as reflected in Sally's verbal and written instructions (deciphering expectations). They would have thought back to what they already knew about the qualities of narrative paragraphs and effective writing in general (i.e., drawing on conceptions about the nature of writing tasks and metacognitive knowledge about the purpose, structure, and components of writing tasks). They also would have considered Sally's typical expectations and evaluation practices both for writing and other kinds of assignments (understanding their teacher). Finally, they would have pulled all these sources of information together to generate for themselves a clear understanding of task criteria. Most critically, they would have understood the importance of self-regulating their writing activities based on their task interpretation. When completing the assignment, they would have planned their work, selected and implemented strategies, monitored progress, and self-evaluated performance in relation to clearly articulated performance criteria.

We conclude that, to support successful learning, teachers need to structure learning environments to support active, reflective, and productive task interpretation. Instructional targets should include not only students' construction of productive metacognitive knowledge and conceptions about tasks but also students' awareness of task interpretation as a learning activity, and of strategies for task interpretation. Happily, research shows that students' self-regulation can be influenced by how teachers structure learning activities, instruction, and evaluation (e.g., Butler, 1998c; Englert, 1990; Wong, Harris, Graham, & Butler, 2003).

TASK INTERPRETATION AND PERSONAL GOALS AND MOTIVATION

Students develop personal goals when confronted with academic work that are only in part based on task interpretation. Other influences on the goals they set include their emotional responses to tasks they are given (Meichenbaum & Biemiller, 1992), perceptions of task value (Pintrich & Schrauben, 1992; Viau, 1999), motivational beliefs (e.g., self-efficacy and attributions; Bandura, 1993; Borkowski, 1992; Schunk, 1994), and the ability to manage their emotions and motivation (Corno, 1993, 1994). As a result, models of self-regulation have emerged that integrate cognitive, affective, and motivational influences (Garcia & Pintrich, 1994; Schunk, 1994; Zimmerman, 1994). Researchers have also identified various goal orientations that reflect "the purposes or reasons an individual is pursuing an achievement task" (Linnenbrink & Pintrich, 2001, p. 252). And although these orientations sometimes focus on accomplishing learning objectives (e.g., reading to learn a concept; writing an evocative poem), students sometimes focus instead on achieving highly in relation to peers or avoiding a task altogether (Linnenbrink & Pintrich, 2001; Pintrich, 2000; Pintrich & Schrauben, 1992).

A full discussion of the relationship between affect, motivation, and self-regulation is beyond the scope of this article. Therefore, in this context, we focus more narrowly on how motivational beliefs and task interpretation interact to shape students' task engagement. For example, one variable that researchers associated with students' motivation is their perception of task value. Task value refers to students' judgment about the interestingness or utility of a task given the goals that are being pursued (Pintrich & Schrauben, 1992; Viau, 1999). Students' interest refers to the intrinsic pleasure students draw from completing the activity (Schiefele, 1991; Viau, 1999), whereas students' perceptions of utility refers to the advantages they believe will arrive from completing the activity (Viau, 1994, 1999). But clearly students' perceptions of task value are predicated on their interpretation of tasks. Students can only judge the interestingness or utility of a task in terms of their understanding of task purposes.

As another example, consider the relationship between task interpretation and students' perceptions of self-efficacy. Perceptions of self-efficacy refer to students' beliefs about their ability to successfully accomplish tasks they are given, and have been related to students' successful engagement and persistence in tasks (Bandura, 1993; Schunk, 1994). But again students' judgments about how likely they will be to successfully accomplish tasks must be based on their perceptions of task requirements.

