Changes in Teacher Efficacy During the Early Years of Teaching

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The role of self-efficacy in teaching and learning continues to interest researchers and practitioners alike. Self-efficacy (Bandura, 1977) has proved to be a powerful force in learning and motivation. Teacher efficacy--teachers' confidence in their ability to promote students' learning--was identified almost 25 years ago as one of the few teacher characteristics related to student achievement in a study by the RAND corporation (Armor et al., 1976). Since that early study, teacher efficacy has been associated with such significant variables as student motivation, teachers' adoption of innovations, superintendents' ratings of teachers' competence, teachers' classroom management strategies, time spent teaching certain subjects, and teachers' referrals of students to special education. Student self-efficacy plays a key role in classroom learning and is more significant than general self-concept or self-esteem in predicting achievement. Yet much remains to be learned about this important aspect of efficacy and how it develops in teachers.

Some of the most powerful influences on the development of teacher efficacy are mastery experiences during student teaching and the induction year. Previous research has found that some aspects of efficacy increase during student teaching while other dimensions may decline (Hoy & Woolfolk, 1990). Bandura's theory of self-efficacy suggests that efficacy may be most malleable early in learning, thus the first years of teaching could be critical to the long-term development of teacher efficacy. Yet few longitudinal studies exist that track efficacy across these early years. This paper reports the results of an ongoing study of changes in teacher efficacy from entry into a preparation program through the first year of actual teaching. Multiple quantitative assessments of efficacy were used including items developed for the RAND studies, Gibson and Dembo's Teacher Efficacy Scale, Bandura's Teacher Self-Efficacy Scale, and an instrument designed to reflect the specific context and goals of the preparation program studied.

The Development of Teacher Efficacy

Bandura (1977, 1997) 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, persuasion 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).

A powerful source of social influence for new teachers is the school setting itself.

Organizational Socialization

Organizational socialization is the process by which the requisite role orientations of offices, statuses, and positions is acquired by organizational participants. Although formal organizations do not affect all the basic needs of their members, few members can escape the formative influence of the values, expectations, incentives, and sanctions of the organization. Organizations shape orientations of personnel through a variety of mechanisms designed to make personal beliefs and values conform to the norms of the organization. Moreover, the period before and shortly after new participants join an organization is highly significant in terms of socialization; as Etzioni (1975, p. 246) notes, it is a time "when efforts to induce consensus between newcomers and the rest of the organization are comparatively intense."

Public school teachers go through a series of phases in their socialization into the profession. Lortie (1975) notes that early teacher socialization occurs through the internalization (largely unconscious) of teaching models during the many years that prospective teachers spend as students in close contact with their own teachers, an "apprenticeship of observation." Socialization to professional norms and values continues during college preparation, an environment that stresses ideal images and practices (Hoy, 1968; Hoy & Woolfolk, 1990). There is some question as to the significance of formal training at the university in altering the traditional teaching perspectives developed during the prospective teacher's apprenticeship of observation (Lortie, 1975; Petty & Hogben, 1979; Zeichner, 1981). There is agreement, however, that a significant phase of socialization begins when students enter the actual world of teaching as practice teachers. Here a reality shock is likely (Corcoran, 1981; Veenman, 1984; Weinstein, 1988). Neophytes are confronted with a set of organizational norms and values that

are usually at variance with those espoused by their college professors; that is, the ideal images of college are in conflict with the norms and values of most veteran teachers. With experience, many teachers come to oppose permissiveness and take on a more custodial pupil control ideology than they held in their early years of teaching (Willower, Eidell, & Hoy, 1967; Packard, 1988). Indeed, in some schools good control and good teaching are equated.

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. 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. General teaching efficacy appears to increase during college coursework, then 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.

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.

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. Evidence suggests that input during initial training has a different impact than input received after teachers are in the field. 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 impact of different teacher preparation programs and practices on efficacy. One purpose of this study was to initiate such a longitudinal study.

