Self-Efficacy Beliefs and Teacher Effectiveness: Implications for Professional Development

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Abstract

In an era of increasing accountability demands for teachers and students professional development will be the key to success in school reform initiatives as administrators struggle with improving the current teaching force. Research has shown that teacher efficacy is an important variable in teacher effectiveness that is consistently related to teacher behaviors and student outcomes. Furthermore, it has been shown that schools with high performance professional development integrate key dimensions that support and reinforce skill development and efficacy beliefs. It is the contention of this paper that the framework of professional development for teachers should include self-efficacy as a theoretically sound focus of training designs aimed at improving teacher competence and by extension improving student outcomes.

The changes necessary to promote meaningful and substantive educational improvement are both fundamental and systemic. Because change and reform in education continues to be at the political forefront, new challenges are emerging for policy makers and administrators across the country. For example, more challenging standards, high stakes testing, and school accountability are all pressuring administrators to highlight the key linkage between teacher effectiveness and student achievement. This has led to a rekindled emphasis on a timeless certainty: if students are to achieve high standards then no less can be expected of their teachers (National Commission on Teaching & America's Future, 1996). The result has been a renewed interest in the ongoing professional development of teachers, particularly high quality in-service training, and an accompanying concern about how to design and deliver this training in ways that improve teaching and learning. Indeed, creating stable, high-quality professional development experiences for teachers has become a major concern as communities, states, and the nation struggle with ways to improve the quality of education.

The substance and outcomes of many current teacher professional development opportunities have been soundly criticized suggesting the transforation of current patterns is a critical challenge (Feistritzer, 1999). This paper argues that the teacher self-efficacy is a key driver of teacher effectiveness and should be explicitly included as a central focus in the professional development of teachers. We argue that teacher in-service training should not only develop and implement professional development activities aimed at building positive efficacy beliefs but should also use such beliefs as an indicator of training success (i.e., a valuable outcome of training). Research substantiating the link between self-efficacy and teacher effectiveness is briefly reviewed and suggestions are made about how teacher development activities, particularly in-service training, can be reoriented to include the development of teacher self-efficacy.

Criticisms of Current In-Service Training Practice

Although conceptually the value of professional development activities for overall improvements in teacher effectiveness has been recognized, in practice the capacity of current professional development models, particularly in-service teacher training, to enhance teacher effectiveness has been limited. The continuing professional development opportunities available to teachers have been criticized as generating little or no improvement on subsequent student learning (U.S. Department of Education, 1998). Professional development and in-service training efforts have tended to lack continuity across time. For example, Senge (1990) notes that one serious deficiency has been school districts' uncritical and fragmented adoption of fads, fancies, and popular (but un-

proven) innovations. This criticism is consistent with portrayals of in-service teacher training as mass-marketed, flavor-of-the-month experiences that are disconnected from one another and fail to build on previous learning (Darling-Hammond, 1999). Indeed, the state of professional development for many teachers consists of disconnected, packaged-prescription one-shot workshops conducted on "in-service days" in which teachers passively attend to outside "experts" instructing them on topics that do little to deepen their subject matter knowledge or teaching skill (Garet, Birman, Porter, Desimone, Herman, & Yoon, 1999). These efforts have offered little continuity in building effective teaching practice, have not provided adequate opportunities for teachers to reflect on practice with knowledgeable colleagues (WestEd, 2000), and have not been closely linked to the content, activities, or challenges of what teachers need to know and be able to do for their students (National Commission on Teaching & America's Future, 1996). As Mathew Miles puts it,

> A good deal of what passes for professional development in schools is a joke—one that we'd laugh at if we weren't trying to keep from crying…. In short, it's pedagogically naïve, a demeaning exercise that often leaves its participants more cynical and no more knowledgeable, skilled, or committed than before. (1995, p. viii)

The bottom line is that teachers want and need practical in-service activities that address their genuine needs in the classroom, make them better teachers, and that improve student outcomes. This must include coherent, relevant coursework that is tied to real-world practice and that includes learning experiences that build both teacher competence and confidence (WestEd, 2000). We believe that using teacher self-efficacy as an organizing concept around which teacher in-service training can be designed and evaluated presents a viable and promising means for advancing toward this end.

