DOCUMENT RESUME

ED 383 737 TM 023 188

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TITLE Use of Learning and Study Skills among Students Differing in Self-Regulated Learning Efficacy.
PUB DATE Apr 95
NOTE 13p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, April 18-22, 1995).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Affective Behavior; *Cognitive Processes; High Schools; *High School Students; Rural Schools; *Social Cognition; *Study Skills; Tutoring
IDENTIFIERS *Efficacy; Learning and Study Strategies Inventory; *Self Regulated Learning

ABSTRACT

The specific cognitive and affective learning and study strategies that best distinguished students reporting high and low self-regulated learning efficacy were determined. Participants (N=75) came from 12 rural public high schools. All students were administered the Learning and Study Strategies Inventory (LASSI) and Bandura's Efficacy for Self-Regulated Learning subscale during a school-sponsored tutoring program. Step-wise analyses of the 10 skill strategies revealed that self-regulatory efficacy was most significantly discriminated by cognitive self-testing and test strategies, and affective motivation. The overall results are consistent with a social cognitive model, which states that both cognition and affect need to be addressed to provide a more comprehensive picture of self-regulated learning. (Contains 17 references and 2 tables.) (Author)

USE OF LEARNING AND STUDY SKILLS AMONG STUDENTS DIFFERING IN SELF-REGULATED LEARNING EFFICACY

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Paper presented at the annual meeting of the American Educational Research Association, April, 1995.

Abstract

The specific cognitive and affective learning and study strategies that best distinguished students reporting high and low self-regulated learning efficacy were determined. Participants (N = 75) came from twelve rural public high schools. All students were administered the Learning and Study Strategies Inventory (LASSI) and Bandura's Efficacy for Self-Regulated Learning subscale during a school-sponsored tutoring program. Step-wise analyses of the ten skill strategies revealed that self-regulatory efficacy was most significantly discriminated by cognitive self-testing and test strategies, and affective motivation. The overall results are consistent with a social cognitive model which states that both cognition and affect need to be addressed to provide a more comprehensive picture of self-regulated learning.

Use of Learning and Study Skills Among Students Differing in Self-Regulated Learning Efficacy

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Most educators would like their students to become more self-reliant and effective as independent learners. Students who believe in their efficacy for self-regulated learning tend to set academic goals and attain higher levels of academic achievement (Weinstein, Goetz, & Alexander, 1988; Zimmerman, Bandura, & Martinez-Pons, 1992). However, research (e.g., Tuckman, & Sexton, 1989) has shown that students vary in the degree to which they self-regulate the learning process. Determining the specific strategies and skills that differentiate students who vary in self-regulated learning may have important educational implications for both teachers and students.

According to social cognitive theory (Bandura, 1986; 1991), self-regulated learners use both cognitive and affective skills in directing their own learning processes. Paris and Oka (1986) have suggested that self-regulated learners may combine cognitive skill with motivational will, with Corno (1986) and McCombs (1986) further supporting the theoretical influence of cognition and affect on student self-directed learning. Little empirical

evidence, however, is available concerning the dual influence of cognitive and affective skills upon student self-beliefs of efficacy to regulate learning. This study explored the types of academic skills that differentiated students with high and low efficacy for self-regulated learning. More specifically, the relative role of cognitive and affective learning and study skills was assessed to determine the skills that best predicted student differences in efficacy perceptions for self-regulated learning.

Method

Participants.

Students (N = 75) were primarily white, average-ability high school students. The participants were 11th- or 12th-graders enrolled in one of twelve rural southwestern public high schools. All students were participating in a one or two-day school-sponsored program which combined academic tutoring with study skills training and career development information. A school counselor serving the five-county region administered the program sessions during which students voluntarily completed two survey instruments which assessed their study skills and efficacy for self-regulated learning.

Measures.

The Learning and Study Strategies Inventory (LASSI) [Weinstein, Schulte, & Palmer, 1987] is a standardized self-report measure designed to assess several learning

characteristics. The LASSI consists of subscales which measure both affective (Attitude, Motivation, Time Management, Anxiety, Concentration) and cognitive (Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, Test Strategies) learning and study skills. Each of the ten subscales are comprised of from eight to ten statements which students rate along a five-point agree to disagree scale. In the current study, subscale scores were recorded for each student; thus item-level data was unavailable and reliability was not assessed with this student sample. However, reliability values cited in the user's manual (Weinstein, 1987) indicate that the subscales are both internally consistent and stable. Others have reported similarly high reliability estimates (see Olejnk & Nist, 1992).

The scale assessing self-efficacy for self-regulated learning (SRL) was obtained from Bandura's (1989) Multidimensional Scales of Perceived Self-Efficacy. The SRL was designed to measure high school students' perceived capability to use various self-regulated learning strategies; such as concentrating on school subjects, organizing schoolwork, and participating in class discussions. Students rated their self-regulatory efficacy on eleven items according to a 7-point Likert-type scale (1 = not very well at all, to 7 = very well). Higher scores on this measure indicated higher perceptions of efficacy for self-regulated learning. The calculated reliability estimate for the present sample revealed good

internal consistency (Cronbach's alpha = .89).