The Measurement of Teacher Efficacy

The construct of teacher efficacy has been conceptualized in a number of ways, but the most pervasive is derived from two Rand Corporation evaluations of innovative educational programs funded by the Federal Elementary and Secondary Education Act (Armor et al., 1976; Berman et al., 1977). In these studies, teachers' level of efficacy was determined by computing a total score for their responses to two 5-point Likert scale items: (a) "When it comes right down to it, a teacher really can't do much because most of a students motivation and performance depends on his or her home environment," and (b) "If I try really hard, I can get through to even the most difficult or unmotivated students." The theoretical basis for these items was Rotter's (1960) social learning theory.

Gibson and Dembo. In an attempt to improve on the validity and reliability of the Rand two-item scale, Gibson and Dembo (1984) developed a 30-item scale that yields two factors consistent with the Rand items. These researchers turned to Bandura's cognitive social learning theory of self-efficacy to interpret the two factors. According to Bandura (1977), motivation is determined by people's judgments of their capability to execute particular courses of action (called efficacy expectations) and their beliefs about the likely consequences of those actions (called outcome expectations). Gibson and Dembo labeled their first factor *personal teaching efficacy* (alpha = .75), and assumed this factor assessed self-efficacy. The second factor, *teaching efficacy* (alpha = .79), was assumed to capture outcome expectancy. Our research indicates, however, that this second dimension of efficacy does not represent an outcome expectation as defined by Bandura (1986). Instead it appears to reflect a general belief about the power of teaching to reach difficult children and may have more in common with teachers'

conservative/liberal attitudes towards education. For this reason we have labeled the dimension, general teaching efficacy (GTE). The second dimension appears to be the more accurate indicator of the teacher's personal sense of efficacy and is labeled personal teaching efficacy (PTE) (Hoy & Woolfolk, 1993; Woolfolk & Hoy, 1990, Woolfolk, Rosoff, & Hoy, 1990).

Results of studies using either the Rand items or the Gibson and Dembo scale have consistently found that the two dimensions of efficacy, however conceptualized, are independent. Thus, individuals who believe that teaching is potentially powerful factor in students' learning may believe either that they are effective or that they lack the ability to make a difference with their own students. Other patterns are possible as well. Teachers may believe that teaching in general can have little impact on students and that they are (or are not) exceptions to this rule (Anderson, Greene, Loewen, 1988; Burley, Hall, Villeme, & Brockmeier, 1991; Hoy & Woolfolk, 1993; Moore & Esselman, 1992; Saklofske, Michaluk & Randhawa, 1988; Soodak & Podell, 1993; Woolfolk & Hoy, 1990). 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 .25.

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.

They found reliabilities for both subtests within the range found for the longer versions (alpha .77 for PTE, .72 for GTE).

Bandura's Teacher Self-Efficacy Scale. In the midst of the confusion about how to best measure teacher efficacy, Bandura offered his own Teacher Self-Efficacy Scale. Bandura (1997) pointed 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 constructed a 30-item instrument. This measure attempts to provide a multi-faceted picture of teachers' efficacy beliefs without becoming too narrow or specific. Very little research is available, however, using Bandura's scale.

Deciding how to measure teacher efficacy presents thorny issues (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). 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. In response to these issues of context specificity, we are developing an instrument to assess efficacy that is grounded in the situational affordances and demands confronting the prospective teachers in the current study, as described in the methods section.

The purposes of this study were to a) assess changes in efficacy during student teaching and the first year of teaching, b) identify factors that might be related to changes in efficacy, and c) compare measures of teacher efficacy in order to improve the measurement of this construct.

Method

The study was a longitudinal investigation that assessed the efficacy of prospective and novice teachers at the beginning of their preparation program, at the end of student teaching, and after their first year of employment as a teacher. All the members of the 1997-1998 elementary education Matster's of Education cohort at a major Midwestern university participated in the study.

Program and Participants

Participants were 55 prospective teachers in the two cohorts (n=27 and 28) of the Master's of Education initial teaching certification program. In keeping with the standard policy of the College of Education, students were randomly assigned to the two cohorts after being accepted into the teacher preparation program. Two students in the first cohort did not participate in either the first or second data collection, and thus could not be included in the study, bringing the number of participants in the first two phases of the study to 53. Thirty-three participants returned their questionnaires at the end of their first year of teaching, but four of these did not teach during that year, so their responses were not included in the phase three teaching year data. Thus the final participant group included 53 students who provided responses at the beginning and end of their preparation programs, 29 of whom went on to complete a year of teaching and return useable questionnaires. There were 38 females (71.7%) and 15 males (28.3%) in the group. Three of the females and two of the males were African American. The average age of the females was 24.7 (SD =5.36) and of the males was 29.9 (SD = 8.85). Eight of the participants (15%) were married.

