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# Teacher Efficacy: Its Meaning and Measure

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*The theoretical and empirical underpinnings of teacher efficacy are examined to bring coherence to the construct and its measurement. First, we explore the correlates of teacher efficacy revealed using various instruments and search for patterns that suggest a better understanding of the construct. Next, we introduce a model of teacher efficacy that reconciles two competing conceptual strands found in the literature. Then we examine implications of the research on teacher efficacy for teacher preparation and suggest strategies for improving the efficacy of inservice teachers. Finally, we propose new directions for research in light of the proposed model.*

Twenty years ago researchers from the Rand Corporation added two items to an already extensive questionnaire (Armor et al., 1976). It may have been simply a hunch or a whim, but they got results, powerful results, and the concept of teacher efficacy was born. Teacher efficacy has been defined as "the extent to which the teacher believes he or she has the capacity to affect student performance" (Berman, et al., 1977, p. 137), or as "teachers' belief or conviction that they can influence how well students learn, even those who may be difficult or unmotivated" (Guskey & Passaro, 1994, p. 4). This appealing idea, that teachers' beliefs about their own capacities as teachers somehow matter, enjoyed a celebrated childhood, producing compelling findings in almost every study, but it has also struggled through the difficult, if inevitable, identity crisis of adolescence. What is teacher efficacy and why does it continue to produce such compelling results? How is it best measured? Twenty-one years after its birth, as teacher efficacy stands on the verge of maturity, it is time to assess where we have been and to offer tentative answers to some of the questions this research has generated.

With the work of Rotter (1966) as a theoretical base, teacher efficacy was first conceived by the Rand researchers as the extent to which teachers believed that they could control the reinforcement of their actions, that is, whether control of reinforcement lay within themselves or in the environment. Student motivation and performance were assumed to be significant reinforcers for teaching behaviors. Thus, teachers with a high level of efficacy believed that they could control, or at least strongly influence, student achievement and motivation. A second conceptual strand of theory and research grew out of the work of Bandura (1977), identifying teacher efficacy as a type of self-efficacy--a cognitive process in which people construct beliefs about their capacity to perform at a given level of attainment. These beliefs influence how much effort people put forth, how long they will persist in the face of obstacles, their resilience in dealing with failures, and how much stress or depression they experience in coping with demanding situations (Bandura, 1997). The existence of these two separate but intertwined conceptual strands has contributed to a lack of clarity about the nature of teacher efficacy.

A number of unresolved issues continue to perplex researchers working in the area of teacher efficacy. Is teacher efficacy a trait that can be captured by a teacher efficacy instrument or is it specific to given contexts? Are the traditional assessments of teacher efficacy adequate to the task? Does the concept need to be refined or expanded to capture more aspects of teachers' self-efficacy? What is the best interpretation of the two factors that consistently emerge on quantitative measures of efficacy? What contributes to the development of strong, positive teacher efficacy? How malleable is a sense of efficacy once it is established? Does the stability of efficacy change over career stages or across contexts? In what ways does a teacher's sense of efficacy influence teaching behavior? How do teachers' efficacy beliefs influence student beliefs and achievement?

The purpose of this paper is to examine the conceptual underpinnings of teacher efficacy and the tools used to measure it with an eye toward clarifying the construct and improving its measurement. Although we did not research every topic related to teachers' beliefs about their competence or confidence, we did identify and review virtually all sources dated between 1974 and 1997 that used the term "teacher efficacy." For the most part, only articles, conference papers, and books within the two broad theoretical frameworks sketched above are included. These resources represent teachers at different stages in their careers (preservice, novice and inservice), from various school levels (elementary, middle, and secondary), and in a variety of contexts (urban, suburban, and rural). In addition, the work reported here uses a range of research methodologies, but the overwhelming majority of extant studies employed quantitative assessment.

Because we focus on the two dominant theoretical frames that have guided research on this topic, our view of efficacy will be through a psychological lens; both Rotter's and Bandura's work are in that tradition. In addition, the bulk of the research that uses the term "teacher efficacy" has connections to these psychological frames. Because the work has grown within this tradition and also because the dominant modes of investigation have been quantitative, our exploration of teacher efficacy will be deep and thorough in some ways, but narrow in others. For example, the studies of efficacy reviewed here tend to focus on the knowledge and beliefs of teachers and not on the cultural meaning of efficacy in terms of the roles, expectations, and social relations that are important in the construction of those teacher beliefs. Although we are well aware that these cultural factors are important, we will not be able to give them their due in this review. Or goal is to make sense of a defined body of work in its own terms. If we understand the insights and limitations of this work, the research community is in a better position to expand and enrich conceptions of teacher efficacy to include other perspectives and the methodologies appropriate for their investigation.

First, we explore the correlates of teacher efficacy revealed using various instruments to look for patterns that might suggest a better understanding of the construct. Next, we introduce a model of teacher efficacy that reconciles the two competing conceptual strands. Then we examine implications of the research on teacher efficacy for teacher preparation and suggest strategies for improving the efficacy of inservice teachers. Finally, we propose new directions for research in light of the proposed model.

Early Studies of Efficacy: Rotter and Rand

The first studies of efficacy, conducted by the Rand Corporation, were grounded in Rotter's social learning theory. The Rand researchers, whose work sparked interest in teacher efficacy, indicate that their inspiration for including the two efficacy items in their questionnaire was an article by Rotter (1966) entitled "Generalized expectancies for internal versus external control of reinforcement." Teachers who concur that the influence of the environment overwhelms a teacher's ability to have an impact on a student's learning exhibit a belief that reinforcement of their teaching efforts lies outside their control or is *external* to them. Teachers who express confidence in their ability to teach difficult or unmotivated students evidence a belief that reinforcement of teaching activities lies within the teacher's control or is *internal*.[1]

The Rand Studies

In 1976 the Rand Corporation published a study that examined the success of various reading programs and interventions (Armor et al., 1976). Teacher efficacy, determined by summing scores on the two items in italics below, was strongly related to variations in reading achievement among minority students. In a second study Rand researchers found teacher efficacy to be a strong predictor of the continuation of federally funded projects after the end of funding (Berman, McLaughlin, Bass, Pauly, & Zellman, 1977). Teachers' sense of efficacy had a strong positive effect not only on student performance but on the percent of project goals achieved, on the amount of teacher change, and on the continued use of project methods and materials after the project ended.

Rand item 1. *"When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment."* A teacher who expresses strong agreement with this statement indicates that environmental factors overwhelm any power that teachers can exert in schools. This assessment extends beyond the individual capabilities of the particular teacher to teachers in general. Factors such as the conflict, violence, or substance abuse in the home or community; the value placed on education at home; the social and economic realities concerning class, race, and gender; and the physiological, emotional and cognitive needs of a particular child all have a very real impact on a student's motivation and performance in school. Teachers' beliefs about the power of these external factors compared to the influence of teachers and schools have since been labeled general teaching efficacy (GTE) (Ashton et al., 1982).

Rand item 2. *"If I really try hard, I can get through to even the most difficult or unmotivated students."* Teachers who agree with this statement indicate confidence in their abilities as teachers to overcome factors that could make learning difficult for a student. The teachers are making a statement about the efficacy of their own teaching, reflecting confidence that they have adequate training or experience to develop strategies for overcoming obstacles to student learning. These teachers may well have experienced past success in boosting students' achievement. This aspect of efficacy has been labeled personal teaching efficacy (PTE); it is more specific and individual than a belief about what teachers in general can accomplish.

In the Rand Studies, teachers were asked to indicate their level of agreement with these two statements. The sum of the two items was called teacher efficacy (TE), a construct that purported to reveal the extent to which a teacher believed that the consequences of teaching--student motivation and learning--were in the hands of the teacher, that is, internally controlled.

Correlates of Efficacy Using the Rand Items

Using the Rand items as measures, correlates of efficacy range from student achievement to teacher stress and the implementation of innovation. Among basic skills teachers at four secondary schools, Ashton and Webb (1986) reported that when general teaching efficacy (GTE), as measured by the first Rand item, was added to a regression equation that included the math scores from the previous spring on the Metropolitan Achievement Test, the amount of variance explained in math achievement scores increased by 24%. Personal teaching efficacy (PTE), as measured by the second Rand item, explained an additional 46% of the variance in student achievement in language as measured on the Metropolitan Achievement Test. These findings point to a substantial impact of efficacy on student achievement. They also are perplexing because it is unclear why personal teaching efficacy should affect language achievement, while general teaching efficacy affects math achievement.

In addition to student achievement, researchers explored the relationships between a teacher's level of efficacy and his or her willingness to implement innovation, stress level, and willingness to stay in the field. In a sample of volunteer participants in an "Effective Use of Time" program, the change in the proportion of time teachers spent in interactive instruction after training was significantly related to personal teaching efficacy (PTE) (Smylie, 1988). Improved teacher efficacy was also related to reduced stress among teachers, as indicated by the total stress score on the Wilson Stress Profile for Teachers (WSPT), as well as to stress subscores in areas of student behavior, teacher/administrator relations, parent/teacher relations, psychological and emotional symptoms of stress, and stress management techniques (Parkay, Greenwood, Olejnik, & Proller, 1988). Teachers who had left teaching were found to have significantly lower teacher efficacy (TE) than either teachers in their first year or fifth year of teaching (Glickman & Tamashiro, 1982).

These studies, using the sum of the two Rand items as a global measure, revealed intriguing results even with this simple measure. It was enough to whet the appetites of researchers seeking to understand this construct and find more reliable means of measuring it.

Other Measures of Efficacy in the Rand/Rotter Tradition

The results of the two Rand studies piqued interest in the construct of teacher efficacy, but researchers were concerned about the reliability of the two-item scale and attempted to develop longer, more comprehensive measures. Three such instruments are reviewed below. Each of these builds on the foundation laid by Rotter, conceptualizing teacher efficacy as teachers' beliefs that factors under their control ultimately have greater impact on the results of teaching than factors in the environment or in the student --factors beyond the influence of teachers.

Teacher Locus of Control. Rose and Medway (1981) developed a 28-item measure called the Teacher Locus of Control (TLC) in which teachers were asked to assign responsibility for student successes or failures by choosing between two competing explanations for the situations described. Half the items on the TLC describe situations of student success while the other half describe student failure. For each success situation, one explanation attributes the positive outcome internally to the teacher (I+) while the other assigns responsibility outside the teacher, usually to the students. Similarly, for each failure situation, one explanation gives an internal teacher attribution (I-) while the other blames external factors. (See Table 1 for sample items.)

Scores on the TLC have been weakly but significantly related to the individual Rand items (GTE and PTE) as well as to the sum of the two Rand items (TE) with correlations generally ranging from .11 to .41 (Coladarci , 1992; Parkay, Greenwood, Olejnik, & Proller, 1988). Rose and Medway (1981) found that the TLC was a better predictor of teacher behaviors than Rotter's Internal-External (I-E) Scale. For example, the TLC predicted teachers' willingness to implement new instructional techniques, whereas Rotter's I-E Scale did not. Teachers who were high in internal responsibility for student learning in schools with large populations of disadvantaged students gave fewer disciplinary commands, while high-internal teachers who taught among more privileged students called on nonvolunteers more frequently and more often had students engaged in self-directed activities as opposed to listening (Rose & Medway, 1981).

To further examine the TLC and the two Rand items, Greenwood, Olejnik, and Parkay (1990) dichotomized teachers' scores on the two questions and cross partitioned them into four efficacy patterns. They found that teachers with high efficacy on both measures (I can, teachers can) had more internally-oriented scores on the TLC for both student success and student failure than teachers who scored low on both (I can't, teachers can't). In addition, they found that teachers low in both personal and general efficacy (I can't, teachers can't) had significantly higher stress than teachers with low personal but high general efficacy (I can't, teachers can) or teachers with both high personal and high general efficacy (I can, teachers can).

Responsibility for Student Achievement. The same year that Rose and Medway developed the TLC, Guskey developed a 30-item instrument measuring Responsibility for Student Achievement (Guskey, 1981). For each item, participants were asked to distribute 100 percentage points between two alternatives, one stating that the event was caused by the teacher and the other stating that the event occurred because of factors outside the teacher's immediate control. Consistent with explanations from attributional theory (Weiner, 1979, 1992, 1994), four types of causes were offered for success or failure: specific teaching abilities, the effort put into teaching, the task difficulty, and luck. (See Table 1 for sample items.) Scores on the Responsibility for Student Achievement (RSA) yielded a measure of how much the teacher assumed responsibility for student outcomes in general, as well as two subscale scores indicating responsibility for student success (R+) and for student failure (R-).

When Guskey (1982, 1988) compared scores from the RSA with teacher efficacy (TE) as measured by the sum of the two Rand items, he found significant positive correlations between teacher efficacy and responsibility for both student success (R+) and student failure (R-). He reported strong intercorrelations (.72-.81) between overall responsibility and responsibility for student success and student failure while the subscales for student success and student failure were only weakly related (.20)

or not at all (Guskey, 1981, 1988). Guskey asserted that positive and negative performance outcomes represent separate dimensions, not opposite ends of a single continuum, and that these dimensions operate independently in their influence on perceptions of efficacy (Guskey, 1987). In general, teachers exhibited greater efficacy for positive results than for negative results, that is, they were more confident in their ability to influence positive outcomes than to prevent negative ones. Greater efficacy was related to more positive attitudes about teaching as well as a high level of confidence in teaching abilities on a measure of teaching self-concept (Guskey, 1984). In addition, among teachers receiving training in Mastery Learning, more efficacious teachers tended to rate mastery learning as more important, more congruent with their current teaching practices, and less difficult to implement than teachers with weaker efficacy beliefs (Guskey, 1988).