Teacher Effectiveness and Self-Efficacy

Teaching by its very nature involves solving ill-defined problems that are complex, dynamic, and non-linear. Consequently teacher effectiveness is largely dependent on personal agency, or how teachers define tasks, employ strategies, view the possibility of success, and ultimately solve the problems and challenges they face. It is this concept of personal agency—the capacity of teachers to be self-organizing, self-reflective, self-regulating and proactive in their behavior—that underlies the importance of self-efficacy as a critical component in teacher effectiveness. The link between personal agency and a teacher's efficacy beliefs lies in personal experience and a teacher's ability to reflect on that experience and make decisions about future courses of action.

The Meaning of Self-Efficacy

The construct of self-efficacy refers to an individual's belief in his or her capability "to organize and execute the course of action required to manage prospective situations" (Bandura, 1997, p. 2). It is a task-specific belief that regulates choice, effort, and persistence in the face of obstacles and in concert with the emotional state of the individual. The task-specific focus of self-efficacy distinguishes it from more global concepts such as self-esteem or confidence. An individual's efficacy beliefs are built from diverse sources of information that can be conveyed vicariously through social evaluation as well as through direct experience (Bandura, 1986).

Personal efficacy judgements have been found to have substantial predictive power for performance across a range of tasks and behaviors (Stajkovic & Luthans, 1998). In addition, self-efficacy beliefs are seen as important elements in many current views of motivation (Graham & Weiner, 1996). They have also been found to mediate a number of individual variables relevant to teacher effectiveness such as job satisfaction, intention to quit the job, training and job adjustment in newcomers (Saks, 1995), and the connection between conscientiousness and ongoing learning (Martocchio & Judge, 1997). These and other characteristics of self-efficacy beliefs suggest the construct holds considerable promise for the improvement of teacher development efforts.

A Summary of Self-Efficacy Research

Teacher self-efficacy studies began over twenty years ago with the RAND researchers' evaluation of whether teachers believed they could control the re-

inforcement of their actions (Armor, Conry-Oseguera, Cox, King, McDonnell, Pascal, Pauly, & Zellman, 1976). The study of teacher self-efficacy has evolved over the years and has revealed a wealth of information indicating that self-efficacy may contribute to teacher effectiveness in a number of ways. First, evidence suggests that positive self-efficacy beliefs can increase the extent to which teachers are willing to transfer skills learned during in-service training to the classroom. For example, research on employee training has demonstrated that interventions aimed at raising self-efficacy with regard to specific future behaviors significantly increased the likelihood individuals will exhibit those behaviors on the job (Eden & Kinnar, 1991). Research with teachers has shown that those high in teaching self-efficacy tend to explore more alternative methods of instruction, seek improved teaching methods, and experiment more extensively with instructional materials (Allinder, 1994).

Research also suggests that self-efficacy beliefs can enhance a teacher's ability to respond effectively to stressful and challenging situations. For example, research has indicated that teachers with strong, positive efficacy beliefs about their teaching ability are more likely to take risks and use new techniques (Guskey, 1988; Stein & Wang 1988), and to experiment and persist with challenging strategies that may have a positive effect on student achievement (Hani, Czerniak, & Lumpe, 1996; Ross, 1992). These findings are consistent with research that has shown that individuals who have high, positive efficacy beliefs feel more challenged but less threatened by stressful conditions than those with low self-efficacy (Jerusalem & Mittag, 1995). There are also indications that efficacy beliefs can influence how hard and how long an individual will persevere at a particular task, how resilient people will be when faced with obstacles, and the amount of stress or anxiety they will experience in a given situation (Pintrich & Schunk, 1995).