Results

The means and standard deviations for the student scores on both the LASSI and the SRL are presented in Table 1. With regard

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Insert Table 1 About Here

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to self-regulated learning, students rated their efficacy highest for finishing homework assignments by deadlines (M = 5.02) and lowest for being able to get themselves to study when there are other interesting things to do (M = 3.48). Based upon the mean perceived self-regulatory efficacy scores, the student sample of 75 was divided into high 40% (N = 30) and low 40% (N = 30) self-regulated learning groups. A discriminant function analysis using the ten LASSI skill components revealed significant differences between the two groups [Mahalanobis D- squared = 3.44; $F(10,49) = 4.36$, $p = .0004$]. This indicated that students high and low in perceived efficacy for self-regulated learning were distinguishable with respect to their average profile scores on the learning and study skills. Eighty percent of the students were correctly classified into their respective groups based on the combination of cognitive and affective skills. In addition, the group nonerror rates were not too disparate (see Dillon & Goldstein, 1984), signaling fairly normal underlying distributions.

Separate stepwise discriminant function analyses were then

conducted to identify a substantively useful subset of cognitive and affective study skills. These analyses (see Table 2) were

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Insert Table 2 About Here

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run through a multiple regression computer program, which was possible with only two groups to be discriminated (Tabachnick & Fidell, 1983).

Percent of variance accounted for in distinguishing the high from the low group was 32% and 33% for the reduced set of cognitive and affective skills, respectively. The significant standardized coefficients revealed that the learning and study skills contributing most heavily to the separation of the groups were affective motivation, and cognitive self-testing and test strategies.

Discussion

Some educational recommendations can be offered on the basis of the results obtained, keeping in mind the limited generalizability resulting from the use of a rural high-school sample and self-report measures. Further, skill to efficacy relationships may be specific to particular content domains, student background characteristics, or school contextual factors.

The overall results appear to support the contention that addressing both cognitive and affective dimensions provides a more comprehensive picture of self-regulated learning (Nist, Simpson, & Olejnik, 1991). In the current study, affective

motivation and cognitive self-testing and test strategies were linked to differentiating students with high and low self-regulatory efficacy. Based upon this finding, educators might plan academic activities that foster this repetoire of learning and study skills to influence self-regulated learning. For example, motivation may be enhanced by prompting students to keep records of the amount of work they complete during a class period. Goal setting might be incorporated into record-keeping to aid students in developing test strategies. Finally, activities such as rehearsing and self-questioning might be added to impact self-testing. It should be noted that the relationship between skill strategies and self-efficacy beliefs can be bidirectional as well. Therefore, the instructional interventions suggested here may also influence students' self-regulated learning efficacy perceptions.

In conclusion, although part of the self-regulating process in academic settings concerns the use of appropriate learning and study skills (Bandura, 1986), research has indicated that knowledge of such skills does not necessarily ensure their effective and consistent use (Kramer & Engle, 1981). Therefore, to further skill use, instruction should cover both procedures (the steps needed to execute a skill) and conditions (when to apply a skill) [Paris & Byrnes, 1989] in guiding interventions to modify self-regulated learning.

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Table 1. Learning and Study Skills Inventory, and Self-Efficacy for Self-Regulated Learning Item Means and Standard Deviations (N = 75)

Item	M	SD
Learning and Study Skills (LASSI)		
Cognitive		
Attitude	29.78	5.54
Motivation	28.28	5.81
Anxiety	23.67	8.41
Concentration	22.18	6.82
Time Management	19.03	5.33
Affective		
Test Strategies	25.48	7.12
Information Processing	24.23	6.31
Self-Testing	23.67	6.75
Study Aids	22.10	6.40
Selected Main Ideas	16.03	4.19
Self-Efficacy for Self-Regulated Learning (SRL)	M	SD
How well can you:		
finish homework assignments by deadlines?	5.02	1.40
use the library to get information for class assignments?	4.98	1.50
participate in class discussions?	4.83	1.67
organize your schoolwork?	4.62	1.39
take class notes of class instruction?	4.48	1.31
concentrate on school subjects?	4.47	1.20
remember information presented in class and textbooks?	4.38	1.45
plan your schoolwork?	4.35	1.25
arrange a place to study without distractions?	4.30	1.57
motivate yourself to do schoolwork?	4.22	1.40
study when there are other interesting things to do?	3.48	1.41

Table 2. Summary of Regression Analyses for the Full and Stepwise Entry

Learning and Study Skill	R^2	F	p	Beta	t	p
Affect						
Complete*	.400	7.21	.001	----	----	------
Motivation	.332	28.87	.0001	.576	5.37	.00002
Cognition						
Complete**	.357	6.00	.001	----	----	------
Self-Testing	.264	20.78	.001	.464	4.17	.0003
Self-Testing & Test Strategies	.319	13.37	.0001	.240	2.16	.03

* Attitude, Motivation, Time Management, Anxiety, Concentration

** Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, Test Strategies