Earlier we noted that students' task interpretation is mediated by their task knowledge and conceptions. This cognitive-mediational perspective (Winne & Marx, 1982) emphasizes that it is not the quality of a given task per se (as intended by the teacher) but rather a student's interpretation of that task that impacts on self-regulation. Similarly, Linnenbrink and Pintrich (2001) distinguish between the objective qualities of a classroom environment that might impact on motivation and students' subjective perceptions of those same environmental conditions. They note that stronger links have been found between achievement and students' perceptions of classrooms than between achievement and objectively defined classroom qualities. Thus, it appears that teachers can influence learning processes and outcomes by structuring learning environments but that they must attend to how students perceive those environments (activities, instruction, and evaluation) to have intended effects.

SUMMARY: THE ESSENCE OF TASK INTERPRETATION

In sum, we suggest that task interpretation sets learning in motion and establishes directions for learning. As such, students' adopting the habit of interpreting tasks is foundational to their successful performance. Further, our model (see Figure 1) suggests that task interpretation is a joint function of students' metacognitive knowledge about tasks, their conceptions about the nature of academic work, and how well students actively and strategically focus attention on deciphering task demands. Within this general model, we emphasize that students' metacognitive knowledge about task purpose is particularly foundational to effective task interpretation because the relevance of other types of metacognitive knowledge is determined based on knowledge of task purposes (e.g., the task purpose suggests the text genres or structures are relevant for a particular writing task), and students' ability to successfully and flexibly direct learning depends on a clear vision of what they are trying to achieve (Butler, 1998a).

WHERE TASK INTERPRETATION BREAKS DOWN

In this section, we describe ways in which students' faulty task interpretation derails their completion of tasks. We illustrate how problems with task

interpretation can be associated with limited metacognitive task knowledge, misconceptions about tasks, or failures to actively interpret task requirements and self-regulate learning accordingly. Understanding where task interpretation breaks down provides important direction for intervention.

FAULTY METACOGNITIVE KNOWLEDGE ABOUT TASKS

The problem that some students experience in interpreting tasks can be explained by faulty metacognitive knowledge relative to task purpose, structure, or components. For example, some students have limited metacognitive knowledge about task purposes. In the case of writing, for instance, research shows that students are not always able to explicate the purpose of the writing tasks they are given (Butler, 1998c, 1999; Prain & Hand, 1999). Similarly, younger and poorer readers are often less aware of the purpose of reading, focusing more on decoding words or reading accurately than on extracting meaning from text (Pazzaglia, Cornoldi, & De Beni, 1995; Wong, 1999). Evidence also exists showing how students' performance is affected if they do not understand the specific purpose for solving a given math problem (e.g., Mayer, 1998) or for learning by reading within a given type of activity (Cartier, 1997).

Problems can also be linked to students' limited knowledge about task structures. Research documents that struggling readers and writers do not use knowledge of text structures when extracting meaning from or producing text (e.g., Cox, 1994; Englert, 1990; Englert et al., 1992). For example, in think-aloud protocols with emergent readers, Cox (1994) found that at-risk young readers "regardless of emergent reading level, seemed to know much less about the conventions of written English story structure" (p. 252). Similarly, less effective writers are not sufficiently aware of criteria for judging writing quality (Butler, 1999).

Students' task interpretation is also affected if they lack knowledge about task components. For example, Englert et al. (1992) describe how students with LD often treat writing as a one-step process (i.e., write the paper), which undermines their use of effective planning or revising strategies (Englert, 1990). Note again that the relevance of particular task structures and components depends on the purpose of a given task (e.g., learning a poem by heart vs. learning about historical processes). Students cannot strategically draw on other types of metacognitive knowledge unless they have a foundational idea of task purposes.

MISCONCEPTIONS

Research has shown that students construct conceptions about academic work that do not always match those expected by teachers. For example,

even if most teachers would consider writing a task focused on communicating a message for an intended audience, struggling writers often think of writing as constructing grammatical sentences using correct punctuation, spelling, or neatness (Englert, 1990; Graham, Schwartz, & MacArthur, 1993; Wong, 1999). Students with LD, for example, "focus on form rather than function of the writing process. In particular, they put priority on mechanical aspects of writing such as spelling and neatness of handwriting" (Wong, 1999, p. 186). Students' impoverished conceptions about writing are associated with the use of limited strategies for writing and incomplete criteria for self-evaluation (Wong, 1999).