The preparation program is based on a Holmes Group Professional Development School model. All students enter with an undergraduate degree and complete a Master's of Education in five quarters. Students move through their preparation as a cohort, taking classes and participating in all program activities together. The contents of the program included courses in PE/Health, Art Methods, Music Methods, Child Development/ Learning, Technology, Educational Psychology/Pedagogy, Assessment, Math Methods, Science Methods, Social Studies Methods, Children's Literature, Literacy Methods, Equity, and School & Society. Students are in school placements for most of the year, moving from visiting three days a week in the fall to 10 weeks of full time student teaching during the winter and spring. The program emphasizes diversity and preparing teachers for urban settings.

Instrument and Procedures

Students completed three instruments to assess efficacy and also supplied background information about themselves and the schools in which they taught during their first year.

Gibson and Dembo short form. Factor analyses of all versions of the Gibson and Dembo Scale consistently have produced two independent dimensions of general teaching efficacy (GTE) and personal teaching efficacy (PTE) (Hoy & Woolfolk, 1990; Woolfolk & Hoy, 1990). Students in the current study completed a 10-item version of the Teacher Efficacy Scale (Gibson & Dembo, 1984) adapted by Woolfolk and Hoy (1993). This scale consisted of four PTE, four GTE items, and the two original Rand items. These items were selected because they had the highest factor loadings in the earlier research. Example GTE items are: "If students aren't disciplined at home, they aren't likely to accept any discipline" and "If parents would do more for their children, I could do more." Example PTE items are: "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" and "When I really try, I can get through to most difficult students." Response to each item is along a 6-point Likert scale from "strongly agree" to "strongly disagree." As shown

in Table 1, in the current sample, alpha coefficients of reliability were .73, .79, and .68 for PTE across the three administrations and .78, .78, and .84 for GTE. For both the dimensions, the higher the score (the closer to 6), the more efficacious.

Bandura Teacher Self-Efficacy Scale. Bandura's 30-item scale has 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." Sample items include: "How much can you do to get through to the most difficult students?" "How much can you do to support learning when there is lack of support for the home?" "How much can you do to control disruptive behavior in the classroom?" "How much can you do to make parents comfortable coming to school?" In the current study, based on the average score for the entire 30-item scale, the alpha coefficients of reliability were .94, .95, and .92 across the three administrations (See Table 1). All items are scored such that a higher score indicates greater efficacy.

Program-specific measure of efficacy. In an attempt to identify an appropriate level of specificity for assessing efficacy in our preservice teacher preparation program, we surveyed all the instructors who worked with the prospective teacher cohorts, asking the instructors what students should be able to do after completing the coursework. After removing redundancies, the result was a list of 32 teaching skills such as manage classrooms, evaluate student work, use cooperative learning approaches, teach basic concepts of fractions, and build learning in science on children's intuitive understandings. We then designed a questionnaire, named the OSU Teaching Confidence Scale, that asked students to rate on a 6-point scale how confident they were in their ability to accomplish each skill, the higher the score, the more confident. In the

current study, based on the average score for the entire 32-item scale, the alpha coefficients of reliability were .97, .95, and .70 across the three administrations (see Table 1).

Data collection. There were three phases of data collection: a) Phase 1 during the first quarter of their teacher preparation, before most course work had been completed; b) Phase 2 at the end of the preparation program after student teaching was completed; c) Phase 3 at the end of their first year of actual teaching. The first two data collections took place in classes during the teacher preparation program. Students completed all forms anonymously. They were not required to participate and were assured that no part of their program would be affected by their answers to the questions. The final data collection was completed through the mail. Participants who did not return their first mailing were sent a second request.