Webb Scale. At about the same time as the RSA and the TLC were being developed, a third group of researchers sought to expand the Rand efficacy questions to increase their reliability. The Webb Scale (Ashton, et al., 1982) was an attempt to extend the measure of teacher efficacy while maintaining a narrow conceptualization of the construct. To reduce the problem of social desirability bias, Webb and his colleagues used a forced-choice format with items matched for social desirability. (See Table 1 for example items.) They found that teachers who scored higher on the Webb Efficacy Scale evidenced fewer negative interactions (less negative affect) in their teaching style (Ashton, et al, 1982).

Spurred on by the success of the Rand studies, several researchers sought to expand and refine the notion of teacher efficacy, developing measures they hoped would capture more of this powerful construct. One strand of this research on teacher efficacy has continued to use Rotter's theory to elaborate the study of teachers' beliefs about whether reinforcement is internally or externally controlled. Correlates of teacher efficacy, as measured from this perspective, include student achievement (Armor, et al. 1976; Ashton, 1985; Ashton & Webb, 1986; Berman, et al., 1977), teachers' willingness to implement innovations (Berman, et al., 1977; Guskey, 1984; Smylie, 1988), teacher stress (Parkay, et al. 1988; Greenwood, et al., 1990), less negative affect in teaching (Ashton, et al. 1982), and teachers' willingness to stay in the field (Glickman & Tamashiro, 1982).

A Second Conceptual Strand

While one strand of research grounded in Rotter's theories developed, a second strand emerged, growing out of Bandura's social cognitive theory and his construct of self-efficacy, as initially described in his 1977 article, "Self-efficacy: Toward a unifying theory of behavioral change." Bandura (1997) defined perceived self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy is a future-oriented belief about the level of competence a person expects he or she will display in a given situation. Self-efficacy beliefs influence thought patterns and emotions that enable actions in which people expend substantial effort in pursuit of goals, persist in the face of adversity, rebound from temporary setbacks, and exercise some control over events that affect their lives (Bandura, 1986, 1993, 1996, 1997).

Social cognitive theory proposes a second kind of expectation, outcome expectancy, that is distinct from efficacy expectations. An efficacy expectation is the individual's conviction that he or she can orchestrate the necessary actions to perform a given task, while outcome expectancy is the individual's estimate of the likely consequences of performing that task at the expected level of competence (Bandura, 1986). The efficacy question is, "Do I have the ability to organize and execute the actions necessary to accomplish a specific task at a desired level?" The outcome expectancy question is, "If I accomplish the task at that level, what are the likely consequences?" Temporally, efficacy expectations precede and help form outcome expectations. For example, if a person has low self-efficacy for swimming, he may expect the outcome of drowning if he falls overboard. Bandura asserted that because they stem from the projected level of competence a person expects to bring to a given situation, outcome expectancies add little to the predictive power of efficacy measures. Outcome expectancies, in

the form of physical or social rewards, recognitions, punishments, criticisms, or self-evaluations can provide incentives and disincentives for a given behavior (Bandura, 1986, 1997).

Skinner (1996) notes that many conceptualizations of control include distinctions among the agents, means, and ends of control. Agents refers to the groups or individuals who exert the control in question, ends to the outcomes (desired or undesired) that are controlled, and means to the pathways through which the agent exerts control to achieve those ends. Self-efficacy theory is one of the few conceptualization of human control that describes a distinction between <u>competence</u> or agent-means relationships (I can execute the actions) and <u>contingency</u> or means-ends relationships (the actions will attain certain outcomes). Consistent with Bandura's assessment of the limited predictive power of outcome expectations, however, contingency or means-ends relationships have received little attention in research on self-efficacy. Skinner notes, "studies rarely, if ever, assess both efficacy and response-outcome expectations. In fact, as the name of the theory implies, only self-efficacy is typically examined" (p. 559). As we will argue in this paper, a consideration of means-ends relationships, in the form of judgments about the requirements of the teaching task, is an important factor in teacher efficacy.

Self-efficacy is distinct from other conceptions of self, such as self-concept, self-worth, and self-esteem, in that it is *specific to a particular task*. "Self-esteem usually is considered to be a trait reflecting an individual's characteristic affective evaluation of self (e.g., feelings of self-worth or self-liking). By contrast, self-efficacy is a judgment about task capability that is not inherently evaluative" (Gist & Mitchell, 1992, p. 185). A person may feel hopelessly inefficacious for a particular activity, such as figure drawing or downhill skiing, and suffer no diminishment of self-esteem because that person has not invested self-worth in doing that activity well. On the other hand, high achievers may display a great deal of skill, and yet evaluate themselves negatively because they have set personal standards that are very difficult to meet. Persons may question their self-worth, despite being very competent, if important others do not value their accomplishments, if their skills cause harm to others, or if they are members of groups that are not valued by society (Bandura, 1997).

Self-efficacy has to do with self-perceptions of competence rather than actual level of competence. This is an important distinction because people regularly overestimate or underestimate their actual abilities, and these estimations may have consequences for the courses of action they choose to pursue or the effort they exert in those pursuits. Over or underestimating capabilities also may influence how well they use the skills they possess. "A capability is only as good as its execution. The self-assurance with which people approach and manage difficult tasks determines whether they make good or poor use of their capabilities. Insidious self-doubts can easily overrule the best of skills" (Bandura, 1997, p. 35). For example, Bouffard-Bouchard, Parent, and Larivee (1991) found children with the same level of skill development in mathematics differed significantly in their ability to solve math problems, depending on the strength of their efficacy beliefs. Children with higher efficacy more consistently and effectively applied what they knew; they were more persistent and less likely to reject correct solutions prematurely. In most cases, slightly overestimating one's actual capabilities has the most positive effect on performance.

In his latest book, Bandura (1997) clarifies the distinction between self-efficacy and Rotter's (1966) internal-external locus of control. He provides data demonstrating that perceived self-efficacy and locus of control are not essentially the same phenomenon measured at different levels of generality. Beliefs about whether one can produce certain actions (perceived self-efficacy) are not the same as beliefs about whether actions affect outcomes (locus of control); in fact, the data show that perceived self-efficacy and locus of control bear little or no empirical relationship with each other, and moreover, perceived self-efficacy is a strong predictor of behavior whereas locus of control is typically a weak predictor. Rotter's scheme of internal-external locus of control is basically concerned with causal beliefs about the relationship between actions and outcomes, not with personal efficacy. An individual may believe that a particular outcome is internal and controllable, that is, caused by the actions of the individual, but still have little confidence that he or she can accomplish the necessary actions.

Bandura postulated four sources of efficacy expectations: mastery experiences, physiological and emotional states, vicarious experiences, and social persuasion. Mastery experiences are the most powerful source of efficacy information. The perception that a performance has been successful raises efficacy beliefs, contributing to the expectation that performance will be proficient in the future. The perception that one's performance has been a failure lowers efficacy beliefs, contributing to the expectation that future performances will also be inept. The level of arousal, either of anxiety or excitement, adds to the feeling of mastery or incompetence. Attributions play a role as well. If the success is attributed to internal or controllable causes such as ability or effort, then self-efficacy is enhanced. But if success is attributed to luck or the intervention of others, then self-efficacy may not be strengthened (Bandura, 1993; Pintrich & Schunk, 1996).

Vicarious experiences are those in which the skill in question is modeled by someone else. The degree to which the observer identifies with the model moderates the efficacy effect on the observer (Bandura, 1977). The more closely the observer identifies with the model, the stronger will be the impact on efficacy. When a model with whom the observer identifies performs well, the efficacy of the observer is enhanced. When the model performs poorly, the efficacy expectations of the observer decrease.

Social persuasion may entail a "pep talk" or specific performance feedback from a supervisor or a colleague or it may involve the general chatter in the teachers' lounge or in the media about the ability of teachers to influence students. Although social persuasion alone may be limited in its power to create enduring increases in self-efficacy, it can contribute to successful performances to the extent that a persuasive boost in self-efficacy leads a person to initiate the task, attempt new strategies, or try hard enough to succeed (Bandura, 1982). Social persuasion may counter occasional setbacks that might have instilled enough self-doubt to interrupt persistence. The potency of persuasion depends on the credibility, trustworthiness, and expertise of the persuader (Bandura, 1986).

The Development of the Gibson and Dembo Instrument

In the early 1980s, Gibson and Dembo developed a more extensive and reliable measurement of teacher efficacy, beginning with the formulations of the Rand studies, but bringing to bear the conceptual underpinnings of Bandura. They assumed that the two Rand items reflected the two expectancies of Bandura's social cognitive theory, self-efficacy and outcome efficacy. They wrote:

> If we apply Bandura's theory to the construct of teacher efficacy, outcome expectancy would essentially reflect the degree to which teachers believed that environment could be controlled, that is, the extent to which students can be taught given such factors as family background, IQ, and school conditions. Self-efficacy beliefs would be teachers' evaluation of their abilities to bring about positive student change. (Gibson & Dembo, 1984, p. 570)

As noted later in this paper, we question this interpretation of outcome expectancy, but we agree that a consideration of means-ends relationships (Skinner, 1996) is important for a full understanding of teacher efficacy.

Beginning with teacher interviews and analyses of previous studies of teachers reported to have a strong sense of efficacy, Gibson and Dembo (1984) developed a 30-item measure of teacher efficacy (See Table 1 for sample items). Factor analysis confirmed the existence of two factors, one Gibson and Dembo called *personal teaching efficacy* (PTE, alpha = .75), assumed to reflect self-efficacy, and the other *teaching efficacy* (GTE, alpha = .79), assumed to capture outcome expectancy. Using the Gibson and Dembo items, other researchers have confirmed the existence of two factors (Anderson, Greene, Loewen, 1988; Burley, Hall, Villeme, & Brockmeier, 1991; Hoy & Woolfolk, 1993; Moore & Esselman, 1992; Saklofske, Michaluk & Randhawa, 1988; Soodak & Podell, 1993) with alphas ranging from .75 to .81 for PTE and .64 to .77 for GTE. When the Rand items were included in the factor analysis with the Gibson and Dembo measure, Rand 1 *(When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment )* loaded on the

GTE factor and Rand 2 *( If I really try hard, I can get through to even the most difficult or unmotivated students)* loaded on the PTE factor (Coladarci, 1992; Woolfolk & Hoy, 1990; Ohmart, 1992). Studies of both preservice and inservice teachers have found that from 18% to 30% of the variance between teachers is explained by these two factors. In general, researchers have found the two factors to be only moderately related, with correlations ranging from -.15 to -.20.

Continued research with the Gibson and Dembo items began to identify inconsistencies. Factor analysis of the 30-item instrument indicated that several items loaded on both factors, consequently some researchers have used a shortened version, selecting only the 16 items that load uniquely on one factor or the other (Soodak & Podell, 1993; Woolfolk & Hoy, 1990). Even so, problems have arisen around particular items. Using the 16-item version of the Gibson and Dembo instrument Soodak and Podell (1993) found that, contrary to expectations, one GTE item loaded on the PTE factor, and that another item did not have a strong enough loading on either factor to be included. In light of these findings, Hoy and Woolfolk (1993) have used an even more abbreviated form with just 10 items: five personal and five general teaching efficacy items (see Table 2). They found reliabilities for both subtests within the range found for the longer versions (alpha .77 for PTE, .72 for GTE). They have also urged researchers to conduct factor analysis on their own data, because the loadings have not always been consistent across studies.

Gibson and Dembo (1984) predicted that teachers who score high on both teaching efficacy and personal teaching efficacy would be active and assured in their responses to students and that these teachers would persist longer, provide a greater academic focus in the classroom, and exhibit different types of feedback than teachers who had lower expectations of their ability to influence student learning. Conversely, teachers who scored low on both teaching and personal efficacy were expected to give up readily if they did not get results. Research generally has supported these predictions.

Correlates of Efficacy Using the Gibson and Dembo Instrument

The development of the Gibson and Dembo instrument was a boon to the study of teacher efficacy. Researchers used this tool to investigate the impact of a teacher's sense of efficacy on their behaviors and attitudes and on student achievement, as well as examining relationships of teachers' efficacy to school structure and climate. Results have confirmed the importance of this construct.

Teacher behavior. Teacher efficacy, as a motivational construct, proposes that level of efficacy affects the amount of effort a teacher will expend in a teaching situation and the persistence shown in the face of obstacles. Gibson and Dembo (1984), found evidence for these propositions. Teachers with a higher sense of efficacy, defined as those with high scores on both the PTE and GTE factors, were less likely to criticize a student following an incorrect response and more likely to persist with a student in a failure situation. High efficacy teachers were more likely to divide the class for small group instruction as opposed to instructing the class as a whole.

