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Enhancing elementary-school children performance through reflection on their self-efficacy

Introduction

Self-Efficacy is defind as "people's beliefes in their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to execise control over task demands" (Babdura, 1990, p. 316). Self-efficacy appraisal is an integration of self beliefs, derived from various sources over time, on what a person can do regarding a certain task. The focus on student's self-beliefs as a principal component of academic motivation is grounded on the taken-for-granted assumption that the beliefs that students create, develop, and hold to be true about themselves are key forces for school success or failure (Pajares, 1999; Pintrich & Schunk, 1995; Sternberg, 1996). Self-efficacy has proven to be a more consistent predictor of behavioral outcomes than have other self-beliefs (Graham & Weiner, 1996). Efficacy beliefs play an essential role in all phases of self-regulation and achievement (Zimmerman, 1990, 1998). When self regulatory processes play an integral role in the development and use of study skills, students become more acutely aware of improvements in their academic achievement and experience a heightened sense of personal efficacy (Zimmerman, Bonner & Kovach, 1996).

Theorists in the field agree that enhancing the efficacy beliefs of students will contribute to academic performance more than skill training alone, as efficacy beliefs can potentially be generalized. Furthermore, the generality of efficacy stems primarily from metacognitive changes in people's beliefs concerning their agentive power for self change rather than from skill commonalities, cognitive structuring of similarities, temporal co-development, or strategy transfer (Bandura, 1997). The generality of efficacy beliefs also potentially strengthens personal traits such as, self-esteem. Judgments of personal efficacy influence the choices students make, the effort they expend, the persistence and resilience they exert when obstacles arise, and the thought patterns and emotional reactions they experience. High achievers compared with low achievers feel self-efficacious and personally responsible for the control of their

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academic-learning process (Bandura, 1986, 1997; Pajares, 1996, 1999; Pintrich & DeGroot, 1990; Zimmerman &, Bandura, 1994; Zimmerman, Bonner & Kovach, 1996; Zimmerman & Schunk, 1989). Historically, therefore, enhancing self-efficacy has received consistent research attention.

Teachers know little about how well students can self-evaluate their own learning despite the fact that this skill is critical for appropriate learning.

Our study implements an intervention that challenges the self-efficacy judgment of students and enhances performance.

As children grow older, they are progressively more accurate in appraising their abilities. With wider experience and cognitive development, children gain better understanding of themselves and improve their self-appraisal skills.

The purpose of our intervention is to ***enhance*** performance through reflection on self-efficacy beliefs.

Studies on self-efficacy have consistently demonstrated that efficacy beliefs are influenced by acquisition of skills, including modeling of cognitive strategies, self-verbalization of cognitive operations and strategies, goal setting, self-monitoring and social comparison (Zimmerman, 1995). Studies on writing have confirmed that students' confidence in their writing skills is related to academic motivation variables (Pajares, 2000). Other studies have also shown that different types of psychological influence such as evaluative feedback and social comparative information have an impact on efficacy beliefs (Bandura, 1997).

This study investigates the effect of ***reflection*** **on self-efficacy** – on performance. The ability to discern, weigh and integrate relevant sources of efficacy information improves with the development of ***cognitive skills*** for processing information. These include attentional memory, inferential, and integrative cognitive capabilities for forming self-conceptions of efficacy. The development of self-appraisal skills also relies on growth of self-reflective ***metacognitive skills*** to monitor one's regulative thought, to evaluate the adequacy of one's self-assessment, and to make corrective adjustments of one's appraisals if necessary (Bandura, 1997, p. 115). Effective intellectual functioning requires metacognitive skills such as organizing, monitoring, evaluating and regulating one's thinking processes (Flavel, 1978a; Meichenbaum & Asarnow, 1979).

Studies have shown that ***reflection*** enhances metacognitive processes such as self-monitoring, self-evaluation, self-reaction and attribution (Zimmerman, Bonner & Kovach, 1996). Since self appraisal of efficacy is a form of metacognition and efficacy

beliefs are structured by experience and reflective thought (Bandura, 1997), we view reflection on self-sfficacy as a forethought process, so that the mental processes students will go through while reflecting on it during a length of time, will have an effect on the processing of their efficacy appraisals and their performance will undergo a change. Reflection involves investment of time and mental creative effort (Perkins & Swartz, 1992).This being so, reflecting on self-efficacy forces those who tend to avoid thinking and rely on previous efficacy appraisals to rethink and to repeatedly revise what is produced in order to fulfill personal standards of quality.

This study estimates 6th graders' efficacy beliefs and performance of audience adaptation in writing. Audience Adaptation in writing is the capability of the writer to adapt his writing to a given audience's mood and personality, to the situation, to the environment and even to writer's mood and perspective. Audience adaptation is perceived as a holistic process in the academic field of writing (Schriver, 1993; Gunnarsson, 1997). Thus, it serves as a specific situation for the investigation of efficacy beliefs and performance. Reflection on self-efficacy beliefs as a psychological intervention designed to affect performance through student's efficacy beliefs hasn't been used yet. Furthermore, most of the projects carried out, represent research involving situational manipulations rather than long-term interventions of weekly reflection writing.