As another example, researchers also linked the quality of students' conceptions about learning to their interpretation of task demands and, consequently, their engagement in learning processes (e.g., Cartier, 1997; Prain & Hand, 1999). For example, in her qualitative research that included medical students engaged in problem-based learning, Cartier (1997) observed links between students' learning objectives while reading to learn, the strategies they employed, and the quality of constructed knowledge. Specifically, students whose main goal was to acquire conceptual knowledge about the problem and who used effective strategies for doing so constructed knowledge that was better organized than did students whose main goal was to learn details, even though the latter students used effective strategies for achieving their objectives. Thus, students' differing conceptions about learning (i.e., as accumulation of details to be used later vs. development of more meaningful understandings) drove their selection of strategies for learning through reading and the quality of constructed knowledge.

INEFFICIENT SELF-REGULATION

We argued earlier that task performance will be misdirected if students have problems with the active and reflective process of task interpretation (that critical first step in self-regulation). In this section, we suggest that problems in task interpretation arise in three ways: (1) when students base task interpretation on faulty metacognitive knowledge or misconceptions about tasks, (2) when students lack effective strategies for task interpretation, or (3) when students fail to actively interpret task demands prior to starting work and then guide subsequent performance accordingly (i.e., they fail to adopt task interpretation as an important work habit) (Butler, 1999; Butler & Winne, 1995). In any case, ineffective task interpretation leads students to misdirect subsequent self-regulation and thereby undermines performance.

First, students' successful task interpretation may be undermined by combinations of limited metacognitive knowledge and misconceptions about tasks. As we described in preceding sections, struggling students

have been found to have a range of problems in these areas that can be associated with poor task interpretation. These include limited knowledge about purposes, structures, and components of typical tasks coupled with misconceptions about the fundamental nature of academic work. The result is a poor definition of requirements during task interpretation, which in turn limits students' engagement in tasks. The end result is that these students are not efficiently self-regulating (Butler, 1999; Wong, 1999).

Second, misinterpretations of tasks can also arise if students lack effective strategies for task interpretation. For example, students faced with a writing assignment may not know how to strategically interpret instructions so as to decipher expectations (Butler, 1999). Similarly, students presented with a problem in math may not know how to strategically read the problem to understand what the question is asking (Mayer, 1998; Montague, 1997; Pugalee, 2001).

Finally, problems in task interpretation may arise simply because students fail to focus attention on this important first step in learning (Butler, 1999; Montague, 1997). For example, in math problem solving, students with LD often describe using lower level strategies focused on computation rather than higher level strategies focused on problem interpretation (Montague, 1997). In her work with students at both the secondary and postsecondary levels, Butler (1999; Butler, Jarvis, Beckingham, Novak, & Elaschuk, 2001) also found that even when given very specific explanations and articulated task criteria students do not always carefully interpret that information or guide their activities accordingly (Sally's case study at the start of this article is a real-life example of this problem). It follows that to support efficient self-regulation it is not enough for teachers to provide more detailed information about tasks and expectations. They must also make sure that students both know how to interpret and use that information actively and strategically, and develop the habit of approaching tasks by starting with task interpretation.

WHAT LEADS TO PROBLEMS IN TASK INTERPRETATION?