Teacher efficacy has been linked to the level of professional commitment for both inservice elementary/middle school teachers (Coladarci, 1992) and preservice teachers (Evans & Tribble, 1986). In addition, Allinder (1994) found that personal teaching efficacy (PTE) was linked to instructional experimentation, including willingness to try a variety of materials and approaches, the desire to find better ways of teaching, and implementation of progressive and innovative methods (as measured on the Teacher Characteristics Scale, Fuchs, Fuchs, & Bishop, 1992). The level of organization, planning, and fairness a teacher displayed, as well as clarity and enthusiasm in teaching was also related to personal teaching efficacy. General teaching efficacy (GTE) was related to clarity and enthusiasm in teaching.

Teachers' sense of efficacy also predicts their willingness to work with students who are experiencing difficulties rather than referring the students to special education. Among regular education teachers, those with higher personal teaching efficacy were more likely to rate regular education as the appropriate placement for a second-grade boy described in various cases as having either a learning

problem, a behavior problem, or both. There was a significant interaction between teachers' personal teaching efficacy and the implied socioeconomic status of the student in the case. The higher the teacher's personal teaching efficacy, the more the teacher agreed that a low SES student would be appropriately placed in a regular education classroom (Meijer & Foster, 1988; Podell & Soodak, 1993; Soodak & Podell, 1993).

Student outcomes. As noted earlier, teacher efficacy, when measured using the Rand items, was significantly related to student achievement. Additional evidence for this relationship between efficacy and achievement emerged using the Gibson and Dembo (1984) instrument to assess teachers' beliefs. Students in the second and the fifth grades who had teachers with a greater sense of general teaching efficacy outperformed their peers in math on the Iowa Test of Basic Skills (Moore & Esselman, 1992). Among third graders, the personal teaching efficacy of their teachers at the beginning of the year was significantly related to students' achievement on the Canadian Achievement Tests, as well as to the students' sense of efficacy at the end of the year. For students in the sixth grade, their teachers' sense of efficacy related to their own sense of efficacy for learning, but not to their achievement (Anderson, Greene, & Loewen, 1988). Significantly higher levels of student achievement, as measured by the Ontario Assessment Instrument Pool, were found for teachers with higher personal (PTE) and higher general (GTE) efficacy beliefs, although the relationship with personal teaching efficacy was stronger (Ross, 1992). And higher personal teaching efficacy scores were significantly related to higher reading scores and higher general teaching efficacy were related to higher math scores in majority black, majority white, and rural schools, while in urban schools there was a link between general teaching efficacy and reading achievement (Watson, 1991).

Beyond student achievement, teacher efficacy also plays a role in shaping students' attitudes toward school, the subject matter being taught, and even the teacher. The stronger the general teaching efficacy of a teacher, the greater a student's interest in school and the more students perceived that what they were learning was important. Students of teachers with a stronger sense of personal efficacy gave more positive evaluations of the teacher (Woolfolk, Rosoff, & Hoy, 1990).

In sum, teacher efficacy, as measured by the Gibson and Dembo instrument, has been related to teachers' classroom behaviors, their openness to new ideas, and their attitudes toward teaching. In addition, teacher efficacy appears to influence student achievement, attitude, and affective growth. Finally, contextual variables such as school structure and organizational climate may play a role in shaping teachers' sense of efficacy as indicated by the correlations between school climate variables and teacher efficacy.

Subject-Matter Specific Modifications of Gibson and Dembo's Instrument

Teacher efficacy has been defined as both context and subject-matter specific. A teacher may feel very competent in one area of study or when working with one kind of student and feel less able in other subjects or with different students. While researchers and theorists agree that teacher efficacy is situation specific, it is less clear what is the *appropriate level of specificity*. For example, is efficacy specific to teaching mathematics, or more specific to teaching algebra, or even more specific to teaching quadratic equations? Recognizing that many standard efficacy instruments overlook the specific teaching context, some researchers have modified the Gibson and Dembo instrument to explore teachers' sense of efficacy within particular curriculum areas.

Science teaching. Science educators have conducted extensive research on the effects of efficacy on science teaching and learning. Riggs and Enochs (1990) developed an instrument, based on the Gibson and Dembo approach, to measure efficacy of teaching science--the Science Teaching Efficacy Belief Instrument (STEBI). Consistent with Gibson and Dembo they have found two separate factors, one they called *personal science teaching efficacy* (PSTE) and a second factor they labeled *science teaching outcome expectancy* (STOE). The two factors are uncorrelated. (See Table 1 for sample items.)

As measured using the STEBI, teachers with a higher sense of personal science teaching efficacy reported spending more time teaching science and were more likely to spend an ample amount of time to develop the science concept being considered (Riggs & Jesunathadas, 1993). Personal science teaching efficacy was also related to a composite measure of science teaching performance (Riggs, et al. 1994), the rating a teacher gave to the personal relevance of science, and the teachers' enjoyment of science activities (Watters & Ginns, 1995). Among teachers involved in a year-long training in science education, teachers with low personal efficacy (PSTE) spent less time teaching science, used a text-based approach, were rated weak by site observers, made fewer positive changes in their beliefs about how children learn science, and were less likely to choose to teach science (Riggs, 1995). Higher PSTE scores among preservice teachers have been related to their preference to teach science (Lucas, Ginns, Tulip, & Watters, 1993) and to a more humanistic orientation toward control in the classroom (Enochs, Scharmann, & Riggs, 1995).

Exploring an even greater level of specificity, Rubeck and Enochs (1991) distinguished chemistry teaching efficacy from science teaching efficacy. They found that among middle-school science teachers, personal science teaching efficacy (PTE for teaching science) was correlated with preference to teach science, and that chemistry teaching self-efficacy (PTE for teaching chemistry) was related to preference to teach chemistry. Chemistry teaching self-efficacy was related to science teaching self-efficacy, and science teaching self-efficacy was significantly higher than chemistry teaching self-efficacy. Science teaching self-efficacy was related to the teacher's experiences taking science courses with laboratory experiences and to experience teaching science, while chemistry self-efficacy was related to chemistry course work involving lab experiences and chemistry teaching experience.

Scores on the second factor of the STEBI have also been related to the quality of teaching in science. Teachers with low scores on science teaching outcome expectancy (STOE) were rated as less effective in science teaching, rated themselves as average, and were rated as poor in attitude by site observers (Enochs, Scharmann, & Riggs, 1995). Low-scoring teachers used text-based approaches over hands-on, activity-based approaches and used cooperative learning less (Riggs, 1995).

Teachers who were engaged in a year-long training in science education (Science Education and Equity Project) perceived differential changes in their efficacy beliefs, depending on their initial efficacy scores. Teachers who began the training with low scores on both scales of the STEBI made great gains in PSTE (personal efficacy) during the training, but outcome expectancy (STOE) remained the same. High efficacy/low outcome expectancy teachers had increases in both scales. Low efficacy/high outcome expectancy teachers increased in self-efficacy, but remained stable on outcome expectancy (Riggs, 1995). As teachers attempted to implement methods learned in the training and saw improved student achievement, their personal teaching efficacy improved. The training improved beliefs about what science teachers in general could achieve only when those beliefs were weak to begin with, but personal efficacy was high.

Classroom management. In an attempt to extend the Teacher Efficacy Scale to better reflect the domain of classroom management, Emmer and Hickman (1990) adapted the Gibson and Dembo instrument, yielding a 36-item measure with three efficacy subscales: efficacy for classroom management and discipline, external influences, and personal teaching efficacy. Among a sample of preservice teachers, the efficacy subscales were correlated with preferences for using positive strategies for classroom management, that is, strategies aimed at increasing or encouraging desirable student responses through praise, encouragement, attention, and rewards. The subscales were not related to preference for reductive strategies, that is, attempts to limit or eliminate behaviors by using time outs, punishment, or reprimands. Preservice teachers with a higher sense of personal teaching efficacy were more likely to seek outside help in dealing with student discipline problems (Emmer, 1990; Emmer & Hickman, 1990).

Special education. To explore efficacy in the context of special education, Coladarci and Breton (1995) used a 30-item instrument, modified from Gibson and Dembo (1984) and reworded to apply

specifically to special education. Higher efficacy was found among those with high satisfaction, among women, and among teachers who were older; however, the length of time a teacher had spent working in a resource room was not related to efficacy beliefs. In order to study the likelihood of referral to special education in the Netherlands, Meijer and Foster (1988) developed the Dutch Teacher Self-Efficacy Scales, an 11-item instrument probing personal teaching efficacy beliefs. Teachers were asked to respond along a 4-point Likert scale to questions such as "I become truly discouraged when I see a pupil returning to problem behavior" or "I can handle virtually any learning problem well." The researchers found that high efficacy teachers were more likely to feel that a problem student was appropriately placed in the regular classroom.

One of the unresolved issues in the measurement of teacher efficacy is determining the optimal level of specificity. This situation is not unlike issues faced by researchers studying self-efficacy for school achievement. "Specificity of domains is one of the biggest issues that needs to be resolved for any cognitive or motivational theory that proposes domain specificity of constructs" (Pintrich & Schunk, 1996, p. 79). In general, attempts to limit the scope of the efficacy beliefs have been fruitful in terms of finding significant results. But whether these measures have greater predictive value and generalizability than more global measures has yet to be determined.

Other Measures of Efficacy

The search for ways to measure teacher efficacy has not suffered from a lack of effort. In the attempt to capture the meaning of this apparently powerful construct, researchers have tried both long, detailed measures as well as short, general ones.

Ashton Vignettes. Based on the assumption that teacher efficacy is context specific, Ashton and her colleagues (1984) developed a series of vignettes describing situations a teacher might encounter and asking the teacher to make a judgment as to the cause or causes involved. They tested two frames of reference for judgments. The first asked teachers to judge how they would perform in the described situation on a scale from "extremely ineffective" to "extremely effective." The second version asked teachers to make a comparison to other teachers, from "much less effective than most teachers" to "much more effective than most teachers." (See Table 1 for sample items.) The norm-reference vignettes in which teachers compared themselves to other teachers were significantly correlated with Rand items but the self-referenced vignettes, rating effectiveness or ineffectiveness, were not (Ashton, Buhr, & Crocker, 1984; Ashton & Webb, 1986). Teachers also were asked to indicate the level of stress in each of the situations but, with correlations between efficacy and stress ranging from -.05 to -.82, with an average of -.39, it was concluded that stress could not be used as a proxy for efficacy.

Using the Ashton vignettes, when perceptions of efficacy across a variety of situations were explored with preservice teachers, classroom teachers, college faculty, and student teacher supervisors, college faculty had higher self-perceptions of efficacy for dealing effectively with an unruly student, for planning, and for motivation. Both preservice teachers and college faculty were more optimistic about their effectiveness in situations involving student socialization and motivation than were classroom teachers (Benz, Bradley, Alderman, & Flowers, 1992).

Brief eclectic measures. Some researchers, dissatisfied with any of the existing measures, have used a combination of items from several instruments. Midgley, Feldlaufer and Eccles (1989) created a 5-item personal teaching efficacy measure consisting of the Rand personal efficacy item, two items of academic futility (Brookover, et al., 1978), one item from the Webb Scale, and one original item, and then summed across the five items (alpha = .65). With this measure they found highly significant differences in personal efficacy between elementary and middle-school math teachers. Several researchers who made use of the High School and Beyond database used a 2-item measure of self-efficacy and two items indicating satisfaction; however, because these measures were so highly correlated they combined them into a single measure (Lee, Dedick & Smith, 1991; Newmann, Rutter & Smith, 1989). This seems an

unfortunate choice. Although they may have been striving for greater reliability, conceptually they have muddied the waters because efficacy and satisfaction are distinct albeit correlated concepts.

Raudenbush, Rowen, and Cheong (1992) decided to use a very brief measure of efficacy. They asked teachers to respond to the single question, "To what extent do you feel successful in providing the kind of education you would like to provide for this class?" with responses along a 4-point Likert scale. Secondary teachers had significantly higher self-efficacy when they perceived that they had greater control over classroom and school policy--including student behavior codes, the content of teacher in-service programs, the grouping of students, the curriculum, textbook selection, teaching content, and technique. Whether a teacher felt "well prepared" or "less than very well prepared" also was significantly related to teachers' sense of efficacy. Teachers had significantly higher efficacy for honors and academic track classes than for nonacademic classes, especially among math and science teachers. Student engagement, as measured by a single item ("About what percent of the students in this class are actively engaged?"), was strongly related to teacher efficacy. When student engagement was controlled, the effects of track on teacher efficacy were greatly reduced, indicating a relationship between engagement and track; however, even when engagement was controlled, preparation had an independent effect on teachers' efficacy.

The conceptual confusion around the concept of teacher efficacy has made finding appropriate measures of efficacy difficult. Researchers have tried very simple, general measures as well as long complex vignettes. None of the measures currently in use seems to have found the proper balance between specificity and generality.

Bandura's Teacher Self-Efficacy Scale

In the midst of the confusion about how to best measure teacher efficacy, Bandura has quietly stepped into the fray, offering his own Teacher Self-Efficacy Scale. Bandura (1997) points out that teachers' sense of efficacy is not necessarily uniform across the many different types of tasks teachers are asked to perform, nor across different subject matter. In response, he has constructed a 30-item instrument with seven subscales: efficacy to influence decision making, efficacy to influence school resources, instructional efficacy, disciplinary efficacy, efficacy to enlist parental involvement, efficacy to enlist community involvement, and efficacy to create a positive school climate. Each item is measured on a 9-point scale anchored with the notations: "nothing, very little, some influence, quite a bit, a great deal." (See Table 1 for sample items). This measure attempts to provide a multi-faceted picture of teachers' efficacy beliefs without becoming too narrow or specific.