There is evidence that self-efficacy beliefs can influence the extent to which a teacher in-service training program is ultimately effective in terms of the acquisition of knowledge and skills. For example, increases in self-efficacy have been linked to improved post-training performance for both cognitive tasks and interpersonal skills (Gist, Bavetta, & Stevens, 1990), both critical factors in teacher effectiveness. Research has also shown that individuals with higher levels of self-efficacy perform better in training (Gist, 1986) and that pre-training interventions aimed at raising task specific self-efficacy can significantly improve performance during training (Gist, Schwoerer, & Rosen, 1989). In addition, teachers high in self-efficacy have been found to exhibit higher levels of professional commitment (Coladarci, 1992), another factor suggesting they may be more motivated to attend, participate in, and learn in in-service training.

A number of studies have demonstrated that teachers with high levels of self-efficacy regarding their ability to teach can produce superior student achievement across a range of academic subjects. For example, Ross, Hogaboam-Gray, and Hanay (2001) demonstrated that students taking a computer skills course with a teacher who had high self-efficacy for computer skills instruction performed better academically than students with a teacher who had low self-efficacy for the same instruction. High self-efficacy teachers are also more apt to produce better student outcomes because they are more persistent in helping students who are having difficulty (Podell & Soodak, 1993; Soodak, & Podell 1993) and are less likely to be critical of students that make errors (Ashton & Webb, 1986). Teachers with strong self-efficacy beliefs have also been shown to be better organized, to engage in more effective planning (Allinder, 1994), and are more likely to set high performance standards for themselves as well for their students (Ross, 1995).

Finally, research suggests teacher self-efficacy has important implications for overall school effectiveness. Not only do teachers with high self-efficacy appear be more prevalent in higher performing schools (Olivier, 2001) but there is evidence that teacher self-efficacy may be a key mediating factor between a school's climate and professional culture and its educational effectiveness (Bobbett, 2001; Tshannan-Moran, Hoy, & Hoy, 1998). This raises interesting questions about the possibility of important and substantial cross-level efficacy-performance relationships in which individual self-efficacy levels of teachers may both be affected by **and** influence

the collective efficacy of departments or schools as a whole.

Self-Efficacy and Implications for the Design of In-Service Teacher Training

This brief review of research indicates there is a substantial body of evidence suggesting that self-efficacy can be an important predictor of teacher success in in-service training, a valuable process variable to be considered during training, and a desirable outcome of in-service training. As we have seen, the development of teacher self-efficacy can lead to a number of important outcomes. More importantly, the nature of self-efficacy further suggests the presence of a potentially valuable causal loop or reinforcing feedback cycle in which initial increases in self-efficacy beliefs lead to increased teacher effectiveness that in turn enhances subsequent self-efficacy beliefs (Bandura, 1991). This positive, cyclic efficacy-performance spiral is important because it strongly suggests that self-efficacy will be a critical component in the ongoing professional development of teachers, and that directing resources at enhancing teacher self-efficacy can initiate and sustain an ongoing process of individual improvement. We therefore believe the development of teacher self-efficacy through in-service training is important not only for immediate outcomes but also because such an approach lays the foundation for continuous improvements in teacher effectiveness.

Building Teacher Self-Efficacy Through In-Service Training

Incorporating a focus on the development of teacher self-efficacy represents an important evolution in the design of teacher in-service training that can improve teacher effectiveness and ultimately enhance student achievement. However, little has been written about how teacher professional development, particularly in-service training, can be re-oriented to include self-efficacy as an organizing construct or framework. The next section of this paper examines the implications that a focus on self-efficacy has for the design of in-service teacher training.

Social cognitive theory (Bandura, 1986) outlines four sources of self-efficacy: enactive mastery (e.g., past performance accomplishments resulting from previous experiences or training), vicarious experience, social/verbal persuasion such as that resulting from collaboration and performance-related corrective feedback, and physiological arousal including changes in emotional states such as anxiety, fear, or positive anticipation (Bandura, 1982).

Enactive mastery is perhaps the most influential source of efficacy beliefs because it is experiential in nature and is rooted in past performance accomplishments (e.g., training or prior on-the-job experiences). The value of enactive mastery is that, when faced with similar situations, individuals rely on perceptions of past mastery to produce information that is used to make judgments about present capabilities. Thus, for example, prior teaching successes, particularly in the face of adversity, help establish and strengthen positive efficacy beliefs. Less successful past performance may create doubts about personal ability and could undermine self-beliefs of current capability (Wood & Bandura, 1989b).