HISTORY OF EXPOSURE TO TASKS

Earlier we argued that students construct metacognitive knowledge and task conceptions based on successive experiences with tasks (Paris et al., 2001; Paris & Paris, 2001). Unfortunately, sometimes the tasks that students are given in school inadvertently reinforce unproductive task interpretations, which then feed into students' construction of unproductive metacognitive knowledge or misconceptions about tasks, or both (Campione, Brown, & Connell, 1988; Schoenfeld, 1988). For example, if struggling

readers are most frequently engaged in decoding practice rather than reading for meaning, these learners may inadvertently develop misconceptions about reading tasks (i.e., as a decoding exercise rather than a means of communication). And if students with LD are engaged too narrowly in remedial tasks focused on spelling or grammar, they may lose sight of the purpose of writing as communicating ideas to others (Butler, 1998c). Similarly, the kinds of math work often assigned in classrooms more generally can inadvertently reinforce students' understanding of math as a rote (vs. sense-making) activity (Schoenfeld, 1988). And, activities that can be accomplished through rote activity foster the development of habitual approaches to academic work that are neither reflective nor planful. It follows that teachers must think very carefully about the kinds of academic work they assign and what that work conveys to students about the nature of academic tasks. They also need to make sure that students maintain a clear focus on important task purposes and avoid focusing on components of tasks at the expense of perceiving the meaning of the whole activity (Lave, 1991; Lave & Wenger, 1991).

The impact of students' history of learning on their task interpretation and engagement was illustrated in two recent studies by Cartier and her colleagues (Cartier, 2002; Cartier et al., 2001). Based on findings from their research on strategies used by 3rd year medical students engaged in problem-based learning, Cartier and her colleagues hypothesized that in spite of a change in learning tasks between the 2nd and 3rd years of their program most students would maintain approaches to learning that they had developed previously. Exploratory interviews with 2nd year students provided support for this hypothesis. More specifically, in the first 2 years of study, students had to read texts to learn about various kinds of medical conditions (e.g., cardiac problems). But in the 3rd year, the students had to shift their focus to diagnosing conditions within cases that were presented. The researchers found that even after 2 months in the new context most if the interviewed students had not adopted approaches to learning matched to the new diagnostic task. They seemed to persist in using learning strategies such as selecting and repeating information that may have worked for them previously in different instructional contexts. Thus, Cartier and her colleagues' research shows how students' conceptions about learning can be resistant to change even in the face of altered expectations.

INSTRUCTION AND EVALUATION PRACTICES

Teachers have a direct impact on students' construction of metacognitive knowledge, task conceptions, and self-regulation through their instruction and evaluation. For example, research provides evidence that teachers can structure instruction so as to foster productive metacognitive knowledge and

self-regulated learning (Butler, 1995, 1998c; Englert et al., 1992; Palincsar & Brown, 1984, 1988; Pressley, Brown, El-Dinary, & Afflerbach, 1995; Wong et al., 2003). Instruction supportive of effective task interpretation focuses students' attention on learning processes, promotes active and reflective engagement in learning, and maintains a clear focus on goals of activities even when instruction might focus on particular task components (Mayer, 1998; Lave, 1991). Unfortunately, however, instruction can also undermine students' development of metacognitive knowledge, conceptions about tasks, and/or successful self-regulation. For example, instruction that provides little opportunity for student choice or control over learning is not supportive of students' development of self-regulation (Perry, 1998).

Another key influence on students' construction of metacognitive knowledge, task conceptions, and task interpretation are teachers' evaluation practices (Entwistle & Taite, 1995). Indeed, Entwisle and Taite argue that "the single most influential feature of the learning environment is the nature of the assessment procedures" (p. 101). Students' interpretation of feedback from teachers (e.g., in grades assigned, comments on their work) feeds back into their (re)construction of metacognitive knowledge and conceptions about tasks (Butler & Winne, 1995). Consider as an example the earlier case study of Amy who was working on her science homework (drawn from Butler et al., 2001). Although Amy's teacher may have asked her when assigning the task to prepare answers in her own words, Amy found she was most successful in achieving an A when she copied information straight from the text. Thus, her teachers' evaluation practices strongly influenced Amy's interpretation of task requirements.