Deciding how to measure teacher efficacy presents thorny issues. Bandura (1997) recommends including various levels of task demands, allowing respondents to indicate the strength of their efficacy beliefs in light of a variety of impediments or obstacles and providing a broad range of response options. But perhaps the greatest challenge has to do with finding the appropriate level of specificity for measurement. Although Bandura applauds efforts to expand measures of teacher efficacy beyond single-item measures, which often are unreliable and cannot capture multifaceted dimensions of the construct, he still finds most measures of teachers' sense of efficacy currently available too general. In order to be useful and generalizable, measures of teacher efficacy need to tap teachers' assessments of their competence across the wide range of activities and tasks they are asked to perform. And yet there is a danger of developing measures that are so specific they lose their predicative power for anything beyond the specific skills and contexts being measured (I am confident I can teach simple subtraction in a rural setting to middle-income second grade boys who do not have specific learning disabilities, as long as my class is smaller than 16 students and good manipulatives are available...). Discerning what is the most useful level of specificity depends on the purposes of the research, but either extreme of highly general or highly specific may pose problems for researchers. In determining an appropriate level of specificity, it would be useful to examine the effects of context on teacher efficacy.

School Context Effects

Social cognitive theory (Bandura, 1986, 1997) proposes that behavior, cognitive and other personal factors, and the environment interact to influence each other through the process of reciprocal determinism. Thus it is instructive to examine reciprocal relationships between school context (environment) and teacher efficacy beliefs (personal factors). A number of researchers have chosen complementary research methods to enrich their understanding of the role that context plays in the development and maintenance of teachers' sense of efficacy (Webb & Ashton, 1987; Hipp & Bredeson, 1996; Rosenholtz, 1987). Others have made use of observers' performance ratings to complement the use of self-report data (Riggs, 1995; Saklofske, Michaluk & Randhawa, 1988; Trentham, Silvern, & Brogdon, 1985). The research discussed below examines the ways that a teacher's sense of efficacy changes across contexts and even from one subject or group of students to the next. School context effects such as organizational structure and climate, principal leadership, and collective efficacy also have been examined.

Student/class effects. To explore whether teacher efficacy was stable across class periods in a day, secondary teachers in two studies were asked to respond to the single-item Rand measure of personal teaching efficacy for each of the classes they taught (Raudenbush, Rowen, & Cheong, 1992; Ross, Cousins, & Gadella, 1996). Analyses indicated significant variance within teachers across the different classes they taught. Teachers' level of personal teaching efficacy depended upon the subject matter and the particular group of students they worked with each period. Teachers tended to be less efficacious for non-academic track classes than for academic and honors classes (Raudenbush, Rowen, & Cheong, 1992). These studies lend support to the idea that personal teaching efficacy is a context-specific rather than a generalized expectancy, and that context is more specific than the school or general population served by the school, even though school level variables do appear to influence efficacy.

School-level effects. Teachers' sense of efficacy is related to a number of school-level variables, such as the climate of the school, behavior of the principal, sense of school community, and decision making structures. Using Gibson and Dembo's (1984) measure of efficacy, greater personal teaching efficacy (PTE) and higher general teacher efficacy (GTE) have been found among teachers who perceived a positive school atmosphere (Moore & Esselman, 1992) and a strong press for academic achievement among the staff in their schools (Hoy & Woolfolk, 1993). Moreover, sense of community in a school was the single greatest predictor of teachers' level of efficacy in a study using the High School and Beyond data (Lee, Dedrick, & Smith, 1991).

The leadership of the principal has also been linked to teacher efficacy. Teachers who felt their principals were sufficiently influential with their superiors within the district, as measured on the Organizational Health Inventory, had higher personal teaching efficacy (Hoy & Woolfolk, 1993). Principals who used their leadership to provide resources for teachers and to buffer them from disruptive factors, but allowed teachers flexibility over classroom affairs, created a context that allowed efficacy to develop, and schools where student disorder was kept to a minimum were schools in which teachers felt a greater sense of efficacy (Lee, Dedrick, & Smith, 1991). When the principal of a school modeled appropriate behavior and provided rewards contingent on performance, both aspects of teacher efficacy were higher. The principal's ability to inspire a common sense of purpose among teachers was tied to higher general teaching efficacy (Hipp & Bredeson, 1995).

Teachers' participation in the decisions that affect their work lives also bears on teachers' sense of efficacy. Among teachers in an urban, Midwestern school district, the greater freedom teachers felt to make decisions affecting their own classrooms, the greater was their general teaching efficacy. Teachers who felt they had a greater influence in school-based decision making, and perceived fewer impediments to teaching had a stronger sense of personal teaching efficacy (Moore & Esselman, 1992). Teachers with a stronger sense of personal teaching efficacy rated intervention by a consultant as more acceptable than teachers whose personal teaching efficacy was lower (DeForest & Hughes, 1992). In another study, four

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school factors were found to be significantly associated with teacher efficacy: receiving positive feedback on teacher performance, collaboration with other teachers, parent involvement in the school, and school-wide coordination of student behavior (Rosenholtz, 1989).

In a qualitative study, Ashton and Webb (1986) investigated whether the structure of the school would play any role in teachers' sense of efficacy. They found that teachers working in a school with a middle-school structure and philosophy had a higher sense of efficacy than teachers in a junior-high structure. The middle-school teachers had higher expectations of academic success for their students and were more satisfied with teaching, although they also had more difficulties with collegial relations. To explore the environmental factors that might tend to diminish teachers' sense of efficacy Webb and Ashton (1987) interviewed teachers and found a number of factors that contribute to lower teacher efficacy. These include excessive role demands, poor morale, inadequate salaries, low status, and lack of recognition. In addition, professional isolation, uncertainty, and alienation tended to weaken teachers' efficacy beliefs.

In examining the efficacy beliefs among both novice and experienced teachers during their first year of teaching in an urban context, Chester and Beaudin (1996) found that experienced teachers generally saw a decrease in their sense of efficacy in their first year of teaching in an urban district. However, certain school practices apparently contributed to increased efficacy among the newly hired teachers. The greater the opportunity for collaboration with other adults and the more observations that were made the greater was the teachers' sense of efficacy. Surprisingly, the availability and quality of resources did not have a significant independent relationship to efficacy. Chester and Beaudin speculated that there may be a decision-overload effect when new teachers are presented with a large number of resources in the absence of guidance and support to make instructional choices.

Collective efficacy effects. In addition to school structure and climate, some researchers have begun to examine collective efficacy at the school level, that is, the extent to which perceptions of efficacy, either high or low, are shared across teachers in a school building. Schools where teachers' conversations dwell on the insurmountable difficulties of educating their students are likely to undermine teachers' sense of efficacy. Schools where teachers work together to find ways to address the learning, motivation, and behavior problems of their students are likely to enhance teachers' feelings of efficacy. The effect of collective efficacy may be especially pronounced for novice teachers as they are socialized into the teaching profession.

While collective efficacy appears to be an important concept, one to which Bandura (1997) devoted an entire chapter in his most recent book, we lack consistent measures of a school's collective sense of teaching efficacy. Fuller and Izu, (1986) used the standard deviation of a measure of academic futility (Brookover et al., 1978) as an indication of the convergence of beliefs among the teachers at a school. Newmann, Rutter and Smith (1989) defined efficacy as the teacher's perception that his or her teaching was personally satisfying, leads to the success of students, and is worth the effort-- measured using four questions from the High School and Beyond survey. Like Fuller and Izu, they used the within-school standard deviation of teachers' efficacy scores as a measure of consensus or collective efficacy. Bandura (1993) summed the teachers' beliefs about their school's capacity to promote different levels of academic attainment. He found that teachers' belief in the schools' efficacy as a whole was just as predictive of school performance as teachers' beliefs in their own efficacy.

The socioeconomic status and racial composition of a school's student body are frequently assumed to be the major determinants of student academic achievement. However, school climate has been shown to influence achievement when controlling for the effects of socioeconomic status (Hoy & Sabo, 1998). An important aspect of school climate seems to be the extent to which it enhances or erodes teachers' efficacy beliefs. When teachers' collective efficacy beliefs are taken into account, the effects of student characteristics are greatly reduced (Bandura, 1993; Brookover, et al., 1979; Newmann, Rutter & Smith, 1989). The stronger the teacher's collective beliefs in their instructional efficacy, the better the

school performed academically (Bandura, 1993). When the principal displayed strong leadership (Fuller & Izu, 1986), encouraged innovation and was responsive to teachers' concerns (Newmann, Rutter & Smith, 1989), teachers' collective sense of efficacy was greater. In general, the more cohesive a school's collective sense of efficacy the higher the mean efficacy beliefs of the teachers (Fuller & Izu, 1986).

A low sense of efficacy can be contagious among a staff of teachers, creating a self-defeating and demoralizing cycle of failure. Low teacher efficacy leads to low student efficacy and low academic achievement, which in turn leads to further declines in teacher efficacy (Bandura, 1997). Organizational features that create a cohesive culture that is orderly, with a strong press for academic achievement, where administrators are responsive to teachers' concerns and encourage them to try new ideas, and where teachers encourage one another in their attempts to address student needs, may reverse this cycle (Hoy & Sabo, 1998). As academic achievement is improved, efficacy beliefs are enhanced, which then further enhances student achievement, regardless of the socioeconomic status of the students. The collective efficacy of schools appears to act in powerful ways which merit further exploration.

The Meaning of Teacher Efficacy

Teachers' sense of efficacy has been shown to be a powerful construct related to student outcomes such as achievement (Armor, et al., 1976; Ashton & Webb, 1986; Moore & Esselman, 1992; Ross, 1992), motivation (Midgley, Feldlaufer, & Eccles, 1989), and sense of efficacy (Anderson, Greene, & Loewen, 1988). It was also related to teachers' behavior in the classroom. It affects the effort they put into teaching, the goals they set, and their level of aspiration. Teachers with a strong sense of efficacy are open to new ideas and more willing to experiment with new methods to better meet the needs of their students (Berman et al., 1977; Guskey, 1988, Stein & Wang, 1988), and tend to exhibit greater levels of planning and organization (Allinder, 1994). Efficacy influences teachers' persistence when things do not go smoothly and their resilience in the face of setbacks. Greater efficacy enables teachers to be less critical of students when they make errors (Ashton & Webb, 1986), to work longer with a student who is struggling (Gibson & Dembo, 1984), and to be less inclined to refer a difficult student to special education (Meijer & Foster, 1988; Podell & Soodak, 1993; Soodak & Podell, 1993). Teachers with a higher sense of efficacy exhibit greater enthusiasm for teaching (Allinder, 1994; Guskey, 1984; Hall et al. 1992), have greater commitment to teaching (Coladarci, 1992; Evans & Tribble, 1986; Trentham, et al. 1985) and are more likely to stay in teaching (Burley, et al., 1991; Glickman, & Tamashiro, 1982). At the school level, higher teacher efficacy is related to the health of the organizational climate (Hoy & Woolfolk, 1993), an orderly and positive school atmosphere, greater classroom-based decision making (Moore & Esselman, 1992), and the strength of the collective efficacy (Fuller & Izu, 1986; Newmann, Rutter & Smith, 1989). Clearly the study of this construct has born much fruit in the field of education. And yet there remains a lack of clarity about its structure and antecedents.

Studies of teacher efficacy have consistently found two separate dimensions or factors, although considerable confusion and debate have arisen over their meaning. While there is general agreement that the first factor, commonly called personal teaching efficacy, has to do with one's own feelings of competence as a teacher, the meaning of the second factor has been in question. Although it is often called general teaching efficacy, some have argued for other labels. Emmer and Hickman (1990) called the second factor "external influences" which is reminiscent of Rotter's construct of external control. Riggs and Enochs in the development of the Science Teaching Efficacy Belief Instrument (1990) have labeled Factor 2 as an outcome expectancy, the second component of Bandura's social cognitive theory in which a person assesses the likely consequences of the performance level he or she expects to achieve. Riggs and Enochs (1990), (along with Ashton, et al. 1982; Gibson & Dembo, 1984; and Soodak & Podell, 1996), reasoned that what teachers in general could be expected to accomplish was the outcome an individual teacher could expect from his or her own teaching.

Bandura (1986) argued that an outcome expectancy is a judgment of the likely consequences of a specific action, given an individual's anticipated level of performance (a means-ends relationship as

described by Skinner, 1996). Bandura pointed out that outcome expectancy adds little to the explanation of motivation because the outcome a person expects stems from that person's assessment of his or her own capabilities and expected level of performance, not from what it would be possible for others to accomplish under similar circumstances. Therefore the items used to measure the second factor of teacher efficacy about the potential impact of teachers in general (GTE) cannot be considered an outcome expectancy (Woolfolk & Hoy, 1990). To capture the contingency relationship between means and ends, items would have to refer to outcomes the individual teacher could expect, given certain actions or means he or she felt capable of delivering. Guskey and Passaro would argue that Emmer and Hickman's label "external influences" strikes closer to the mark of what the current GTE items capture.

