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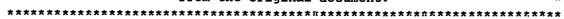   *Self Efficacy
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ABSTRACT
        This article addresses the role of perceived
self-efficacy during self-regulated learning--learning that occurs
from students' self-generated behaviors systematically oriented
toward the attainment of learning goals. Self-efficacy refers to
personal beliefs about one's capabilities to behave in ways necessary
to attain desired performances. A central premise is that
attributions (perceived causes of academic successes and failures)
are important cues used by students to assess self-efficacy for
learning. A theoretical overview of self-efficacy and attribution
theory is given, along with a model highlighting their role during
learning. Research evidence is presented on how providing students
with attributional feedback affects their self-efficacy and
achievement. The importance of self-efficacy and attributions during
learning is highlighted with research on comprehension strategy
instruction with remedial readers. The use of learning strategies is
a key feature of self-regulated learners, and evidence suggests that
strategy instruction promotes self-efficacy and achievement in part
th..ugh its effects on attributions. The implications of
attributional feedback and strategy instruction for self-regulated
learning are discussed. A 44-item list of references and a diagram of
the self-efficacy model of achievement behavior are included.
(Author/TJH)

Attributions and Perceptions of Efficacy During

Self-Regulated Learning by Remedial Readers

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Abstract

This article addresses the role of perceived self-efficacy during
self-regulated learning. Self-efficacy refers to personal beliefs about one's
capabilities to behave in ways necessary to attain desired performances. A
central premise is that attributions (perceived causes of academic successes
and failures) are important cues used by students to assess self-efficacy for
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Attributions and Perceptions of Efficacy During

Self-Regulated Learning by Remedial Readers

Current accounts of learning view students as active seekers and

processors of information (Pintrich, Cross, Kozma, & McKeachie, 1986). There

is growing evidence that personal cognitions influence the instigation,

direction, and persistence of achievement behaviors. Research conducted

within various theoretical traditions places particular emphasis on students'

beliefs concerning their capabilities to exercise control over important

aspects of their lives (Bandura, 1986; Corno & Mandinach, 1983; Dweck &

Leggett, 1988; Nicholls, 1983; Schunk, 1987; Stipek & Weisz, 1981; Thomas,

1980; Weiner, 1985).

This article addresses self-regulated learning, or learning that occurs

from students' self-generated behaviors systematically oriented toward

attainment of learning goals. Self-regulated learning processes involve

goal-directed cognitive activities that students instigate, modify, and

sustain (Zimmerman, 1986). Students' cognitions include such activities as

attending to instruction, processing and integrating knowledge, and rehearsing

information to be remembered, as well as beliefs concerning capabilities for

learning and anticipated outcomes (Schunk, 1986).

The primary cognitive measure in the research that I will describe is

perceived self-efficacy, or personal beliefs about one's capabilities to

behave in ways necessary to attain desired performances (Bandura, 1986). The

subjects in these studies were students who had encountered problems learning

academic content; in many studies the students were remedial readers. At the

outset, subjects displayed low content-area skills and self-efficacy.

In discussing the role of self-efficacy during self-regulated learning, I will focus on students' <u>attributions</u>, or perceived causes for their academic successes and failures. A central premise is that attributions are important cues used by students to assess self-efficacy for learning. Following a theoretical overview, I will present research evidence on the role of attributions during academic learning with special emphasis on how providing students with attributional feedback affects their self-efficacy and achievement. I then will discuss studies examining strategy instruction with remedial readers. The use of <u>learning strategies</u>, or systematic plans that assist the encoding of information, is a key feature of self-regulated learners. I will summarize some evidence suggesting that strategy instruction promotes self-efficacy and achievement in part through its effects on attributions. I will conclude by discussing the implications of attributions and strategy instruction for self-regulated learning.