INDIVIDUAL PROCESSING PROBLEMS

When individuals are experiencing academic difficulties, it is often productive to consider whether their lack of success can be linked to the quality of their self-regulation (Butler, 1998b; Wong, 1991). For example, in an analysis of problems underlying the unsuccessful performance of adults with LD across writing, reading, and math tasks, Butler (1999) found that 88% of the students either had difficulty with task interpretation or articulating specific task criteria for monitoring the success of their efforts, or both. She concluded that these students' academic underachievement was only partly due to specific processing problems in writing, reading, or spelling. Consistent with this conclusion, she found that intervention focused on self-regulation substantially improved their performance (see Butler, 1993, 1995, 1998c).

Certainly individuals' problems in self-regulation can be related to their cumulative individual histories with tasks, instruction, and evaluation. At the same time, characteristics of individual learners also impact on task

interpretation and self-regulation. For example, Zimmerman (2000) identified four sources of problems that undermine students' proactive forethought and self-regulation of performance: a lack of social learning experiences (i.e., when self-regulation is not taught, modeled, or rewarded), apathy or disinterest (i.e., when students fail to see the task value), mood disorders (i.e., depression or mania), and learning disabilities (i.e., specific, neurologically-based cognitive processing problems associated with concentration, recall, reading, or writing) (Zimmerman, 2000). For students with LD in particular, research suggests that initial, specific processing problems (e.g., in decoding words) have cumulative effects that ultimately impact self-regulation (Butler, 1998b; Stanovich, 1988; Wong, 1991). For example, a learner who has trouble learning to read may start to avoid reading tasks or may be exposed in school to tasks narrowly focused on remediating basic skills. The cumulative result might be impoverished metacognitive knowledge and misconceptions about tasks paired with inefficient self-regulation.

RECOMMENDATIONS FOR PROMOTING TASK INTERPRETATION AS AN IMPORTANT WORK HABIT

A number of instructional recommendations can be derived from our analyses of task interpretation's role in successful learning (see Table 2). But first, as a general principle, we concur with Entwistle and Tait (1995) that activities, instruction, and evaluation practices must be coherently related and that "all aspects of a course must convey the same message to students regarding what will be rewarded through assignments and examinations" (p. 101). Thus, when designing learning environments, teachers must pay careful attention to connections between the activities and tasks they present, instructional practices, and evaluation criteria.

SELECTING LEARNING ACTIVITIES AND TASKS

Several recommendations related to selecting learning activities and tasks emerge from our discussion. First, because students' metacognitive knowledge and task conceptions are based on work they are given, teachers must be very careful when selecting and sequencing activities and tasks for students. Prior to selecting activities, teachers need to consider (1) their goals for student learning (i.e., what they hope students will get out of the activity), (2) the variety and complexity of the tasks that make up an activity and how prepared students are to address them (e.g., reading, writing, problem-solving demands), (3) what their task selection will communicate to students about the nature of academic work, and (4) whether the tasks assigned will

Table 2. Summary of Major Recommendations for Supporting Task Interpretation

Establishing the Learning Environment	Recommendations
Selecting Learning Activities and Tasks	When selecting activities, consider: • your goals for student learning • the specific tasks required in the activity • what is communicated about the nature of academic work • what is actually required of students to complete the tasks (i.e., will what students actually do achieve your goals?)
	Maintain a focus on the whole task and authentic purposes, even when breaking tasks down into subcomponents Structure tasks to promote mindfulness on the part of students
Structuring Instruction	Provide explicit instructions focused on metacognitive knowledge, task conceptions, and strategies for completing academic work (in the context of authentic activity)
	Focus instruction explicitly on supporting self-regulation in the context of meaningful work, including a focus on • active task interpretation • planning linked to task purposes • enacting effective strategies matched to task requirements • monitoring and self-assessment matched to specific criteria • active interpretation of feedback and evaluation
	Promote active reflection on processes for completing academic work
Evaluation Practices	Match evaluation criteria carefully to task purposes Engage students in self-evaluation Require students to actively interpret your feedback and evaluation

actually serve to foster intended learning outcomes. To implement this first recommendation, it helps if teachers think first about their goals for students and then consider activities that might promote those goals, rather than jumping into selecting concrete activities in initial stages of planning.