Guskey and Passaro's Challenge

Guskey and Passaro have attempted to clarify the meaning of these two factors by modifying Gibson and Dembo's Teacher Efficacy Scale. They noted that all of the 11 items on the Gibson and Dembo Teacher Efficacy Scale that loaded on the personal teaching efficacy factor were geared to an internal orientation ( "I can"), while the items that loaded on the second factor, labeled general teaching efficacy, consistently reflected an external orientation, ("teachers can't"). When Guskey and Passaro reworded the personal efficacy items so that half reflected an internal and half an external orientation, and did the same with the general teaching efficacy items, the results conformed to an internal/ external dichotomy rather than the personal/general dimensions. (See Table 3 for an example of the rewording and Table 4 for the factor loadings.) The finding that the internal and external factors were only moderately correlated (r= -.24) suggests that the internal and external dimensions are separate dimensions, not opposite ends of the same continuum. Thus, as Guskey and Passaro note, these factors are not identical to the internal/external distinction made in locus-of-control or attribution theories of motivation. Guskey and Passaro concluded that:

> The internal and external distinction identified in this study more accurately represents teachers' perceptions of the strength of different and independent factors. The internal factor appears to represent perceptions of *personal* influence, power, and impact in teaching and learning situations.....The external factor, on the other hand, relates to perceptions of the influence, power, and impact of elements that lie *outside the classroom* and, hence, may be beyond the direct control of individual teachers. (p. 639)

This challenge provokes further reflection on the meaning of the two factors. Consideration of various tools that have been used to measure teacher efficacy and their relationship to one another may provide helpful clues as to the meaning of the two factors.

Relationship Among Existing Measures

Coladarci and Fink (1995) undertook an examination of the major measures of teacher efficacy and their relationships to one another. In a sample of elementary and secondary public school teachers they found a correlation between the Rand measure and the Teacher Efficacy Scale (Gibson & Dembo, 1984) of .64. The Teacher Efficacy Scale correlated with the Teacher Locus of Control Scale (Rose & Medway, 1981) at .47 and with Responsibility for Student Achievement Questionnaire (Guskey, 1981) at .57 (see Table 5). These moderate correlations suggest that these measures are describing related constructs, but the overlap is not perfect. How much of what each scales measures accurately captures teacher efficacy and how much is something else?

A closer examination of the relationships between the subscales adds more intriguing information (see Table 5). Intercorrelations between the general teaching efficacy of the Teaching Efficacy Scale and Rand 1 (general) measure of .53, and between the personal teaching efficacy and Rand 2 (personal) of .41 are not as strong as might have been expected. Previous studies have found that when the Rand items were included in the TES, the factor structure remained intact (Coladarci, 1992; Woolfolk & Hoy, 1990). Consistent with Guskey and Passaro's findings, both the Teacher Locus of Control subscale for student

success (I+) and the Responsibility for Student Success (R+) correlated most strongly with personal teaching efficacy (.47), but their relationship to Rand 1 (general or external) was almost as high (.41 and .39 respectively). The external measures, the TLC for student failure (I-) and RSA subscale for student failure (R-), were related to general teaching efficacy (.35 and .39, respectively); however, a stronger relationship was found between these two external measures and the internal scale of the TLC (I+: .54 and .49, respectively) and between the two subscales of the RSA (.41) ( see Table 5). When the various measures of efficacy (Rand, Gibson & Dembo, TLC, and RSA) were compared to two measures thought to be distinct from teacher efficacy [Affect for Teaching (Guskey, 1987) and Teaching Self-Concept (Guskey, 1987)], the relationships found were in the same range as those between various instruments attempting to measure teacher efficacy (.22 to .54). These findings invite us to question once again the nature of teacher efficacy and how it can best be measured.

## An Integrated Model Proposed

In response to the conceptual confusion surrounding teacher efficacy and consistent with the substantial body of research, we propose an integrated model of teacher efficacy. This model weaves together both conceptual strands discussed earlier and suggests new areas for research (see Figure 1). The major influences on efficacy beliefs are assumed to be the attributional analysis and interpretation of the four sources of information about efficacy described by Bandura (1986, 1997) -- mastery experience, physiological arousal, vicarious experience, and verbal persuasion. However, teachers do not feel equally efficacious for all teaching situations. Teacher efficacy is context-specific. Teachers feel efficacious for teaching particular subjects to certain students in specific settings, and they can be expected to feel more or less efficacious under different circumstances. A highly efficacious secondary chemistry teacher might feel very inefficacious teaching middle school science, or a very confident rural sixth grade teacher might shudder at the thought of teaching sixth graders in the city. Even from one class period to another, teachers' level of efficacy may change (Ross, et al., 1996; Raudenbush, et al., 1992). Therefore, in making an efficacy judgment, consideration of the teaching task and its context are required. In addition, it is necessary to an assess one's strengths and weaknesses *in relation to* the requirements of the task at hand.

Two dimensions emerge in our model that are related to (but not identical with) the two factors of general teaching efficacy (GTE) and personal teaching efficacy (PTE) often identified in teacher efficacy measures. In analyzing the *teaching task and its context,* the relative importance of factors that make teaching difficult or act as constraints are weighed against an assessment of the resources available that facilitate learning. In assessing *self-perceptions of teaching competence*, the teacher judges personal capabilities such as skills, knowledge, strategies, or personality traits balanced against personal weaknesses or liabilities in this particular teaching context ("My sense of humor is an asset with middle-schoolers, but I wouldn't have the patience to teach young children.") The interaction of these two components leads to judgments about self-efficacy for the teaching task at hand. We examine each element of this model in greater detail in the following sections.

Sources of Efficacy Information

As noted earlier, Bandura (1986, 1997) postulated four sources of self-efficacy information: mastery experiences, physiological and emotional arousal, vicarious experience, and social persuasion. These four sources contribute to both the analysis of the teaching task and to self-perceptions of teaching competence, but in different ways. For example, observing a teacher can provide information about the nature of a teaching task, but it also contributes to self-perceptions of teaching competence as the viewer compares self with model. Mastery or enactive experiences are a powerful source of knowledge about one's own capabilities as a teacher, but also supply information about the complexity of the teaching task. The differential impact of each of these sources depends on cognitive processing--what is attended to, what is remembered, and how the teacher thinks about each of the experiences.

Mastery experiences. Mastery or enactive experiences are the most powerful source of efficacy information. The perception that a performance has been successful raises efficacy beliefs, contributing to the expectation of proficient performance in the future. Efficacy beliefs strengthen substantially when success is achieved on difficult tasks with little assistance or when success is achieved early in learning with few setbacks; however, not all successful experiences encourage efficacy. For example, efficacy is not enhanced when success is achieved through extensive external assistance, relatively late in learning, or on an easy and unimportant task. The perception that one's performance has been a failure lowers efficacy beliefs, which contributes to the expectation that future performances will also be inept. This assault on efficacy is likely when the failure occurs early in learning and cannot be attributed to a lack of effort or events outside the person's control (Bandura, 1986, 1997).

Self-perception of teaching competence is affected by all four sources identified by Bandura, but it is most directly influenced by mastery experiences and the physiological arousal associated with those experiences. Only in a situation of actual teaching can an individual assess the capabilities she or he brings to the task and experience the consequence of those capabilities. In situations of actual teaching, teachers gain information about how their strengths and weaknesses play out in managing, instructing, and evaluating a group of students. One may learn, for example, that enthusiasm is an asset when working with a group of particularly active children, but it is not enough to compensate for a lack of organization or planning.

Physiological and emotional cues. The level of emotional and physiological arousal a person experiences in a teaching situation adds to self-perceptions of teaching competence. Feelings of relaxation and positive emotions signal self assurance and the anticipation of future success (Bandura, 1996). Arousal, such as increased heart and respiratory rate, "butterflies," increased perspiration, or trembling hands, can be read either positively as excitement or negatively as stress and anxiety, depending on the circumstances, the person's history, and the overall level of arousal (Bandura, 1997). Moderate levels of arousal can improve performance by focusing attention and energy on the task. However, high levels of arousal can impair functioning and interfere with making the best use of one's skills and capabilities. In order for physiological states to have an effect, they must be attended to. If the task itself requires all of a person's attentional resources, then affective states may contribute little to a sense of personal teaching competence.

Vicarious experiences. Watching others teach, whether from the vantage point of a student or from images portrayed in the media, provides impressions about the nature of the teaching task and its context. Images formed during teacher education, from the professional literature, and from gossip in the teachers' lounge contribute information. Through these and other vicarious experiences one begins to decide who can learn and how much, who is responsible, and whether teachers can really make a difference. Models of successful teachers are the bases for deciding that the teaching task is manageable and that situational and personal resources are adequate. Watching others teach in skillful and adept ways--especially observing admired, credible, and similar models-- can affect the observer's personal teaching competence. Comparisons to others can lead observers, particularly beginning teachers, to believe that they also have the capabilities to be successful teachers under similar circumstances (Bandura, 1977, 1986; Schunk, 1987). Likewise, observing other teachers' failures despite strong effort erodes efficacy beliefs by leading to the conclusion that the task is unmanageable, unless the observer believes that he or she is more skillful than the model.

Verbal persuasion. Verbal persuasion can be general or specific; it can provide information about the nature of teaching, give encouragement and strategies for overcoming situational obstacles, and provide specific feedback about a teacher's performance. Course work and professional development workshops give teachers information about the task of teaching. These experiences also provide strategies and methods that can contribute to a teacher's arsenal of skills. But these new skills may not have an impact on self-perceptions of teaching competence until they used successfully to enhance student learning. Although a "pep talk" alone may be limited in strengthening personal teaching competence,

such persuasion can counter occasional setbacks that might otherwise instill self-doubt and interrupt persistence (Schunk, 1989). The potency of the persuasion depends on the credibility, trustworthiness, and expertise of the persuader (Bandura, 1986). Social persuasion can contribute to successful performances to the extent that a persuasive boost leads a person to attempt new strategies or to try hard enough to succeed (Bandura, 1982). However, when individuals do not have the skills to perform well on a particular task, exhortations to work harder are likely to exacerbate low self-efficacy (Gist & Mitchell, 1992).

Specific performance feedback from supervisors, other teachers, even students, can be a potent source of information about how a teacher's skills and strategies match the demands of a particular teaching task. Specific performance feedback provides social comparison information, that is, whether the teaching performance and outcomes are adequate, inferior, or superior to others in a similar teaching situation. Social persuasion may lower self-perceptions of personal teaching competence if the feedback is overly harsh and global rather than focused and constructive. In response to critical feedback teachers may engage in self-protective strategies concluding that under the particular set of circumstances achieving the hoped-for results was impossible.

Cognitive processes. Although all four sources of information play roles in the creation of efficacy beliefs, it is the interpretation of this information that is critical. Cognitive processing determines how the sources of information will be weighed and how they will influence the analysis of the teaching task, its context, and the assessment of personal teaching competence. The interaction of task analysis, context, and competence, in turn, shapes teacher efficacy.

What is attended to, what is considered important or credible, and what is remembered influence the impact of experience on efficacy beliefs. People develop biases depending on their preexisting beliefs, the kinds of attributions they make, and the sources of information they attend to or consider important (Bandura, 1997). People may tend toward optimism or pessimism in their expectations. They may tend to see themselves or others as the agents exerting control, blaming other people or assuming personal responsibility for failures for example. Perceived control is likely to be higher over factors a person judges to be internal rather than external and variable rather than stable (Gist & Mitchell, 1992), even though external, stable factors such as teacher bias may be seen as controllable (Weiner, 1979).

When teachers reflect on their teaching experiences, they can attribute their success or failure to factors outside of themselves or they can assess the personal factors they brought to the task, including assets or liabilities. In our model, the judgment a teacher makes about his or her capabilities and deficits is self-perception of teaching competence, while the judgment concerning the resources and constraints in a particular teaching context is the analysis of the teaching task. In making judgments of self-efficacy, teachers weigh their self-perceptions of personal teaching competence *in light of* the assumed requirements of the anticipated teaching task. The standards the teacher holds for what constitutes good teaching will influence how these two factors are weighed. The collective efficacy in a particular teaching context influences assessments about both task and personal competence. In a sense, collective efficacy guides cognitive processing by influencing the interpretation of experiences, causing individuals to attend to factors that might have been overlooked, and to weigh the importance of factors differently. For example, one of the most powerful ways that low socioeconomic status of students affects student achievement is by decreasing the collective efficacy of the staff, causing the staff to feel overwhelmed by external constraints and personally inadequate (Bandura, 1997).

Analysis of the Teaching Task and Its Context

In making judgments about efficacy, teachers must assess what will be required of them in the anticipated teaching situation, what we have called the *analysis of the teaching task*. This analysis produces inferences about the difficulty of the task and what it would take for a person to be successful in this context. Considerations include such factors as the students' abilities and motivation, appropriate instructional strategies, managerial issues, the availability and quality of instructional materials, access to

technology, and the physical conditions of the teaching space, to name only a few. Contextual factors include the leadership of the principal, the climate of the school and the supportiveness of other teachers. Task analysis will be most explicit for novice teachers and for those entering a new teaching assignment. Experienced teachers are likely to rely more heavily on memories and interpretations of similar past teaching experiences (Gist & Mitchell, 1992).