The implications of enactive mastery for teacher in-service are relatively straightforward: the goal should be to design and implement in-service training that assures teachers will get adequate opportunities to master new teaching techniques and content before they are expected to implement them in the classroom. Efficacy theory and research suggest some ways of doing this may be more effective (in terms of developing efficacy beliefs) than others. For example, we know that providing mastery experiences in training typically involves the use of skill practice with a focus on how to best use practice to generate both learning and subsequent skill applications. The 'practice' component of many in-service training programs has been criticized as either non-existent or of limited relevance (Garet et al., 1999). A focus on efficacy development suggests this component needs to be strengthened significantly. We suggest the enactive mastery component of in-service training is of critical importance and that the application of learning during training should be both well planned and challenging. When teachers are challenged in using their learning during training (but can still do so successfully) they are likely to develop stronger efficacy beliefs and are more likely to use that learning when they return to the class-

room (Schmidt & Bjork, 1992). In addition, task variety and ordering will be important elements in training settings in which teachers are pushed to use new skills immediately. Varying the order in which tasks are practiced and increasing the variations (e.g., form or context) of that task can create intentional challenges that deepen learning (through the increased information processing requirements associated with these variations) and foster task-related self-efficacy. Suggestions such as these are generally consistent with the recognition that a fundamental requirement for effective teacher training is the active participation of learners in the learning process through interaction with peers and instructors, connecting learning with past and current experience, and the active application of new learning (Sileo, Prater, & Luckner, 1998).

The use of simulations represents another potential design element that focuses on providing mastery experiences as a means of learning that has the potential to increase teacher self-efficacy. Simulations have been used in a wide variety of training programs (Jacobs & Dempsey, 1993) including preservice and in-service teacher training. For example, Strang and colleagues have developed and studied computer-based simulations for nearly 20 years to help teachers develop a variety of knowledge and skills. These have ranged from simulations developed to provide effective and timely lesson-related feedback to students (Strang & Loper, 1983), pacing lesson activities (Strang, Badt, Loper, & Richards, 1985), classroom management (Murphy, Kauffman, & Strang, 1987), to understanding ethnic and gender issues in the classroom (Strang & Yeh, 1995). Simulations such as these typically combine software, computer technology, and learning principles in ways that are consistent with the development of positive efficacy beliefs. They stress hands-on, realistic experiences that are coupled with clear and effective feedback. Both of these factors are central to the development of efficacy beliefs. The former because it provides relevant mastery experiences and the latter because the cognitive processing of behavioral feedback provides "confirmatory behavioral evidence" (Lindsley, Brass, & Thomas, 1995) that can influence subsequent task performance.

Other types of simulations also hold promise as vehicles that may contribute to the development of teacher efficacy beliefs. For example, there is increasing interest in helping pre-service and in-service teachers develop skills that will enable them to teach from a more global and multicultural perspective. A number of simulations have emerged from the field of cross-cultural training that could be used to develop teacher efficacy beliefs along these lines. Examples include Bafa Bafa (Shirts, 1973), Barnga (Thiagarajan, 1984), the Albatross (Gouchenour, 1977) and others that have enjoyed some application in teacher training contexts (e.g., see Cannella & Reif, 1994). These simulations typically involve role-plays that encourage participants to interact verbally or non-verbally to solve problems or achieve goals, followed by in-depth discussions that help participants process what they observed, felt, and learned. Again, the active experience coupled with subsequent cognitive processing of behavioral information lays a strong foundation for the development of positive efficacy beliefs.

In general, the computer-based and experiential simulations such as the ones discussed here can be effective in the development of teaching-related efficacy and transfer of the complex skills like those needed for effective teaching. On both counts, their value lies not in the extent to which they closely mimic the application environments, but their ability to include the most important stimulus attributes, address job-relevant learning objectives, and involve specific, positive feedback and processing of behavioral information during and after the experience.