Results

In order to answer the research questions, we first created variables based on the participant's responses. Factor analyses of the Gibson and Dembo 10-item scale yielded the two factors of GTE and PTE found in previous research. Thus two scales were created for these measures by calculating the means of the five items for each scale. Items were coded such that the higher the score (closer to 6), the higher the efficacy. Factor analysis of the Bandura instrument did not yield any interpretable factors, so scores for this assessment of efficacy were based on the mean of all 30 items. Items were coded such that the higher the score (closer to 9), the higher the efficacy. This 30-item scale proved very reliable with alphas of reliability .92 or higher for each administration in this study. The OSU scale yielded three possible factors, discussed below, but again, the high reliability of the total measure (alphas of .97, .95, and .70) and high intercorrelations among the three factors led us to use the total score (mean of the 32 items) for our main analyses. Items were coded such that the higher the score (closer to 6), the higher the efficacy.

Finally, participants were asked to rate several aspects of the resources and support in their first year teaching assignment (quality of teaching resources provided, support from colleagues, support from administrators, support from parents, support from the community). Factor analysis of these responses yielded one factor, so an index of *support* was created by calculating the mean of these five items. Items were coded such that the higher the score (closer to 6), the higher the efficacy. Reliability for this support scale was .76.

Changes in Efficacy

The means and standard deviations for each of the four efficacy measures across the three phases of the study are given in Table 2. For each of these four measures, t-tests for paired samples indicate that the changes from the beginning of the program to the end of student teaching (phase 1 to phase 2) represented significant increases in efficacy. From the end of student teaching to the end of the first year of teaching (phase 2 to phase 3), the decreases in the Bandura, GTE, and PTE scales were significant, but the slight decrease in the OSU scale was not significant. From entry into the program to the end of the first year of teaching (phase 1 to phase 3), the increases in efficacy indicated by the PTE and OSU measures were significant. Thus efficacy as assessed by the OSU measure rose during teacher preparation and held through the first year of teaching. Efficacy as assessed by the PTE scale rose and then fell (but still remained significantly above the entering level), while efficacy as assessed by the Bandura and GTE scales rose significantly during preparation, but then after the first year of teaching returned to levels roughly equal to entering scores. A plot of individual cases for the Bandura measures shows that this pattern of increase then reversal holds for 22 of the 29 cases. Of the seven not fitting this pattern, four decreased and three increased in efficacy, though not dramatically, over the three time periods.

Measures of change. To examine the correlates of change in efficacy during the first year of teaching, we calculated change scores for the Bandura, OSU, GTE, and PTE scales.

Change was calculated as phase 3 score minus phase 2 score, so a positive change score indicates that efficacy increased during the first year of teaching, the larger the change score, the greater the increase in efficacy. As indicated in the Table 3, change in the Bandura measure is correlated with change in all the other efficacy scales.

Correlates of change. To examine the relationships of changes in efficacy to other participant perceptions of success and to contextual factors, the change scores were then correlated with:

- the participants' ratings of their own **success** during the first year compared to other first year teachers in similar situations,
- their **satisfaction** with their professional performance in the first year,
- assessment of the **difficulty** of their teaching assignment ("Compared to other first year teachers' classrooms, how challenging was your teaching assignment?"),
- the **support** available (the mean rating of support by the administration, colleagues, parent, community, and quality of teaching resources),
- the **SES** level of their classroom (defined by the percent of students *no*t on free and reduced lunch—the higher the score, the higher the SES of the class),
- the number of days the participants were **sick** during the first year of teaching.

Table 3 shows correlations between the above participant perceptions and changes in efficacy. Satisfaction with performance in the first year was correlated with changes in efficacy as assessed by the Bandura and GTE scales (.43 and .48 respectively). Surprisingly, perception of success in relation to other teachers in similar first year settings was not related to changes in efficacy, however assessed. Instead, perception of success was correlated with the SES of the class (-.41, the lower the SES of the class, the higher the assessment of success) and the number of days that the teacher was sick (-.57, the greater the success, the fewer the sick days). Changes in efficacy as assessed by the Bandura, GTE, and PTE measures were correlated with level of

support (.38, .37, and .37 respectively). As perceptions of support increased, efficacy also increased. In the first year, number of days sick was correlated with changes in efficacy as assessed by the OSU scale (-.40), the greater the increase in efficacy, the fewer the sick days. Finally, the greater the perceptions of support in the first year, the less difficult the teaching assignment was rated (r=-.56). Support was also correlated with the SES of the class, the higher the SES, the greater the perceptions of support (r=.68).