As noted above, the analysis of teaching task bears some similarity to general teaching efficacy, but it includes specific aspects of the teaching situation. General teaching efficacy (GTE) assesses optimism about the abilities of teachers in general to cope with adverse circumstances such as an unsupportive home environment or unmotivated students. GTE gauges the potential of teachers in general to be successful in spite of various external constraints. Thus Guskey and Passaro's (1994) observation that the general teaching efficacy dimension of the Gibson and Dembo instrument is really a measure of external attributions for student failure seems valid. Remember that when Guskey and Passaro modified the general teaching efficacy scale to include external, personal statements, the factor analysis revealed an external factor, dominated by items that attributed student failures to influences of the home and family. The correlations between general teaching efficacy and responsibility for student failure (R-) and internal control of student failure (I-) suggest that the general teaching efficacy scale taps teachers' tendencies to blame the home and the students for student failure (Coladarci & Fink, 1995). There are no items on GTE that tap the positive influences of environmental factors, such as community support, abundant and high quality curriculum materials, the culture of the school or the leadership of the principal. Thus GTE, as currently constituted, reflects only a partial analysis of the teaching task, focusing on the external constraints that might impede teaching.

When novice teachers enter the teaching force, they frequently encounter a "reality shock" as they confront the complexity of the teaching task. There is a tempering of the "unrealistic optimism" they held as prospective teachers (Weinstein, 1988). A "get tough" attitude may result for those teachers who conclude that the constraints of teaching are formidable and resources for dealing with the problems are weak. Studies have found declines in general teaching efficacy after the first year of teaching (e.g., Housego, 1992; Hoy & Woolfolk, 1990) and lower general teaching efficacy of experienced compared to prospective teachers (Pigge & Marso, 1993). In addition, Woolfolk, Rosoff, and Hoy (1990) found that only general teaching efficacy made a significant independent contribution to beliefs about pupil control ideology; lower general teaching efficacy related to being more controlling and mistrustful of students and less supportive of student autonomy. These changes in GTE can be interpreted as reflecting an increased sense of the difficulty of the teaching task and a growing pessimism about the overpowering negative external constraints that can undermine the teacher's efforts.

Our conceptualization of the analysis of the teaching task is consistent with Skinner's (1996) concept of contingency or means-ends relationships. The questions are, "What outcomes do I seek--what is success in this teaching task?" and "What means or actions will be required to accomplish this particular teaching task--to succeed in this situation?" Other factors, such as what resources are available and what constraints exist, may be involved, but the analysis of the teaching task requires a consideration of means-ends relationships specific to this teaching situation.

Assessment of Personal Teaching Competence

The model in Figure 1 separates perceptions of current functioning, *assessment of personal teaching competence*, from teacher efficacy. Most researchers have associated the factor usually called "personal teaching efficacy" with self-efficacy, a prediction of the capability to orchestrate action in the future. If personal teaching efficacy is a form of self-efficacy then, like self-efficacy, it is neither an assessment of present functioning nor a description of past achievement (Pintrich & Schunk, 1996). But personal teaching efficacy has been assessed with items that confuse present and future time. Some items ask about current competence as a teacher (e.g., "I have enough training to deal with almost any learning problem") while others present hypothetical situations that imply action in the future (e.g., "If a student

did not remember information I gave in a previous lesson, I feel assured that I would know how to increase his/her retention in the next lesson"). The Ashton Vignettes, which are meant to assess personal efficacy, are cast as hypothetical situations asking about future potential-- "How effective would you be...?" On the other hand, most of the personal items on the Science Teaching Efficacy Beliefs Inventory assess current functioning (e.g., "I generally teach science ineffectively" or "I am typically able to answer students' science questions"). In our model, self-perception of teaching competence is seen as part of, but not the whole of, teacher efficacy. Self-perception of teaching competence would be tapped by questions that assess perceptions of *current functioning*. These contribute to a judgment of teacher efficacy–a prediction of future capability.

Teacher efficacy will be determined, in part, by the individual's comparative judgment of whether his or her current abilities and strategies are adequate for the teaching task in question. As noted earlier, teachers can feel efficacious in one context and quite inefficacious in another. The level of perceived competence to meet the demands of a particular teaching task are what will influence functioning in that context. Whether the person believes these abilities and strategies are either fixed and immutable or can be acquired and improved through additional training and experience affects a person's efficacy beliefs (Bandura, 1993). A teacher who is aware of deficits in his or her capabilities in a certain circumstance but has a belief about how those deficits can be addressed will have a resilient sense of teacher efficacy.

Teacher Efficacy

*Teacher efficacy is the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context.* It is in making explicit the judgment of personal competence *in light of* an analysis of the task and situation that our model improves upon previous models. There are both theoretical and practical implications for this integrated model. Both self-perception of teaching competence (including an assessment of internal resources and constraints) and beliefs about the task requirements in a particular teaching situation (including an assessment of resources and constraints external to the teacher) contribute to teacher efficacy and to the consequences that stem from efficacy beliefs. By conceptualizing teacher efficacy in terms of the confluence of judgments about personal teaching competence and the teaching task, both competence and contingency (i.e., both agent-means and means-ends relations as described by Skinner, 1996) are considered in an explanation of resultant teacher efficacy. By inviting a fuller examination of the specific teaching task and context, not just the constraints facing teachers in general, our model provides a more finely tuned picture of teachers' efficacy beliefs. By encouraging a consideration of the personal deficits as well as the competencies teachers bring to a task, a more complete picture of teachers' self-perceptions can be drawn. In addition, our model highlights the situational and developmental nature of teaching task analysis. The analysis of the task will be more salient in shaping efficacy beliefs when teachers lack experience or when tasks are novel.

One of the things that makes teacher efficacy so powerful is its cyclical nature. As noted in Figure 1, the proficiency of a performance creates a new mastery experience, which provides new information that will processed to shape future efficacy beliefs. Greater efficacy leads to greater effort and persistence, which leads to better performance, which in turn leads to greater efficacy. The reverse is also true. Lower efficacy leads to less effort and giving up easily, which leads to poor teaching outcomes, which then produce decreased efficacy. Thus, a teaching performance that was accomplished with a level of effort and persistence influenced by the performer's sense of efficacy, when completed, becomes the past and a source of future efficacy beliefs. Over time this process stabilizes into a relatively enduring set of efficacy beliefs.

Ross's (in press) conceptualization of teacher efficacy suggests that, with experience, teachers develop a relatively stable set of core beliefs about their abilities. New challenges, however, such as having to teach a new grade, work in a new setting, adopt a reformed curriculum, inclusion, or other

demands, can elicit a reevaluation of efficacy. This conceptualization is consistent with our model in that, with experience, teachers develop a relatively stable sense of their teaching competence that is combined with their analysis of a new task to produce judgments about expected efficacy on that task. When the task is seen as routine, one that has been handled successfully many times, there is little active analysis of the task and efficacy is based on memories of how well the task has been handled in the past. Prospective or inexperienced teachers, however, rely more heavily on their analysis of the task and on vicarious experience (what they believe other teachers could do) to gauge their own likely success, that is, their efficacy in the given situation.

Beliefs about both the task of teaching and assessment of personal teaching competence are likely to remain unchanged unless "compelling evidence" intrudes and causes them to be reevaluated (Bandura, 1997). Consequently, helping teachers develop strong efficacy beliefs early in their career will pay lasting dividends. Factors that contribute to the initial development of teacher efficacy or factors that may cause a reevaluation of efficacy beliefs by teachers in the midst of their careers are explored in the next sections.

## The Development and Modification of Efficacy Beliefs

The research suggests that teachers' sense of efficacy plays a powerful role in schooling. Given the importance of a strong sense of efficacy for optimal motivation in teaching, we do well to examine how efficacy is developed, when it is most malleable, and what factors may lead to its improvement. Assuming that efficacy and student achievement are reciprocally related, it makes sense to consider how efficacy might be strengthened. Judgments about efficacy become more routinized and automatic as experience with a task increases. When tasks are novel, when changes have taken place in the person or task that affect performance, or when the task is salient or important to the individual, they are most likely to engage in a more rigorous analysis of the factors contributing to their efficacy beliefs (Gist & Mitchell, 1992). Similarly, Bandura (1977) postulated that efficacy would be most malleable early in learning, which has led a number of researchers to focus on preservice teachers.

Efficacy Beliefs of Preservice and Student Teachers

Efficacy beliefs of preservice teachers have been linked to attitudes towards children and control (Woolfolk & Hoy, 1990). Among liberal arts majors, efficacy beliefs were related to an orientation toward humanistic versus custodial control, (as measured by the Pupil Control Ideology Form, Willower, Eidell, & Hoy, 1967). Undergraduates with a low sense of teacher efficacy tended to have an orientation toward control, taking a pessimistic view of students' motivation, relying on strict classroom regulations, extrinsic rewards, and punishments to make students study. Those liberal arts majors who scored high in both general teaching efficacy and personal teaching efficacy were more humanistic in their control orientation than students who were high in general but low in personal efficacy, or students who scored low in both. Once engaged in student teaching, efficacy beliefs also have an impact on behavior. Student interns with higher personal teaching efficacy were rated more positively on lesson presenting behavior, classroom management, and questioning behavior by their supervising teacher on their practicum evaluation (Saklofske, Michaluk, & Randhawa, 1988).

The development of teacher efficacy beliefs among prospective teachers has generated a great deal of research interest because once efficacy beliefs are established, they appear to be somewhat resistant to change. There is some evidence that course work and practica have differential impacts on personal and general teaching efficacy. It seems that general teaching efficacy beliefs, which our model relates to beliefs about the task, are more likely to change when students are exposed to vicarious learning experiences or social persuasion, such as college course work (Watters & Ginns, 1995), while actual teaching experiences during student teaching practica have a greater impact on personal teaching efficacy (Housego, 1992; Hoy & Woolfolk, 1990). General teaching efficacy has also shown a decline during student teaching (Hoy & Woolfolk, 1990; Spector, 1990) suggesting that the optimism of young teachers may be somewhat tarnished when confronted with the realities and complexities of the teaching task.

The difference between a vicarious learning situation and an enactive one is like the difference between enjoying a well-told joke and then attempting to retell it. One may enjoy the skill and ease with which the joke was told but then feel self-conscious and fumble when trying to retell it. A preservice teacher may admire the skill of a well-taught lesson given by an experienced teacher but fail in trying to present a similar lesson. Teacher preparation programs that include extensive verbal input and vicarious experience may address beliefs about the task requirements of teaching but do little to raise self-perceptions of teaching competence.

Student teaching provides an opportunity to gather information about one's personal capabilities for teaching. However, when it is experienced as a sudden, total immersion, sink-or-swim approach to teaching, it is likely detrimental to building a sense of teaching competence. Student teachers often underestimate the complexity of the teaching task and their ability to manage many agendas simultaneously. Interns may either interact too much as peers with their students and find their classes out of control or they may grow overly harsh and end up not liking their "teacher self." They become disappointed with the gap between the standards they have set for themselves and their own performance. Student teachers sometimes engage in self-protective strategies, lowering their standards in order to reduce the gap between the requirements of excellent teaching and their self-perceptions of teaching competence.

Teacher preparation programs need to give preservice teachers more opportunities for actual experiences with instructing and managing children in a variety of contexts with increasing levels of complexity and challenge to provide mastery experiences and specific feedback. An apprenticeship approach of breaking down elements of the complex task of teaching, allowing an apprentice teacher to work on developing one set of skills at a time, should encourage a compounding sense of efficacy over various contexts and skills. Performance feedback (verbal persuasion) early in learning that highlights the positive achievements of the apprentice teacher and that encourages emphasis on attributions that are controllable and variable (e.g., effort and persistence) will have a positive effect on the development of efficacy beliefs. Assigning novice teachers smaller classes and more capable students in their first year should enhance efficacy.

Efficacy Beliefs of Novice Teachers

Although few studies have looked at the development of efficacy beliefs among novices, it seems that efficacy beliefs of first-year teachers are related to stress and commitment to teaching, as well as satisfaction with support and preparation. Novice teachers completing their first year of teaching who had a high sense of teacher efficacy found greater satisfaction in teaching, had a more positive reaction to teaching, and experienced less stress. Confident new teachers gave higher ratings to the adequacy of support they had received than those who ended their year with a shakier sense of their own competence and a less optimistic view of what teachers could accomplish. Efficacious beginning teachers rated the quality of their preparation higher and the difficulty of teaching lower than those who were less efficacious. And efficacious novices indicated greater optimism that they would remain in the field of teaching (Burley, Hall, Villeme, & Brockmeier, 1991; Hall, Burley, Villeme, & Brockmeier, 1992).

Attention to the factors that support the development of a strong sense of efficacy among preservice and novice teachers seems to be worth what effort and care may be involved because, once established, efficacy beliefs of experienced teachers seem resistant to change.