<div align="center">Theoretical Background</div>

<u>Self-Efficacy</u>

Bandura (1982) hypothesized that perceived self-efficacy affects choice of activities, effort expenditure and persistence. Students with low self-efficacy for accomplishing a task may avoid it, whereas those who believe they are capable are more likely to participate. Especially when facing obstacles, students who feel that they can perform well ought to work harder and persist longer than those who doubt their capabilities.

Individuals acquire information to appraise their self-efficacy from their performance accomplishments, vicarious (observational) experiences, forms of persuasion, and physiological indexes. One's own performances offer reliable guides for assessing self-efficacy. In general, successes raise

efficacy and failures lower it, although once a strong sense of efficacy is developed an occasional failure will not have much effect.

Students acquire much capability information from knowledge of others. Similar others offer the best basis for comparison (Rosenthal & Zimmerman, 1978; Schunk, 1987). Observing similar peers perform a task conveys to observers that they, too, are capable of accomplishing the task. Information acquired vicariously has a weaker effect on self-efficacy than does performance-based information, because a vicarious increase in efficacy is negated easily by subsequent unsuccessful performances.

Students often receive persuasory information that they possess the capabilities to perform a task, as, for example, when a teacher tells a student, "You can do this." Although positive persuasory feedback enhances self-efficacy, this inc ease is apt to be short-lived if individuals' subsequent efforts turn out poorly. Students also derive efficacy information from such physiological indexes as heart rate and sweating. Bodily anxiety signals might be interpreted to mean that one lacks skills.

I do not wish to imply that self-efficacy is an important influence on all behaviors. Efficacy appraisal typically does not occur with skills or behaviors that are well established (Bandura, 1982). People are apt to assess their capabilities for accomplishing a task when personal or situational conditions are altered. Students, for example, are more likely to gauge self-efficacy for learning new material than for accomplishing review exercises.

Even in learning situations, many other variables are important. Cognitive abilities predict how well students learn (Corno & Snow, 1986). Outcome expectations (beliefs concerning the outcomes of one's actions) affect

behavior: Students are generally not motivated to behave in ways that they believe will result in negative outcomes. Another influence is the value students place on outcomes, or how important they believe those outcomes will be for their lives. Students who perceive little value in learning particular content may expend little effort even if they feel efficacious about learning that content.

Attributions

Attribution theories assume that people seek to explain the causes of important events in their lives (Heider, 1958; Weiner, 1985). In achievement settings, the search for causes results in such questions as, "Why did I do well (or poorly) on my social studies test?", and, "Why did I get an A (or a D) in biology?" A series of studies by Weiner and his colleagues provided the empirical base for developing an attributional theory of achievement behavior (Weiner, 1974, 1979, 1985; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971; Weiner, Graham, Taylor, & Meyer, 1983).

Guided by Heider's work, Weiner et al. (1971) postulated that students are likely to attribute their academic successes and failures to such factors as ability, effort, task difficulty, and luck. These authors assumed that factors were given rather general weights and that for any given outcome one or two factors would be perceived as more responsible than the others. It should be noted that Weiner et al. did not imply that these four were the only attributions used by students. Other attributions used to explain academic outcomes include other people (teachers, peers), mood, fatigue, illness, personality, and physical appearance (Frieze, 1980; Frieze, Francis, & Hanusa, 1983).

Weiner et al. (1971) originally represented causes along two dimensions: internal or external to the individual, and relatively stable or unstable over time. For example, ability is internal/stable, effort is internal/unstable, task difficulty is external/stable, and luck is external/unstable. Weiner (1979) added a third dimension--controllable or uncontrollable by the individual. Although effort is generally viewed as internal and unstable (immediate effort), there also seems to be a general effort factor (typical effort): People are described as lazy, hardworking, and so forth. Effort is considered to be controllable; mood factors (including fatigue and illness) are not.

In forming attributions, people use situational cues, the meanings of which are learned. Salient cues for ability attributions are success attained easily or early in the course of learning, as well as many successes. Effort attributions are credible when students expend mental effort or persist for a long time to succeed. Task difficulty cues include task features (e.g., mathematical problems with more numbers are more difficult) and social norms (if everyone fails a test, the test was difficult). A prominent cue for luck is random outcomes.