Measures of Efficacy

In general, the four measures of efficacy revealed similar patterns and changes in efficacy over time. All were highly reliable, even with our small sample. Principal-axis factoring of the Bandura scale did not reveal subscales consistent with the seven sections of the instrument, but reliability for the 30-item scale was high (above .90).

We performed a principal-axis factor analysis of the phase 1 administration of the OSU scale using Kaiser's criterion of eigenvalues greater than 1 (Kaiser, 1974) in combination with Cattell's scree test (Cattell, 1965) to determine the number of factors (Kim & Mueller, 1978). Three factors emerged and accounted for 70% of the variance. Some of the items loaded on two or all three factors, so these items were dropped and the remaining items analyzed into three factors with varimax rotation. Factor loadings of the final set of items are given in Table 4. The three factors seem to represent confidence to teach math and science, confidence to use instructional innovations, and confidence to manage classrooms. Using items for the phase 1 administration of the OSU measure, subscales were created by calculating the means of the items that loaded on each factor. Table 5 gives the means, standard deviations, reliabilities and intercorrelations of these scales. As shown

Discussion

The picture that emerges from these findings is that efficacy, however assessed rose during teacher preparation, but fell with actual experience as a teacher. The only exception to

this pattern came with the program specific OSU measure that asked teachers to agree or disagree with 32 statements of the form, “I am confident in my abilities to…” The abilities listed represented teaching activities and skills. Here efficacy rose and held. It is possible that the teachers did feel capable of executing the 32 actions described in the OSU measure, but still were not sure that these activities would lead to success as a teacher. Change in efficacy assessed by this measure did not correlate with self-perceived teaching success or satisfaction with professional performance. In fact, only the number of days sick correlated with OSU Confidence change, the greater the increase in efficacy the fewer the sick days. Other factors related to the number of sick days were the perceived difficulty of the teaching assignment, self-perceived success, and satisfaction with professional performance.

Previous research has found increases in personal efficacy and decreases in general teaching efficacy during student teaching (Hoy & Woolfolk, 1990). For the prospective teachers in the Hoy/Woolfolk sample, however, student teaching was the first real experience in the classroom. Prospective teachers in the current study were in a year-long internship accompanying their course work, so their immersion into teaching was gradual, until they assumed responsibility for their own class the following year as an employed teacher. Thus the current sample probably had more support and buffering during their student teaching experience. When this support was withdrawn, efficacy fell. In fact, level of support during the first year of teaching correlated with positive changes in efficacy as assessed by the Bandura and PTE measures, so there is some evidence that support may be important in protecting efficacy during early teaching. These findings are consistent with Burley, Hall, Villeme, and Brockmeier (1991) and Hall, Burley, Villeme, and Brockmeier (1992) who found that 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. A task for future research is to identify characteristics of the schools that might affect the development of beginning teachers' beliefs and

to map relationships between specific school characteristics and teachers' sense of efficacy. 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).

In terms of the assessment of efficacy, Bandura's instrument correlated with all of the other three measures of efficacy at all three phases of the study. The scale did not factor into interpretable subscales, so it is difficult to describe what exactly is being measured. We did try create a subscale from Bandura's nine instructional self-efficacy items (alpha=.84) and found that this subscale also correlated positively with GTE, PTE, and OSU. A larger sample will be needed to further examine these instruments.

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Table 1

Correlations of Efficacy Measures and Reliabilities for Phases 1, 2, and 3.

Phase 1 Measures (n=53)	BAN	GTE	PTE	OSU
Bandura (BAN)	*.94*			
GTE	*.31**	*.78*		
PTE	.53**	.26	*.73*	
OSU	.52**	.21	.60**	*.97*

Phase 2 Measures (n=53)	BAN	GTE	PTE	OSU
BAN	*.95*			
GTE	.38**	*.78*		
PTE	.62**	.45*	*.79*	
OSU	.61**	.31*	.71**	*.95*

Phase 3 Measures (n=53)	BAN	GTE	PTE	OSU
BAN	*.92*			
GTE	.61**	*.84*		
PTE	.56**	.50**	*.68*	
OSU	.39*	.17	.31	*.70*

*p< 05; **p< l.01

Note. Reliabilities in italics on the diagonals.