Efficacy Beliefs of Experienced Teachers

Bandura (1997) warned that producing positive changes in established efficacy beliefs requires "compelling feedback that forcefully disputes the preexisting disbelief in one's capabilities" (p. 82). Changes in efficacy beliefs among inservice teachers seem to be more difficult to produce and sustain. Among experienced teachers, efficacy beliefs appear to be quite stable, even when the teachers are exposed to workshops and new teaching methods (Ross, 1994). Teachers who attended an "Efficacy

Seminar" designed specifically to increase their sense of efficacy had higher efficacy scores immediately following the seminar but when the scores were measured again six weeks later the increases had disappeared (Ohmart, 1992). Bandura (1997) suggested that when people gain new skills and have experiences that challenge their low estimate of their capabilities, they "hold their efficacy beliefs in a provisional status, testing their newly acquired knowledge and skills before raising their judgments of what they are able to do" (p. 83).

Efficacy and the implementation of innovation. Change is difficult. Even when changes are made for the better, they are uncomfortable and stressful. For teachers in the midst of a change process, the development of teacher efficacy seems to be curvilinear (Ross, 1994; Stein & Wang, 1988). Initially, implementation of change has a negative effect on teachers' personal efficacy. Improvements that occur in personal teaching efficacy due to increased skill may be offset by changes in the definition of what constitutes good teaching. Rising standards challenge teachers' existing beliefs about the effectiveness of their teaching strategies. However, as teachers develop new strategies to cope with the changes and gain evidence of improved student learning, their personal teaching efficacy increases. Guskey (1986, 1989) suggested that change is a gradual and difficult process for teachers, and that they need encouragement, support, and feedback after training in a new method to get them through the initial slump in their confidence. This lowered confidence may continue until the teacher begins to witness evidence of improved student learning.

A longitudinal study of the implementation of a new instructional program over the course of a school year demonstrated this lag in efficacy beliefs as teachers attempt to put a new method into practice (Stein & Wang, 1988). Although the degree of implementation showed the largest gain between fall and winter, the teachers' efficacy scores did not register an increase until spring. Teachers who successfully implemented the new program exhibited marked gains in self-efficacy while teachers who learned about the new method but were unsuccessful in their attempts to implement it saw their level of self-efficacy decline.

Other studies of teachers' use of new skills and knowledge gained through inservice training have also found significant efficacy effects. Teachers who implemented new methods after training saw increased general teaching efficacy (Ross, 1994; Ross, McKeiver, & Hogaboam-Gray, 1995), felt greater responsibility for both positive and negative student learning, and had more positive feelings toward teaching (Guskey, 1984). Teachers who were trained in new science methods made significant gains in personal teaching efficacy for science (Riggs, & Jesunathadas, 1993; Riggs, et al., 1994; Riggs, 1995). Guskey (1988) found that among teachers exposed to training, the more efficacious teachers tended to rate the new method as more important, more congruent with their current teaching practices, and less difficult to implement. Guskey suggested that teachers' confidence, however, can act as a double edged-sword when it comes to implementing new methods. He found that teachers who did not implement a changed methodology after training had greater self-confidence than those who did, and those teachers who tried to put into practice what they had learned experienced decreased self-confidence (Guskey, 1984). Teachers with a great deal of confidence may not feel the need for new strategies and so do not attempt to implement what they have learned.

Contextual influences on changes in efficacy. Although the level of collaboration in a school has been linked to higher efficacy among teachers (Rosenholtz, 1989; Chester & Beaudin, 1996), conversing with peers may also have a negative impact on the implementation of new programs. Collective inefficacy may inhibit attempts to try new methods. Among efficacious teachers, the fewer task-relevant collegial interactions they reported, the more likely they were to use newly-adopted curriculum guides (Poole & Okeafor, 1989; Poole, Okeafor & Sloan, 1989). It seems that those teachers with a greater sense of efficacy more readily implemented the new curriculum and avoided the grumbling and foot dragging that often accompanies change. Confidence in one's capabilities does not inhibit all peer interactions, however. Higher personal teaching efficacy has been related to the willingness to make use of a teaching

coach or coaching network which, in turn, has been related to increases in student achievement (Ross, 1992; 1994).

Career stage and efficacy.  Little evidence exists about how efficacy beliefs change or solidify across stages of a career. One study found that teachers at later stages in their career had a lower sense of efficacy (Brown & Gibson, 1982); however, another found no differences across career stages among outstanding teachers (Pigge & Marso, 1993), and a third study found that teachers with more teaching experience and higher levels of education had higher levels of both personal and general teaching efficacy (Hoy & Woolfolk, 1993). Among teachers in Kentucky implementing a nongraded primary school program, no significant differences were found in mean efficacy between teachers at different stages in their teaching careers (DeMesquita & Drake, 1994). However, differences across career stages were found for efficacy in implementing specific aspects of the change, such as the ability to balance teacher- and child-directed activities, for teaching mixed-age ranges, and for fostering parent involvement. Further investigation of the progress of efficacy beliefs throughout the span of teachers' careers, using more finely tuned measures of efficacy, would be useful.

Supporting and improving efficacy for experienced teachers. The development of a strong sense of efficacy can pay dividends of higher motivation, greater effort, persistence, and resilience across the span of a teaching career. An examination of the integrated model suggests a number of intervention strategies to raise efficacy levels for inservice teachers. Probably the most logical place to start is with the assessment of teaching competence. Verbal persuasion in the form of professional development workshops or inservice programs can provide a provisional boost in teacher efficacy, but if persuasion is not accompanied by the development of new skills that improve performance and increase student learning, the impact may be fleeting (Guskey, 1984; Ohmart, 1992; Ross, 1994; Stein & Wang, 1988). During implementation of change processes, giving teachers an opportunity to engage in role playing and micro-teaching experiences with specific feedback can have a more powerful impact on self-perceptions of teaching competence because such exercises more directly address the need for mastery experiences.

When attempting to implement new practices, efficacy beliefs may initially be lowered but then rebound to a higher level when the new strategies are found to be effective (Ross, 1994; Stein & Wang, 1988). Ross (in press) describes the process as follows:

> (a) High teacher efficacy might contribute to experimentation and new teaching ideas by influencing teachers' goal setting. (b) Teacher efficacy could decline as the new techniques disrupted the smoothness of existing practice. (c) Efficacy beliefs might remain depressed even if there was early success if the perceived superiority of the new techniques persuaded teachers of the inadequacy of their routine practice. (d) Teacher efficacy might begin to increase as teachers integrate the new methods into their repertoire and began to enjoy increased student performance consistently. (e) Enhanced efficacy might motivate the search for new skill development opportunities. (pp. 31-32)

Encouragement and support are particularly important as change is implemented and temporary dips in efficacy occur. Also, teachers can be warned that initial attempts to implement new strategies may temporarily lower feelings of efficacy. Teachers need support and training to see them through the initial slump in efficacy beliefs as they attempt to implement new methods. They also need to see evidence of increased student learning before new, higher efficacy beliefs will take root.

Another point of intervention concerns the analysis of the teaching task. Teachers need a more thorough understanding of the complexity of the task requirements and help in breaking these down to allow focus and improvement in a manageable subset of skills. Challenging beliefs about intelligence as a fixed rather than a mutable characteristic also can have positive efficacy effects (Ross, 1995). Working collectively to address school-level variables that affect the conditions of teaching provide the opportunity for enhanced efficacy beliefs as well. Opportunities for collaboration among adults (Chester & Beaudin, 1996; Rosenholtz, 1989), coaching (Ross, 1992), teacher participation in decision making (Newmann,

Rutter & Smith, 1989) and improving the health of the school climate (Hoy & Woolfolk, 1993; Moore & Esselman, 1992) are all related to increases in teacher efficacy. All these opportunities for participation and collaboration should increase the vicarious experience, social persuasion, and performance feedback available to support efficacy beliefs. The positive effects of vicarious experiences and verbal persuasions are likely to be pronounced because fellow teachers can provide compelling models and credible sources of feedback.

Another strategy addresses the ways teachers think about their teaching. If principals and supervisors focus on the positive results of teacher behaviors and talk about it in terms of factors under teachers' control, such as effort and the planning that has gone into a lesson, teachers will be more likely to make similar attributions. In general, helping teachers feel a greater sense of control over their professional lives in schools will increase their sense of teacher efficacy and make for greater effort, persistence, and resilience.

Directions for Future Research

As the construct of teacher efficacy enters its third decade, it is ready to be put to work, even as researchers continue to explore and clarify its identity. We sketch only a few of the areas the seem fruitful avenues for research.

Testing the Model

The model presented in this paper needs to be tested and refined. One area that needs further attention is how teachers analyze the teaching task. What are the critical elements of teaching that inform the analysis of the task? How does experience mediate this analysis of the task? What situational factors facilitate teaching? Similarly, perceptions of personal teaching competence are pivotal in the model. What is the optimal level of specificity for analyzing teaching competence? What kind of feedback is effective in altering self-efficacy for teaching? We also need to examine more carefully the consequences of self-efficacy in terms of goal level, persistence, risk taking, and other aspects of teacher motivation. Although our model used Bandura's four broad categories of experience as bases that contribute to efficacy judgments, greater specification is needed to understand what information is drawn from the teaching task, the context, and assessment of personal teaching competence to form self-efficacy. For example, modeling is known to influence self-efficacy, but less is known about what types of information from observation are particularly useful in determining efficacy. Also, what is the role of social support in developing and modifying teacher efficacy and how does this factor fit into Bandura's four sources-of-efficacy scheme (Schunk, personal communication, March, 1997).

Measurement

The refinement and development of new measures of efficacy are important tasks. Our model suggests that a valid measure of teacher efficacy must assess both personal competence and an analysis of the task in terms of the resources and constraints in particular teaching contexts. Most existing measures of teacher efficacy do not include both dimensions of efficacy. For example, the first Rand item and other measures of general teaching efficacy tend to assess just the external constraints faced by teachers, while the second Rand item and other measures of personal teaching efficacy assess teaching strengths but not personal challenges. Studies need to test the relative predictive power of assessments of personal competence and of the analysis of the task. Certainly some context is inferred in assessments of personal competence (presumably those the person has had experience with) but a more careful and fine-grained assessment of those factors that both facilitate and impede teaching *in a particular teaching context* is likely to produce more powerful instruments.

Measures of the assessment of the teaching task should be weighted to reflect the relative importance of different aspects of the job. For example, if interacting with parents comprises about 10% of a teacher's responsibilities then perhaps four items on a 40-item measure would assess teachers' level of assurance in this area. Confidence in interacting with parents might be weighted differently at the

elementary, middle, and secondary levels. Separate measures might need to be developed for each of these levels as the tasks differ in significant ways. Whatever the strategy, reliable and valid measures of teaching self-efficacy are needed.

One of the most perplexing issues in the measurement of efficacy beliefs is determining the level of specificity that is most helpful. Bandura (1986) recommends that self-efficacy beliefs should be assessed at the optimal level of specificity that corresponds to the task being assessed and the domain of functioning being analyzed. Pajares (1996) complained that, in relation to student self-efficacy, global measures obscure what is being measured,

> Omnibus tests that aim to assess general self-efficacy provide global scores that decontextualize the self-efficacy-behavior correspondence and transform self-efficacy beliefs into a generalized personality trait rather than the context-specific judgment Bandura suggests they are....The problem with such assessments is that students must generate judgments about their academic capabilities without a clear activity or task in mind. As a result, they generate the judgments by in some fashion mentally aggregating to related perceptions that they hope will be related to imagined tasks. (p. 547)

On the other hand, he noted that "specificity and precision are often purchased at the expense of external validity and practical relevance" (p. 561). Finding an appropriate balance is no small matter. A model that invites us to consider an analysis of the task may help in discerning the levels of specificity and correspondence needed to develop a measure of efficacy that is both practical and valid. How specific are teachers' definitions of common classroom tasks? Do experienced and inexperienced teachers hold different conceptions of these tasks? Do these conceptions vary in specificity? For example, compared to neophytes, do more experienced teachers aggregate tasks into larger units? What constitutes "success?" Answers to these questions, gained perhaps through qualitative research, might help to identify appropriate levels of specificity, correspondence, and success for typical classroom tasks.

Collective Efficacy

This review has focused on perceived self-efficacy for teaching, but teaching is typically performed in a group context; in fact, many problems that teachers face require that they work together as a collective to change the lives of their students. The social context of the school is important. Collective efficacy does exist as a group process and is related to group performance. Unfortunately, there has been relatively little study of perceived collective efficacy, but where it has been done, the results have been significant. Not only does perceived self-efficacy for teaching influence student achievement, but so does collective efficacy (Bandura, 1993, 1997).

The interrelationship between self-efficacy and collective efficacy should be examined. To what extent are they functions of each other? Some schools are loosely structured and others are tightly connected. To what extent are efficacy relations affected by levels of organizational interdependency? To what extent is collective efficacy important in the socialization of new teachers? Studies of collective efficacy and the role of school practices could explore the ways that teachers are socialized toward beliefs about the task of teaching. How are teachers' beliefs about the task of teaching shaped by the attitudes of other teachers about the specific resources and constraints of the community and school in which they teach? Teachers' perceptions of their own capabilities are formed in the midst of a particular set of contextual challenges and opportunities. What role does supervision play in shaping self-perceptions of teaching competence? Practices such as providing opportunities for collaboration, coaching, or mentoring could be examined in light of their impact on self-perceptions of teaching competence.