In the present context, attributions are important because they affect students' expectations for success and achievement behaviors. The stability dimension is hypothesized to influence expectancy of success. Assuming that task conditions are expected to remain much the same, success ascribed to stable causes (high ability, low task difficulty) should result in higher expectations of future success than attributions to unstable causes (immediate effort, good luck). Students may be uncertain whether they can sustain the effort needed to succeed or whether they will be lucky in the future. Failure

ascribed to low ability or high task difficulty is apt to result in lower expectations of succees than failure attributed to insufficient effort or bad luck. Students may believe that increased effort will produce more favorable outcomes, or that their bad luck may change.

Many students with learning problems enter a vicious cycle in which negative beliefs interact with academic failures (Licht & Kistner, 1986). For various reasons, students fail in school, and they begin to doubt their learning capabilities and to view academic successes as uncontrollable. Students become frustrated and give up readily on tasks. Lack of effort and persistence lead to further failures, which reinforce the negative beliefs. Eventually, students interpret their successes as externally caused: The task was easy, they were lucky, the teacher helped them. They attribute their failures to low ability, which negatively affects self-efficacy, motivation, and achievement (Nolen-Hoeksema, Girgus, & Seligman, 1986).

As discussed later in this article, researchers have identified students who fit this attributional pattern and trained them to attribute failure to controllable factors (e.g., low effort, improper strategy use) rather than to low ability. Effort has received special attention; if students believe they fail because of low ability, they may not expend much effort to succeed. Because effort is under volitional control, training students to believe that prior difficulties resulted from low effort may lead them to expend greater effort with the expectation that it will produce better outcomes.

Self-Efficacy for Learning

A model that highlights the role of self-efficacy and attributions during academic learning is shown in Figure 1 (Schunk, 1987). The model postulates that, at the start of an educational activity, students differ in their

beliefs about their capabilities to acquire knowledge, perform skills, master the material, and so forth. This initial sense of self-efficacy varies as a function of prior educational experiences and of such personal characteristics as abilities and attitudes. Social, instructional, and other contextual variables associated with the learning context affect students while they are cognitively engaged with academic material. Students derive cues that signal how well they are accomplishing the task and that they use to assess efficacy for future learning or performance. Cues include performance outcomes, outcome patterns, attributions, social comparisons, persuader credibility, and bodily symptoms. In this model, attributions are hypothesized to constitute an important cue used by students to appraise their self-efficacy in achievement situations. Self-efficacy, in turn, affects motivation and skillful performance.

Insert Figure 1 about here

The research described in the next section has tested many predictions of this model. Much of this research uses students who are remedial readers; some mathematical research also is summarized to illustrate the importance of attributions. Subjects initially are pretested on self-efficacy and skill. To assess self-efficacy, testers briefly show subjects samples of the academic content (reading passages and questions, math problems). For each sample, subjects judge their certainty of answering questions or solving problems like those shown or of learning how to do so. The skill test includes items of comparable form and difficulty to those on the efficacy test. Treatment procedures subsequently are implemented as part of a multi-session

instructional program on the content-area skills, after which subjects are posttested.

Research Evidence

Research supports the ideas that, compared with normal learners, students with learning problems hold lower expectations for success, judge themselves lower in ability, and place greater emphasis on lack of ability as a cause of failure (Boersma & Chapman, 1981; Butkowsky & Willows, 1980; Palmer, Drummond, Tollison, & Zinkgraff, 1982). Such students often do not stress low effort as a cause of failure (Andrews & Debus, 1978; Dweck, 1975; Pearl, Bryan, & Donahue, 1980). They give up readily when they encounter difficulties, cite uncontrollable causes for success and failure, and hold low perceptions of internal control over outcomes (Johnson, 1981; Licht & Kistner, 1986). These negative beliefs may generalize to situations where students previously have not failed.