Considering that self-efficacy alone will not enhance performance if students lack specific skills needed for specific tasks and that skill training by itself may also not be sufficient to raise efficacy beliefs, three training groups were used: reflection training, skill training, both reflection and skill training, and a control group were used.

Hypotheses

It was hypothesized that reflection on self-efficacy will have an impact on **performance**. The reflection and skill training was hypothesized to be the best for enhancing performance.

Methodology

This research focuses on influencing a key self-regulatory motive – self-efficacy (Schunk & Ertmer, 2000). We believe that because self-efficacy and self-regulation exert reciprocal effects, training programs should address both aspects. The results of our pilot study, taken a year ago, show that a self-regulated learning supporting

environment is necessary for motivating students to engage themselves in the long-term self-reflective practices. Teachers in schools that didn't promote self-directed active learning were unable to conduct the reflection training in any of their classes though they were willing to do so. Students who were not used to reflect refused to do so. Consequently seven out of twelve classes were taken out of the research study. Therefore this study was carried out in schools promoting self-directed active learning environment.

The sample was randomly divided into 4 training groups: The first was given reflection training, the second was given skill training on audience adaptation in writing, the third underwent both reflection and skill training and the fourth served as a control group and didn't receive any training. The purpose of the manipulation was to study the effect of each training on students' performance. Four or five classes were randomly chosen for each training group.

The sample population number was large in order to overcome the limit of generalization. It contained 625 sixth graders from 22 classes in eight schools. It varied by socioeconomic status, culture and gender perspectives. Teachers were guided before the beginning of the school year. The intervention period lasted an entire school year. The students in the reflection training groups were asked to reflect on their self-efficacy to adapt their writing to audience. Guided questions or "Thinking Organizers" (Perkins & Swartz, 1992) helped them. Each time they reflected they could focus on another metacognitive skill such as: selecting important attainments, comparing, self-monitoring, organizing, integrating, evaluating and regulating thinking processes. By the end of the school year, each student accomplished 20 reflection tasks.

A 20 item Likert type questionnaire (5 point scale) was built to estimate students' strength of self-efficacy beliefs prior to intervention and post intervention. The questionnaire was an adaptation of Zimmerman & Bandura's "Scale of Measuring Perceived Self-Regulatory Efficacy for Writing" (1994) and Fulman's Taxonomy that had been developed to evaluate audience adaptation in writing (1996). Consultation with writing researchers and experts helped in adapting it to the sixth graders. The questionnaire items were derived from the following categories:

a. efficacy to identify contents and terms, **b.** efficacy to identify previous knowledge, **c.** efficacy to distract main idea, **d.** efficacy to organize a text, **e.** efficacy to make linguistic adaptations, **e.** efficacy to make syntactical adaptations. Validity and internal consistency reliability were checked. (Factor analysis showed audience adaptation accounts for 51% of variance, Alpha=.95)

Performance outcomes were scored on a 5 – point scale rubric that estimated two authentic tasks of each student, pre- and post-training. The students first wrote a task to be read by the teacher and later on they were asked to rewrite the same task to be read by third grade students. (Inter-rater reliability was checked.)

One Way Anova with Scheffe' multiple comparison was used to analyze the quasi-experimental, pretest - posttest control group design.

Results

It was hypothesized that reflection on self-efficacy will have an impact on ***Performance***. Reflection and skill training was hypothesized to be best for enhancing performance. A significant difference was found between post-performance training groups while no significant difference was found between pre-performance training groups, $F(3,621) = .07$, $p > .05$.

The combination of reflection and skill training was found to have the most significant effect on performance, $F(3,621) = 28.89$, $p < .001$, as shown in appendices 1 and 2.

Discussion

The theoretical contribution of the study is the demonstrated capability of combined reflection and skill training to enhance student performance .The processes explored in this study have an impact on students' academic achievements in the area of audience adaptation in writing. Since feelings of self-efficacy beliefs are potentially transferable (Pajares, 1999), the reflection processes might have an impact on performance in other areas as well.

The possibility of influencing performance through reflecting on self-efficacy beliefs opens new avenues for nurturing efficacy beliefs of young students as they progress in their performance through school. Equipping young students with intellectual tools as well as with efficacy beliefs and intrinsic interests to educate themselves throughout a lifetime are the key factors of human agency (Bandura, 1986; Pajares, 2000; Zeldin, 2000).

Reflection on self-efficacy might be adapted to teacher training and used as a tool for nurturing and shaping efficacy beliefs of teachers and student-teachers, as they go through their professional development in colleges and universities.

Lately, more attention has been paid to accuracy of efficacy appraisals. Researchers

have found that unrealistic appraisals are common and that over confidence is more frequently a problem with most students (Zimmerman, 1996).