Our second recommendation in this area is for teachers to maintain a focus on the whole task or activity, even when breaking a task into subcomponents for structuring instruction (Mayer, 1998). Note that many types of tasks in schools lend themselves to being broken down into steps (e.g., writing a narrative paragraph, learning algorithms for solving math problems). And teachers often break tasks down to define subskills to sequence learning activities (Carter & Kemp, 1996; Jonassen, Tessmer, & Hannum, 1999; Mayer, 1998). In fact, this is why task analysis has been foundational to the study of instructional design. Jonassen et al. (1999) explain the function of

task analysis "is to describe the learning requirements for any task or skill being analyzed. How do learners have to think? What do they have to know? How do they have to perform?" (p. ix). It is a common approach to sequencing instructions to define component activities required by tasks and then to teach those components to students. And both teachers and students benefit from this kind of metacognitive knowledge about task components when planning instruction or learning, respectively (see Randi, this volume).

But again, even when breaking down tasks into component parts, it is important to maintain a focus on the whole activity (Carter & Kemp, 1996; Mayer, 1998). For example, Mayer (1998) explains that sometimes "students possess all the basic skills but still cannot carry out the task; what may be missing is the ability to organize and control the basic skills within the context of solving the higher-level task" (p. 52). Carter and Kemp caution that "it is very easy to lose sight of the purpose of teaching (the whole) when teaching specific subcomponents" (p. 162). Thus our recommendation is that teachers should situate instruction of task subcomponents in the context of whole activities (e.g., to teach specific strategies for reading in the context of meaningful reading). Similarly, Mayer argues that promoting effective problem solving requires "practice in solving problems in context, that is, as part of working in realistic problem-solving settings" (p. 50).

Our third recommendation is that teachers should explicitly structure activities to promote independent, deliberate, self-regulated learning by students. For example, teachers can support task interpretation by highlighting goals underlying activities (e.g., write the goal on board) or by explicitly clarifying expectations for a given assignment. But, as was described earlier, just because a teacher articulates expectations clearly does not mean that students reflectively and actively interpret that information. But teachers can also design activities that directly promote self-regulated learning and, in that context, task interpretation. An example might be asking students to summarize task criteria and plans for accomplishing a task as the first step in an assignment (Butler, 2002; Butler et al., 2001). Class discussions or writing assignments can also focus explicitly on task purposes, structure, or components or on associated self-regulated processes (Prain & Hand, 1999). Students can also be asked to reflect on their ways of learning and consider how they might improve their skills and strategies (Entwistle & Tait, 1995). If teachers consistently require active and independent task interpretation as part of activities they assign, then over time students are more likely to adopt task interpretation as a work habit, that is, as a routine way of starting work on academic tasks.

STRUCTURING INSTRUCTION

Our first instructional recommendation related to structuring instruction is for teachers to provide instruction explicitly focused on promoting

metcognitive knowledge, productive task conceptions, and students' development of effective strategies for completing academic work. One way to implement this recommendation is to provide strategy instruction. In strategy instruction, the processing requirements underlying various tasks are often identified and then taught directly to students (e.g., Ellis, 1993) (an example of how task analysis is frequently used as a basis for designing instruction). Direct instruction regarding task components is one way in which strategy instruction has been provided (e.g., Deshler, Ellis, & Lenz, 1996). Other forms of mediated instruction also have been successful in promoting strategic learning (e.g., Butler, 2002, 2003; Englert, 1992; Pressley et al., 1995). We refer teachers to the many effective models for strategy training for guidance on how to incorporate strategy instruction into classroom teaching (see Wong et al., 2003, for a recent overview). Here we simply emphasize that explicit instruction focused on task components is extremely beneficial in terms of promoting students' metacognitive knowledge about task components and strategies, as well as more strategic approaches to learning. But, as we emphasized earlier, if students are to perceive the relationship between task components and more foundational task purposes, strategy instruction must be embedded within the context of meaningful work.