A study by Butkowsky and Willows (1980) illustrates this debilitating pattern. Fifth grade boys were designated as good, average, or poor readers, based on standardized measures. Subjects were exposed to solvable or insolvable anagrams and line drawings; prior to the task, subjects judge expectancies for success and following the task assessed attributions for the outcomes. Compared with good and average readers, poor readers persisted for a shorter time on insolvable items, judged expectancies of success lower, and were more likely to attribute failure to low ability and success to factors beyond personal control. Although all groups of readers lowered expectations of success following failure, poor readers showed the greatest decrement.

In the remainder of this section I discuss processes that are designed to facilitate students' self-regulated learning efforts. As mentioned earlier,

as students work on academic tasks they receive cues that signal how well they are accomplishing their learning goals. Because students' judgments about goal progress are tempered by their performance attributions, the development of self-regulated learning is enhanced by providing students with attributional feedback that highlights abilities and efforts as causes of success. Self-regulatory skills also are promoted by giving students instruction on learning strategies. Although many students acquire strategies during regular instruction, strategy learning is problematic for students with learning problems. I will summarize evidei. : suggesting that the beneficial effects of strategy instruction on self-efficacy and achievement occur in part due to changes in students' attributions for their academic outcomes.

Attributional Feedback

Attributional feedback, which links students' successes and failures with one or more causes, is a persuasive source of efficacy information. Although ability information becomes more important with development (Nicholls, 1978), effort feedback can motivate students of different ages. Being told that one can achieve better results through harder work can motivate one to do so because it conveys that one possesses the necessary capability to succeed (Andrews & Debus, 1978; Dweck, 1975). Providing effort feedback for prior successes supports students' perceptions of their progress in learning, sustains motivation, and increases efficacy for continued learning (Schunk, 1987). Effort feedback is especially useful for students with learning problems, who often place insufficient emphasis on the effect of effort on achievement (Torgesen & Licht, 1983).

In addition to the type of attributional feedback, its timing also is important. Early task successes constitute a prominent cue for formulating

ability attributions. Feedback that links early successes with ability (e.g.,
"That's correct. You're really good at this.") enhances learning efficacy.
Many times, however, effort feedback for early successes is more credible,
because when students lack skills they must work hard to succeed. As students
develop skills, switching to ability feedback enhances self-efficacy better.

These ideas have been tested in several studies (Schunk, 1982, 1983,
1984; Schunk & Cox, 1986). Although these studies addressed mathematical
skill learning, I summarize this research because it illustrates the role of
attributions in achievement context and a means for improving children's
attributional thinking and self-regulated learning. Schunk (1982) found that
linking childrer s prior achievements with effort (e.g , "You've been working
hard.") led to higher task motivation, self-efficacy, and subtraction skill,
compared with linking their future achievement with effort ("You need to work
hard.") or not providing effort feedback. Schunk (1983) showed that ability
feedback for prior successes ("You're good at this.") enhanced self-efficacy
and skill better than effort feedback or ability-plus-effort (combined)
feedback. The latter subjects judged their effort expenditure during the
instructional program greater than ability-only students. Children in the
combined condition may have discounted some ability information in favor of
effort.

To investigate sequence effects, Schunk (1984) periodically provided some
children with ability feedback, others with effort feedback, and those in a
third condition with ability feedback during the first half of the
instructional program and effort feedback during the second half. This latter
sequence was reversed for children assigned to a fourth condition. Ability
feedback for early successes, regardless of whether it was continued, led to

higher ability attributions, self-efficacy and skill, compared with effort

feedback for early successes.