A second source of self-efficacy information, vicarious experience, also suggests various options for the design of teacher in-service training. Vicarious experience capitalizes on the notion that an individual's efficacy beliefs can be enhanced through the observation of a significant model engaged in an activity that they perceive as being aligned with their needs and capabilities. Thus, part of one's vicarious experience involves the social comparisons made with other individuals. These comparisons provide powerful referents useful in the development of self-perceptions of competence (Schunk, 1983). This suggests that efficacy-focused in-service training should include activities that provide teachers with opportunities to observe other teachers

successfully **and** unsuccessfully engaging in teaching behaviors that they will be expected to adopt. This is important, first, because the cognitive processing of positive and negative performance information (i.e., observing both success and non-success) enhances an individual's ability to engage in analysis and self-correcting patterns of behavior. Second, recent interest has been focused on collaborative training techniques that draw on the features of small group interaction in ways that benefit the learning process. Collaborative training protocols, such as the use of dyads or triads to maximize learning through peer interaction, have been shown to provide vicarious learning opportunities that can take the place of hands-on mastery experiences (Shebilske, Gawlick, & Gluck, 1998). These approaches not only represent a potentially important source of self-efficacy but also an avenue through which the efficiency of teacher in-service training could be improved. For example, there is evidence that such techniques can reduce instructional time and resources by as much as one-half (Shebilske, Regian, Arthur, & Jordan, 1992).

Although a relatively less robust source of efficacy information than mastery or vicarious experiences, verbal persuasion also represents a potentially valuable tool for cultivating the efficacy beliefs of teachers. The notion here is that the communication of verbal judgements from respected or influential others can affect an individual's self-efficacy beliefs. This kind of communication should not be confused with superficial, hollow praise for the sake of bolstering self-beliefs. Bandura (1986), for example, cautions against the use of artificial praise and advocates only sincere and valid verbal appraisals. In fact, it is usually easier to weaken self-efficacy beliefs through negative appraisals than to strengthen such beliefs through positive encouragement. Verbal persuasion can thus change self-efficacy beliefs for the better only when the behavior-related information is both compelling and is delivered in a manner that disrupts the preexisting disbelief in one's capabilities (Bandura, 1997).

Verbal persuasion as a source for building positive efficacy beliefs is most easily seen in informal kinds of learning that are characteristic of many schools recognized for their outstanding professional development activities. For example, Killion (1999) notes that the amount of informal learning in schools that have won national awards for model professional development is outstanding. In these schools, conversations, collaborative planning sessions, team meetings, peer observations, mentoring relationships, and a variety of other unplanned collegial encounters provide valuable avenues for learning and for receiving and providing the kind of verbal support and encouragement that can effectively build positive efficacy beliefs. Principles also have a role to play here as supporters and reinforcers of teacher learning. By setting high expectations, encouraging teachers, and fostering a helpful, collegial culture they can maximize the capacity of positive verbal judgements to shape a teacher's efficacy beliefs.

Because self-efficacy beliefs are intertwined with physiological states (each are highly dependent on one another), physiological states such as anxiety, stress, and fatigue provide other potentially important sources of efficacy information. For example, strong emotional reactions to a task provide cues about the anticipated success or failure of the outcome (Pajares, 1996). The implication for in-service training is the apparent need to provide a safe environment in which teachers feel they may learn in a non-threatening, cooperative manner. Providing a safe, non-threatening, supportive environment is as simple as allowing teachers time to interact and establish rapport with each other and with their trainers that facilitates an environment that is risk free, but still allows a free flow of ideas, opportunities for success and feedback. Skilled efficacy builders—colleagues, staff, and administrators—do more than convey positive and compelling feedback: they work to structure learning and application activities that bring about success. This type of environment will enhance self-efficacy if teachers feel that mistakes they make in training will not reflect badly upon them or result in punitive actions, and that the learning experience will improve their professional knowledge and skills.