Table 2

Means of Four Measures of Efficacy at Three Phases in Teaching

Measures	Phase 1: Beginning *of Preparation*		Phase 2: After *Student Teaching*		Phase 3: After First *Year of Teaching*	
	M	**SD**	**M**	**SD**	**M**	**SD**
Bandura	6.03_a	.82	6.60_b	.95	5.91_a	.90
GTE	3.85_a	1.03	4.50_b	1.05	3.84_a	1.05
PTE	4.12_a	.73	5.04_b	.66	4.75_c	.71
OSU	4.14_a	.96	5.17_b	.57	5.03_b	.66

Note. Responses to Bandura were on a 9-point scale (1 = *Nothing*, 9 = *A great deal*). Responses to GTE, PTE, and OSU were on a 6-point scale (1=Disagree, 6=Agree). Means in the same row that do not share the same subscript differ at $p < .05$ in a paired-samples t-test.

Table 3
Means, Standard Deviations, and Correlations Matrix for Efficacy Change and Context Measures: Phase 3 Data (n=29)

Variable	M	SD	Bch	GTE ch	PTE ch	OSU ch	SUC	SAT	DIFF	SUPT	S
Bandura change (Bch)	-.68	.95	-								
GTE change (GTEch)	-.66	1.03	.64**	-							
PTE change (PTEch)	-.28	.77	.45*	.38	-						
OSU change (OSUch)	-.13	.60	.45*	.41*	.36	-					
SUCCESS (SUC)[a]	7.38	1.35	.21	.22	.01	.34	-				
Satisfaction (SAT)[a]	6.69	1.75	.438	.48**	.23	.32	.69**	-			
Difficulty (DIFF)[a]	6.43	2.08	.03	.16	-.04	.02	-.12	-.15	-		
Support (SUPT)[a]	5.28	1.52	.38*	-.02	.37*	.18	.07	.21	-.55**	-	
SES[b]	45.10	35.74	.28	-.11	.17	.05	-.41*	-.23	-.53**	.68**	-
Sick Days (SICK)	3.22	3.71	-.35	-.33	-.02	-.40*	-.57**	-.45*	.41*	-.31	-.1

*p< .05; **p< .01

Note. a. Range = 1-9; b. Range = 1 to 100% of class *not* free and reduced lunch.

Table 4

Factor Item Loadings for the OSU Teaching Confidence Scale: Three Factor Varimax Solution: Phase 1 Data (n=53)

	Item	Factor Loading
	Items loading on Factor 1 (Math/Science)	
18.	give students concrete experiences in learning mathematics	.92
21.	connect mathematics to literature	.82
19.	teach basic concepts of fractions	.81
20.	teach algebra	.78
16.	develop number sense in children	.73
22.	facilitate students' communication about mathematics (through journals, discussion, etc.)	.69
17.	locate resources for planning mathematics lessons	.68
24.	incorporate different activities and curricula into science teaching	.65
25.	implement a variety of science teaching strategies that incorporate inquiry-based learning	.60
	Items loading on Factor 2 (Innovative Teaching)	
7.	develop an assessment rubric	.78
29.	use media to support teaching and learning	.74
8.	determine the academic needs of my students	.70
31.	understand the impact of cultural diversity on classroom content, context, and instructional strategies.	.70
6.	use a variety of assessment techniques	.69
30.	evaluate software for teaching and learning	.63
4.	integrate language arts teaching	.55
2.	select appropriate literature for thematic teaching	.53
	Items loading on Factor 3 (Classroom Management)	
9.	manage classrooms	.69
14.	establish a feeling of community in my classes	.67
11.	teach effectively in an urban school	.61
12.	facilitate class discussions	.59

Table 5

Means, Standard Deveations, Correlations, and Reliabilities of Three Subscales of the OSU Teaching Confidence Scale

Subscale	M	SD	Innovate	Manage	Math
Innovate	4.24	1.00	*.91*		
Manage	4.50	.81	.53**	*.88*	
Math	4.17	1.12	.71**	.60**	*.95*

** p< .001

Note. Score range for all subscales is 1 to 6 (6 = confident in my ability). Reliabilities in italics on the diagonal.