Schunk and Cox (1986) presented subtraction instruction to middle school

students classified as learning disabled in mathematics. Students received

effort feedback during the first half of the instructional program, effort

feedback during the second half, or no effort feedback. Each type of feedback

promoted self-efficacy and skill better than no feedback; first-half feedback

enhanced students' effort attributions. Given students' learning

disabilities, effort feedback for early or later successes likely seemed

credible, because students had to work hard to succeed. Over a longer time,

effort feedback for successes on the same task could lose its effectiveness;

as students become more skillful they might wonder why they still ave to work

hard.

Strategy Instruction

Learning strategies are systematic plans that assist encoding of

information and task performance (Paris, Cross, & Lipson, 1984; Pintrich et

al., 1986). Strategy instruction also is an effective means of promcting

self-efficacy (Corno & Mandinach, 1983). The belief that one can apply a

strategy to improve learning instills in learners a sense of personal control

over achievement outcomes, which raises self-efficacy.

Many students learn a strategy better by verbalizing aloud the steps in

the strategy while applying them (Schunk, 1986). Verbalization helps students

attend to important task features and, as a form of rehearsal, assists coding

and retention. Verbalization is most beneficial for students who typically

perform in a deficient manner; it may help them work at tasks systematically

(Borkowski & Cavanaugh, 1979; Hallahan, Kneedler, & Lloyd, 1983). When

children can handle the task demands, verbalization may not facilitate performance because it is an additional task and can distract children from the primary task.

We tested these predictions with remedial readers in grades two through four (Schunk & Rice, 1984). While receiving instruction in listening comprehension, half of the children in each grade verbalized a strategy prior to applying it to questions; the other half received strategy instruction but did not verbalize the strategy. Strategy instruction led to higher self-efficacy across grades and promoted performance among third and fourth graders but not among second graders. Perhaps the demands of verbalization, along with those of the comprehension task, were too complex for the youngest subjects. They may have focused their efforts on comprehension, which would have interfered with strategy encoding and retention.

In a follow-up study (Schunk & Rice, 1985), fourth and fifth graders with reading comprehension deficiencies received strategy instruction and practice. Within each grade, half of the subjects verbalized the strategy prior to applying it. Strategy verbalization led to higher reading comprehension, self-efficacy, and ability attributions across grades. The latter finding suggests that part of the influence of strategy verbalization on self-efficacy may occur indirectly through ability attributions.

The Schunk and Cox (1986) study (described above) also investigated the role of verbalization. Within each of the three attribution conditions, some students verbalized aloud subtraction solution steps and their application to problems (continuous verbalization), others verbalized aloud during the first half of the instructional program but not during the second half (discontinued verbalization), and those in a third group did not verbalize. Continuous

verbalization led to higher self-efficacy and skill than discontinued and no verbalization, which did not differ. It is possible that, when instructed to no longer verbalize aloud, discontinued verbalization students had difficulty internalizing the strategy and did not use covert instructions to regulate their performances. A treatment in which verbalizations are gradually faded to a silent level may help students self-regulate their performances covertly (Meichenbaum, 1986).

A problem in many strategy training studies is that, although students learn the strategy, they do not employ it when not required to do so (Borkowski & Cavanaugh, 1979). One means of facilitating strategy transfer is to provide students with strategy value information on how strategy use improves performance. Two experiments with remedial readers showed that strategy value information also enhances self-efficacy (Schunk & Rice, 1987).

Students were taught a strategy to find main ideas. In the first experiment, children were assigned to one of the following treatments: specific strategy value information, general information, specific + general (combined) information, or no strategy value information. Specific information was linked to the task at hand: The teacher told children that by using the strategy they would be able to answer comprehension questions. General information conveyed the value of the strategy on all reading tasks. Children were told that by using that strategy or one similar to it they would be able to answer questions about what they had read. In the second experiment, children received strategy effectiveness feedback, specific strategy value information, or feedback + specific information (combined). The feedback, which was delivered by the teacher after a child correctly answered a comprehension question, linked children's successes at answering

questions with their proper application of the strategy. In each study, the combined treatment enhanced self-efficacy and skill better than the other conditions, which did not differ. These remedial readers benefited from multiple sources of information on how to improve their reading performance.