Accuracy of efficacy appraisal is determined by the self-efficacy – performance relationship which generates different types of self-efficacious students (Bandura, 1997): the realistic type of students, whose efficacy appraisals correspond to their performance level, the unrealistically low or high efficacious type of students, whose efficacy beliefs are exaggeratedly lower or higher than their actual performance, and the optimistic type whose efficacy beliefs are slightly higher than their performance, which aids in motivating and helping one overcome difficulties. According to Bandura, people with cautious realistic self appraisals rarely set aspirations beyond their immediate reach nor make the extra effort needed to surpass their ordinary performances. Inaccurate estimates of self-efficacy may develop from faulty task analysis or from lack of self knowledge (Bandura & Schunk, 1981), two problems shown to be prevalent in students in schools. The unrealistic types act on faulty self-efficacy judgments and might suffer adverse consequences. The inaccuracy of self-efficacy judgment is a significant problem for learners because it deters them from learning properly. It causes too little preparation because of overconfidence or because of underconfidence (Bandura, 1995).

It is recommended therefore to examine the relationship between self-efficacy and performance, to implement reflection as an intervention that challenges faulty self-efficacy judgment of students, and to determine the most effective training for each efficacy type of student. Many children are severely handicapped by disbelief in their efficacy stemming from faulty self-appraisal. They have much to gain from changing a negatively biased system of self-appraisal into a more positive one.

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Appendices

Appendix 1

Table 1 shows the Mean, SD, and F of pre-training performance of the 4 training groups:

Table 1

Mean, SD and F of pre and post-training performance of the 4 training groups (N=625)

Variable	*Training Group*[(1)]	*M*	*SD*	*F*	*N*
	1	2.66	1.52		158
Pre-	2	2.67	1.66	0.07	148
training	3	2.63	1.60		164
performance	4	2.71	1.70		155
	1	4.11	0.74		158
post-	2	3.31	1.07		148
training	3	3.19	1.20	28.89*	164
performance	4	2.93	1.60		155

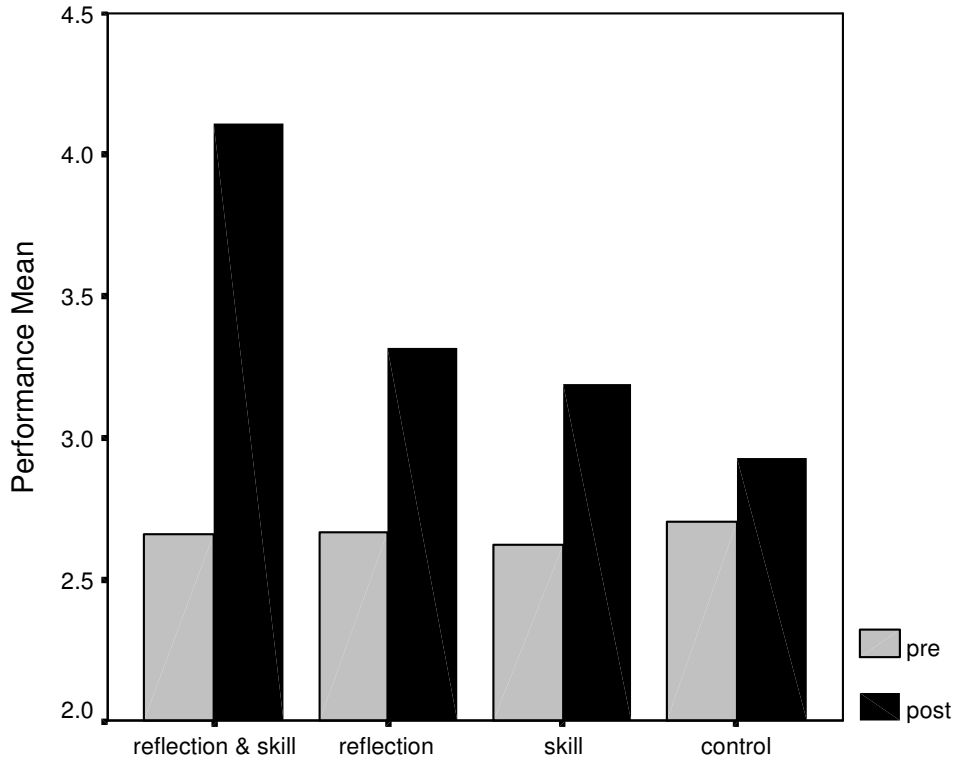
$p < .001$*

(1) Training Groups:

1= reflection & skill, 2= reflection, 3= skill, 4= control

Appendix 2

The pre- and post-intervention performance is shown in Figure 1:



Four intervention groups

Figure 1
Performance Mean pre and post intervention

The combination of reflection and skill training was found to have the most significant effect on performance $F(3,621)= 28.89$, $p< .001$.