When teachers do provide instruction focused on learning processes, our second recommendation is that they focus explicitly on promoting self-regulated learning. Within that context, we recommend that teachers pay particular attention to supporting students to learn how to interpret tasks effectively. Students can learn, for example, how to ask questions of teachers to clarify expectations of tests, quizzes, papers, or projects (Simpson & Nist, 2000). Or they can be supported to "analyze the situation and think about task appropriate processes and approaches" (Simpson & Nist, 2000, p. 537). Attention should also focus on promoting planning (in relation to task purposes), enacting effective strategies that match task demands, monitoring and self-assessment (in light of task criteria), and active and reflective interpretation of feedback. Note that most emerging strategy instruction models recommend situating students' learning of task-specific strategies within a self-regulating framework (e.g., Butler, 1998a; Harris & Graham, 1996).

Our third recommendation related to structuring instruction is that teachers promote students' active reflection on processes for completing academic work. For example, a good deal of research is now being conducted that demonstrates the value of writing within subject areas (e.g., math, science, language arts) in terms of enhancing students' metacognition, self-regulation, and learning (El-Hindi, 1997; McCrindle & Christensen, 1995; Prain & Hand, 1999; Pugalee, 2001). Other researchers have argued that similar benefits can be derived by engaging learners in social

interaction and dialogues. For example, Englert et al. (1992) describe how students' construction of metacognitive knowledge about writing can be socially mediated through teacher-student and student-student dialogue. Similarly, Cox (1994) noted the relationship between preschoolers' development of metacognitive knowledge about texts and teacher-child language experiences.

EVALUATION PRACTICES

We have three recommendations for teachers related to how they should structure their evaluation practices. First, we recommend that teachers carefully coordinate evaluation to match task purposes. As we saw in the earlier case study of Amy, students are likely to interpret task goals based on how their work is graded (Entwistle & Tait, 1995). Second, we recommend that teachers actively engage students in self-evaluation. Asking students to self-evaluate the quality of their work focuses attention on task criteria and promotes construction of metacognitive knowledge about tasks. Finally, we also recommend that teachers require students to actively interpret the feedback they are given and teachers' evaluations of their work (Butler & Winne, 1995). For students to profit from feedback provided, they must actively compare feedback against expected performance to derive implications for further learning.

CONCLUSION

In this article we argued that task interpretation is foundational to students' successful participation in academic work. We explained how students' metacognitive knowledge, task conceptions, and active and reflective deciphering of task requirements are key determinants of successful performance and emphasized that effective learners habitually interpret tasks as a first key step in learning. We also outlined how task interpretation can be compromised by problems in any of these areas. Finally, we provided suggestions for structuring activities, instruction, and evaluation practices (i.e., learning environments) to promote task interpretation and more appropriately focused self-regulation.

Throughout this article, our intent has been to illuminate the importance of teachers' targeting task interpretation as an aspect of academic work worthy of explicit attention. There are multiple ways in which teachers can structure learning environments to achieve this important goal, and our experience in professional development initiatives is that teachers armed with a clear vision of this goal can design many inventive ways to promote task interpretation. But we close by emphasizing once again that, although

teachers can support student success by providing explicit assignment descriptions, promoting task interpretation as a work habit requires attention to promoting self-regulation. Teachers need to find ways to structure activities, instruction, and evaluation that promote students' reflective, active, independent, and habitual interpretation of tasks as a first key step in learning.

We would like to thank Rolland Viau for his helpful advice on certain aspects of this discussion and Lyn Corno for her insightful feedback on an earlier draft of this article.

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