We also have investigated the role of attributional feedback during strategy instruction (Schunk & Rice, 1986). Children with reading comprehension deficiencies were given instruction on identifying main ideas. In one condition (ability/ability), children periodically received ability feedback, a second group (effort/effort) received effort feedbac., a third condition (ability/effort) was given ability feedback during the first half of the instructional program and effort feedback during the second half, and for a fourth group this sequence was reversed (effort/ability).

In contrast to the Schunk (1984) results, children who received ability feedback later during the instructional program (ability/ability and effort/ability conditions) developed higher ability attributions and self-efficacy than subjects in the other conditions; however, the sequence of attributional feedback did not differentially affect skill development. One difference between this study and the Schunk (1984) study is that this experiment was conducted over three times as many sessions. The remedial readers might have discounted early ability feedback because of their prior difficulties in reading. Although the credibility of later ability feedback initially might be questioned by children, such discounting is likely to cease over time as students continue to succeed and believe that they are becoming more competent. As ability feedback gains credibility, students are apt to formulate ability attributions and develop higher self-efficacy for continued success. This explanation is only suggestive because duration of

attributional feedback was not explored; future research could vary it by including different levels (e.g., short, long) in the same study.

Implications for Self-Regulated Learning

My intention in this paper was to show that the development of self-regulated learning is enhanced by providing students with instruction on learning strategies and with attributional feedback that highlights abilities and efforts as causes of success. As students work at academic activities, they assess their progress in accomplishing learning goals. Strategy instruction gives students a sense of control over achievement outcomes, which promotes their beliefs about their learning capabilities. Attributions constitute one type of cue used to assess self-efficacy for learning. Feedback linking students' progress with effort and ability makes these attributions highly salient to students and raises self-efficacy.

The research summarized in this chapter shows that attributional feedback and strategy instruction have important effects on achievement outcomes, but it does not fully specify the mechanism whereby these effects occur. I have suggested that treatment procedures influence students' perceptions of their progress in learning and their attributions for that progress, which impact their self-efficacy for continued progress. Some support for this hypothesis comes from our study showing that strategy verbalization led to greater emphasis on ability as a cause of success (Schunk & Rice, 1985). The highlighting of student progress seems especially important among remedial readers and other students with learning problems. Strategy verbalization, explicit feedback, and multiple sources of strategy value information, may exert their effects through a common mechanism of making students' progress salient to them.

The procedures discussed in this article can be implemented by teachers to foster self-regulated learning in the classroom. For example, the Schunk and Rice comprehension procedures were applied in children's regular reading groups. Teaching students to use a comprehension strategy by having them verbalize steps is easily implemented in small group reading instruction. It also is necessary to show students that the strategy improves their performances. This can be done in such ways as providing students with strategy value information and highlighting their performance improvement since they have been using the strategy (e.g., progress charts).

Attributional feedback can be applied to seatwork activities. Feedback that signals progress in learning validates students' beliefs that they are acquiring skills and enhances motivation for further learning. It is important that feedback be viewed as credibl by students. Effort feedback for success at a task that students believe is easy may lead them to wonder whether the teacher thinks they are low in ability (Weiner et al., 1983). Effort feedback is credible on tasks where more effort leads to better performance (e.g., improve one's grade by correcting homework or revising an assignment). Similarly, students may discount ability feedback after they have had to struggle to succeed. Ability feedback is credible when students learn quickly or perform well-established skills.

There are different perspectives on self-regulated learning, and these have created a significant research base. Much exciting research will occur in the future. I believe that attribution theory has an important role in this area, and I hope that this article will increase the likelihood of that role being fulfilled.

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Figure Caption

Figure 1. Self-efficacy model of achievement behavior.

APTITUDES

EXPERIENCES

SELF-EFFICACY

TASK
ENGAGEMENT
VARIABLES

EFFICACY
CUES

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