Award-Winning Professional Development Schools

Model Professional Development Award-win-

ning schools (Killion, 1999) exhibit a number of features that are consistent with a focus on self-efficacy as it has been described here. One key element is that they all have effective systems that support the development of teacher efficacy. This support is demonstrated, first, through focused and clearly communicated school improvement goals. School improvement goals that are well defined and understood effectively focus professional development activities while providing sources of motivation and commitment for teachers. When teachers, administrators, and support staff understand and share responsibility for goals and share accountability for results they are in an ideal position to provide resources, ideas, and suggestions and support one another in the accomplishment of those goals. In short, such goals provide a sound foundation upon which teaching-related efficacy can be built.

Second, most award-winning schools require teachers to develop individual professional development plans. Such plans have a tremendous potential to enhance efficacy beliefs because they require teachers to identify in specific terms what knowledge, skills or abilities they need to improve, how they will do so, and how they will recognize when improvement has been achieved. In short, individual professional development plans foster the development of self-efficacy because they provide the framework within which teachers can get clear information about the outcomes and pattern of progress they are making as they strive to master new knowledge and skill sets. This information is the substance from which strong efficacy beliefs are built.

Third, schools with award-winning professional development programs have built integrated systems of feedback and support that provide teachers with clear and compelling information about skill improvements. This includes frequent and regular progress reviews with principals, peer evaluation teams that observe and provide written feedback about performance improvements (often facilitated by electronic communication), and built-in time within the teacher workday for collaboration, feedback, and learning.

Finally, award-winning schools have elements in place that help stabilize positive efficacy beliefs and build the cyclical and amplifying relationship we know exists between efficacy beliefs and performance. In these schools, teachers have opportunities to gain recognition for their developmental gains and expertise, and to share what they have learned with colleagues. For example, in most of these schools teachers can earn salary increases, advancement credits, or stipends for professional development success. Many also provide opportunities for teachers to gain special recognition by conducting workshops for colleagues both within and outside their school or by attending or presenting at state and national conferences.

In short, schools with high-performance professional development activities have integrated a number of key dimensions that support and reinforce skill development and efficacy beliefs. These include well-defined school goals, individual professional development plans that are aligned with those goals, and the presence of effective feedback and reward systems that work to stabilize efficacy beliefs and build positive efficacy-performance cycles.

Summary and Conclusions

School districts and administrators now under pressure to select or design models of professional development that are drastically different from past approaches are seeking solid research data and practical applications to meet the new demands. It is the contention of this paper that the growing demands for accountability and results require innovative approaches to teacher in-service that are theoretically sound and supported by research. We have tried to demonstrate why we believe that the self-efficacy construct represents a viable organizing concept for the development of new and better professional development models. Self-efficacy is a central feature of social learning theory and its role as a potent intervening factor between learning and subsequent performance has been established by research in a number of contexts, including teacher development. There is also substantial research indicating that the self-efficacy construct can provide schools and staff development specialists with the tools they need to design effective teacher training, improve teacher competence, and by extension enhance student outcomes.

We have suggested that the development of self-efficacy should become a central consideration in the design and development of in-service training plans and methods as well as a measured outcome of in-service training and other teacher development activities. There is some evidence this may be occurring. The value of self-efficacy as an important variable in teacher effectiveness is implicitly reflected in The National Staff Development Standards (NSDS) (1994; 1995a; 1995b). These standards do not specifically identify self-efficacy as a major focal point for designing staff development efforts or an important outcome metric of those efforts. But, as with the Model Professional Development Award schools, they do incorporate ideas, processes, and activities that address some of the specific sources of self-efficacy. For example, the NSDS specifically calls for follow-up of in-service instruction with a variety of strategies including modeling, peer coaching, collegial support groups, mentoring, study groups, as well as audio-taping and video-taping. From a theoretical perspective, the nature of these activities is consistent with an orientation to teacher in-service that fosters positive efficacy beliefs. From a practical perspective, they can all be implemented in ways that offer an opportunity to specifically attend to and enhance the efficacy beliefs of teachers.

We believe that self-efficacy, when used as a pivot point in the design of in-service training and professional development activities, can provide a sound theoretical framework for understanding the why's and how's of teacher development. It also points to the potential value of a set of practical tools —including feedback, various instructional design elements, and integrated support systems—that can be used to foster positive efficacy beliefs, improve teacher competence, and enhance student outcomes.

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