What are the characteristics of efficacious schools? There are many organizational variables that are likely influenced by both self-efficacy and collective efficacy, for example organizational culture and school climate. Perceived collective efficacy is an important aspect of organizational culture (Bandura, 1997). Culture is not only concerned with shared assumptions, values, and norms, but also with shared

beliefs about the organization's capabilities to innovate and attain its goals. Organizational members' collective belief about efficacy to produce and achieve at certain levels is an important feature of the institution's operating culture. Thus, analysis of the determinants of perceived organizational efficacy should have important consequences for both understanding and improving organizational performance. Questions remain about the linkages between the organizational climate and efficacy beliefs of the participants. To what extent is administrator and teacher efficacy tied to the openness of school climate and authenticity in behavior? To what extent is collective efficacy a necessary condition for organizational change and innovation? How are empowerment initiatives, decision making structures, and innovation related to the cultivation and maintenance of efficacy beliefs?

Changing Efficacy Beliefs

Another theoretical issue is the malleability of self-efficacy. How stable is the core of beliefs about teacher ability? How is its reevaluation elicited? The question about how self-efficacy can be changed may be a question about how motivation and beliefs about teaching competence can be changed. But as Gist and Mitchell (1992) note, further conceptualization is needed about "the plasticity of the determinants of self-efficacy: the specific causal factors that are susceptible to change, the extent of probable change, and the practical issues involved in facilitating change" (p. 184).

Greater understanding of the factors that facilitate or inhibit the development of efficacy beliefs among teachers across stages of their career would be valuable. Evidence suggests that input during initial training has a different impact than input received after teachers are in the field. More work could be done with novice teachers to understand how their successes and disappointments in their classrooms interact with the socializing influences of the climate of their school building to produce enduring efficacy beliefs (Hoy & Woolfolk, 1990; Pajares, 1992). Longitudinal studies across teacher preparation programs and across the first several years in the field could begin to map the development of efficacy beliefs and could assess the efficacy impact of different teacher preparation programs and practices. How do these sources of efficacy have a differential impact at different stages in a teaching career? Qualitative research could explore what events and influences teachers attribute to the development of their efficacy beliefs.

One of the difficult unresolved issues surrounding teacher efficacy is the issue of transfer. To what extent does efficacy in one context or subject area transfer to other situations? Our model invites us to examine how the analysis of the teaching task leads to judgments about the ways the current task is either similar or different from previous teaching tasks. What are the factors that contribute to that transfer? (Pajares, 1996). What influences how teachers define success and how do different definitions affect teacher efficacy?

The employment of a variety of research methods will serve to enrich our understanding of the antecedents and consequences of teachers' efficacy beliefs. Quantitative measures typically contribute to our understanding with a "snap shot" of the efficacy beliefs of a large number of teachers at a particular point in time. However, qualitative studies of teacher efficacy are overwhelmingly neglected. Interviews and observational data can provide a thick, rich description of the growth of teacher efficacy. Interpretive case studies and qualitative investigations are needed to refine our understanding of the process of developing efficacy.

Much work remains to be done, but a construct that is related to teachers' motivation to persist in the face of setbacks and their willingness to work to overcome difficulties is worth the effort. The list of positive outcomes related to a strong sense of teacher efficacy is impressive. As the construct of teacher efficacy stands on the verge of maturity, it can look forward to a promising and productive career ahead.

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Footnotes

[1] More recent conceptualizations of attributions (e.g., Weiner, 1979, 1994) distinguish between the internal/external dimension and the controllable /uncontrollable dimension, creating a 2 X 2 matrix rather than a single continuum.

**Table 1**

# Measures of Efficacy

| Instrument | Structure | Example Items |
|---|---|---|
| Efficacy Measures Growing out of Rotter's Concept of Generalized Expectancies of Reinforcement | | |
| Rand Measure (Armor, Conroy-Oseguera, Cox, King, McDonnell, Pascal, Pauly, & Zellman, 1976) | 2 items on a 5 point Likert scale from strongly agree to strongly disagree. Scoring: Sum of the two items | When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment. If I really try hard, I can get through to even the most difficult or unmotivated students. |
| Teacher Locus of Control (Rose & Medway, 1981) | 28 items with a forced-choice format. Scoring: Half of the items describe situations of student success (I+) and half describe student failure (I-). | Suppose you are teaching a student a particular concept in arithmetic or math and the student has trouble learning it. Would this happen    a. because the student wasn't able to understand it, or    b. because you couldn't explain it very well? If the students in your class perform better than they usually do on a test, would this happen    a. because the students studied a lot for the test, or    b. because you did a good job of teaching the subject area? |
| Responsibility for Student Achievement (Guskey, 1981) | Participants are asked to give a weight or percent to each of the two choices. Scoring: A global measure of responsibility, with two subscales: responsibility for student success (R+) & responsibility for student failure (R-) | If a student does well in your class, would it probably be    a. because that student had the natural ability to do well, or    b. because of the encouragement you offered? When your students seem to have difficulty learning something, is it usually    a. because you are not willing to really work at it, or    b. because you weren't able to make it interesting for them? |
| Webb Efficacy Scale (Ashton, et al. 1982). | 7 items, forced choice. Participants must determine if they agree most strongly with the first or the second statement. | A. A teacher should not be expected to reach every child; some students are not going to make academic progress. B. Every child is reachable. It is a teacher's obligation to see to it that every child makes academic progress.<br><br>A. My skills are best suited for dealing with students who have low motivation and who have a history of misbehavior in school. B. My skills are best suited for dealing with students who are academically motivated and generally well behaved. |

| Efficacy Measures Growing out of Bandura's Concept of Self-Efficacy | | |
|---|---|---|
| Teacher Efficacy Scale (Gibson & Dembo, 1984) | 30 items on a 6 point Likert scale from strongly disagree to strongly agree. Scoring: A global measure of teacher efficacy derived from the sum of all items. Two subscales emerge from factor analysis: personal teaching efficacy and general teaching efficacy. | When a student gets a better grade than he usually gets, it is usually because I found better ways of teaching. The hours in my class have little influence on students compared to the influence of their home environment. If a student masters a new math concept quickly, this might be because I knew the necessary steps in teaching that concept. |
| Science Teaching Efficacy Belief Instrument (Riggs & Enochs, 1990) | 25 item 5 point Likert scale from strongly agree to strongly disagree. | I understand science concepts well enough to be effective in teaching elementary science. Effectiveness in science teaching has little influence on the achievement of students with low motivation. |
| Ashton Vignettes (Ashton, et al. 1982). | 50 items describing problem situations concerning various dimensions of teaching, including motivation, discipline, academic instruction, planning, evaluation, and work with parents. Self-referenced: "extremely ineffective" to "extremely effective." Norm-referenced: "much less effective than most teachers" to "much more effective than other teachers." | Your school district has adopted a self-paced instructional program for remedial students in your area. How effective would you be in keeping a group of remedial students on task and engaged in meaningful learning while using these materials?<br><br>A small group of students is constantly whispering, passing notes and ignoring class activities. Their academic performance on tests and homework is adequate and sometimes even good. Their classroom performance, however, is irritating and disruptive. How effective would you be in eliminating their disruptive behavior? |
| Bandura's Teacher Efficacy Scale | 30 items on a 9 point scale anchored at nothing, very little, some influence, quite a bit, a great deal. 7 subscales: Influence on decision making, influence on school resources, instructional efficacy, disciplinary efficacy, enlisting parental involvement, enlisting community involvement, and creating a positive school climate. | How much can you influence the decisions that are made in your school? How much can you do to overcome the influence of adverse community conditions on student learning? How much can you do to get children to follow classroom rules? How much can you assist parents in helping their children do well in school? How much can you do to get local colleges and universities involved in working with your school? How much can you do to make students enjoy coming to school? How much can you do to get students to believe they can do well in school work? |

Table 3

## Guskey and Passaro's Rewording of Teacher Efficacy Items

Example of Alternative Forms of An Item

| Item: Gibson & Dembo (1984) Number 15, and Woolfolk & Hoy (1990) Number 8. | |
|---|---|
| Personal-Internal (P-I) (Original Item) | When I really try, I can get through to most difficult students. |
| Personal-External (P-E) | Even when I really try, it is hard to get through to the difficult students. |
| Teaching-Internal (T-I) | When teachers really try, they can get through to most difficult students. |
| Teaching-External(T-E) | Even when they really try, it is hard for teachers to get through to the difficult students. |

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**Table 4**

**Guskey and Passaro's Factor Loadings for the Teacher Efficacy Scale**

| Item Number | Factor Loading | Items Loadings on Factor 1 (External) |
|---|---|---|
| 9 | .81 | *I am* teacher is very limited in what *I* can achieve because a student's home environment is a large influence on his/her achievement. |
| 20* | .67 | When it comes right down to it, a teacher really can't do much because most of a students's motivation and performance depends on his/her home environment. |
| 4 | .61 | If students aren't disciplined at home, they aren't likely to accept any discipline. |
| 10 | .57 | Teachers are not a very powerful influence on student achievement when all factors are considered. |
| 3 | .56 | The amount a student can learn is primarily related to family background. |
| 2 | .53 | The hours in my class have little influence on students compared to the influence of their home environment. |
| 13 | .41 | If parents would do more for their children, *teachers* could do more. |
| 6 | .37 | When a student is having difficulty with an assignment, *I often have trouble* adjusting it to his/her level. |
| 5 | .34 | I *do not have* training to deal with *many of the* learning problems *my students have*. |
| 17 | .31 | Even a teacher with good teaching abilities may not reach many students. |
| 21 | .16 | My teacher training program and/or experience *did not give* me the necessary skills to an effective teacher. |

|  |  | Item Loadings on Factor 2 (Internal) |
|---|---|---|
| 11 | .59 | When the grades of students improve it is usually because *their teacher* found more effective teaching approaches. |
| 7 | .54 | When a student gets a better grade than he/she usually gets, it is because I found better ways of teaching that student. |
| 8 | .51 | When I really try, I can get through to most difficult students. |
| 12 | .50 | If a student masters a new concept quickly, this might be because *the teacher* knew the necessary steps in teaching that concept. |
| 1 | .48 | When a student does better than usual, many times it is because *the teacher* exerts a little extra effort. |
| 14 | .47 | If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson. |
| 19* | .44 | If I try really hard I can get through to even the most difficult or unmotivated students. |
| 15 | .38 | The influences of a student's home experiences can be overcome by good teaching. |
| 16 | .35 | If a students in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly. |
| 18 | .24 | If a student couldn't do a class assignment, *most teachers* would be able to accurately assess whether the assignment was at the correct level of difficulty. |

* Items used in Rand Studies.

In Guskey, T. R. & Passaro, P. (1994). Teacher efficacy: A study of construct dimensions. American Educational Research Journal, 31, 627-643. Used with permission.

**Table 5**

## Intercorrelations among Efficacy/ Non-Efficacy Measures (N=333)*

|  | TLC | RSA | TES | EV | Webb | AfT | TSC |
|---|---|---|---|---|---|---|---|
| Rand Items | .47 | .50 | .64 | .27 | .39 | .45 | .48 |
| Teacher Locus of Control Scale | | .68 | .47 | .18 | .28 | .34 | .33 |
| Responsibility for Student Achievement Questionnaire | | | .57 | .22 | .41 | .39 | .46 |
| Teacher Efficacy Scale | | | | .39 | .42 | .50 | .54 |
| Efficacy Vignettes | | | | | .34 | .36 | .38 |
| Webb Efficacy Scale | | | | | | .32 | .40 |
| Affect for Teaching | | | | | | | .72 |
| Teaching Self-Concept | | | | | | | |

## Subscale Intercorrelations among Efficacy/ Non-Efficacy Measures (N=333)*

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Teaching Efficacy** | | | | | | | | | | |
| 1. Rand 1 | | .53 | .45 | .35 | .41 | .39 | .37 | .35 | .35 | .37 |
| 2. Teacher Efficacy Scale | | | .42 | .25 | .28 | .40 | .35 | .39 | .39 | .39 |
| **Personal Teaching Efficacy** | | | | | | | | | | |
| 3. Rand 2 | | | | .41 | .34 | .36 | .27 | .34 | .42 | .46 |
| 4. Teacher Efficacy Scale | | | | | .47 | .47 | .21 | .28 | .39 | .47 |
| **Efficacy for Classroom Success/ Positive Student Outcomes** | | | | | | | | | | |
| 5. Teacher Locus of Control: I+ | | | | | | .53 | .54 | .49 | .33 | .35 |
| 6. Responsibility for Student Ach: R+ | | | | | | | .30 | .41 | .43 | .49 |
| **Efficacy for Classroom Failure/ Negative Student Achievement** | | | | | | | | | | |
| 7. Teacher Locus of Control: I- | | | | | | | | .65 | .26 | .22 |
| 8. Responsibility for Student Ach: R- | | | | | | | | | .26 | .31 |
| **Non-Efficacy Measures** | | | | | | | | | | |
| 9. Affect for Teaching | | | | | | | | | | .72 |
| 10. Teaching Self-Concept | | | | | | | | | | |

*In Colardarci, T., & Fink, D.R. (1995). *Correlations among measures of teacher efficacy: Are they measuring the same thing?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco. Used with the permission.