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An Interview With Anita Woolfolk: The Educational Psychology of Teacher Efficacy

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Anita Woolfolk Hoy received her BA in Psychology in 1969 and her PhD in Educational Psychology both from the University of Texas at Austin. She worked briefly as a school psychologist in Texas, and then joined the faculty in Department of Educational Psychology of the Graduate School of Education at Rutgers University in 1979. She remained there until 1993 and served as Chair of the department from 1990 to 1993. Presently, she is a Professor in the College of Education at The Ohio State University. Her professional offices include Vice-President for Division K (Teaching and Teacher Education) of the American Educational Research Association and President of Division 15 (Educational Psychology) of the American Psychological Association. She has published research in the areas of student perceptions of teachers, teachers' beliefs, student motivation, and the application of educational psychology to teaching. Her text, *Educational Psychology* (Allyn and Bacon) is in its 9th edition and is the most widely read introduction to educational psychology in the field (Woolfolk, 2004). She is married to Wayne K. Hoy, the Novice Fawcett Chair in Educational Administration at The Ohio State University. Together they conduct research on teachers' sense of efficacy and school efficacy. In this interview, Woolfolk Hoy comments on her primary research area, teachers' self-efficacy, discusses educational psychology and teaching, and reflects on trends and issues in educational psychology.

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TEACHERS' SENSE OF EFFICACY

(1) Your primary research area is teachers' sense of efficacy. Tell us what that area is about and what work you have done.

Teachers' self-efficacy for teaching—their perceptions about their own capabilities to foster students' learning and engagement—has proved to be an important teacher characteristic often correlated with positive student and teacher outcomes.

About 15 years ago, Wayne Hoy and I began a series of studies that continues today on teachers' sense of efficacy. In our initial work, we examined how feelings of efficacy relate to ideas about motivating and managing students and how all these beliefs change with initial teaching experience (Hoy and Woolfolk, 1990; Woolfolk *et al.*, 1990; Woolfolk and Hoy, 1990). Next, we looked to the school climate to identify organizational factors related to teachers' efficacy judgments such as the leadership of the principal and the collegiality of the faculty (Hoy and Woolfolk, 1993).

This research program really expanded when we moved to The Ohio State University. As is so often the case, students inspire our own learning and I have benefited from these experiences as well. With our students, Megan Tschannen-Moran and Roger Goddard, we studied the meaning and measurement of teachers' sense of efficacy and collective teacher efficacy. This work has focused primarily on developing a model of efficacy that reconciles some of the seeming inconsistencies in early research and on designing survey instruments for assessing both individual teachers' efficacy judgments and teachers' sense of collective efficacy (Goddard *et al.*, 2000; Tschannen-Moran *et al.*, 1998; Tschannen-Moran and Woolfolk Hoy, 2001). Two other students, Rhonda Burke-Spero and Rich Milner, recently taught me about the role of cultural context in the development of efficacy and the value of qualitative methods for understanding teachers' experiences of efficacy (Burke-Spero and Woolfolk Hoy, 2003; Milner and Woolfolk Hoy, 2003). Right now I am studying what organizational and interpersonal supports might enhance and sustain teachers' developing sense of efficacy—particularly in the early years of teaching.

(2) Teacher efficacy—is it better measured qualitatively, quantitatively, or perhaps in a case study format?

First, I think Bandura would prefer the terms teachers' sense of efficacy, self-efficacy of teachers, instructional efficacy, teachers' efficacy beliefs, or teachers' perceived efficacy. The term, "teacher efficacy" is too often confused with teacher "effectiveness," so I am trying to use other terms.

But to your question, I believe this concept would benefit from more studies that use both qualitative and quantitative methodologies. For the past 25 years, teacher efficacy has been assessed predominantly through quantitative scales and surveys. Early quantitative measures of efficacy were grounded in the work of Rotter (1966), whereas more recent instruments are based on Bandura's theory of self-efficacy. Each approach, of course, can tell us some things and not others. For example, previous research using quantitative measures found that some aspects of efficacy increase during student teaching while other dimensions may decline (Hoy and Woolfolk, 1990). But this research does not tell us why. Some of the most powerful influences on the development of teachers' efficacy beliefs are mastery experiences during student teaching and the induction year. 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 during the malleable period of student teaching.

I believe that qualitative methods are appropriate for an exploration of factors that mediate efficacy development and cultural influences on the construction of efficacy beliefs. I worked with one student who used qualitative methods to focus on five prospective teachers involved in a cross-cultural immersion teaching internship. Qualitative case study methods examined the interns' perceptions and beliefs about their own teaching efficacy (Burke-Spero and Woolfolk Hoy, 2003).

Some of our qualitative work pointed to the importance of social support and resources in the development of efficacy, so we have followed with larger quantitative studies (Tschannen-Moran and Woolfolk Hoy, 2002). Qualitative results have helped us identify topics for quantitative items on surveys and helped us phrase items appropriately. Also, we have used the quantitative measures to identity teachers with a range of efficacy beliefs so that we could conduct case studies of these targeted teachers.

(3) Your recent work focuses on teacher efficacy and teacher's needs for social support and respect. Please tell our readers about this work and why you see it as important?

About 6 years ago while we were developing our model of teachers' sense of efficacy, I was working with students in our teacher education program. I taught one of the first courses in the curriculum and then worked with those same students during their capstone experience. My research team decided to trace the development of efficacy as my students progressed through the program and then follow them through their first year of

teaching (Burke-Spero and Woolfolk Hoy, 2003; Woolfolk Hoy and Burke-Spero, 2003). Some of the studies were surveys that used the scales we were developing and other investigations were case studies. Preliminary findings from the case studies indicated that student teachers often commented about the support available to them in their placements. With these finding in mind, we added five questions to our surveys for first year teachers that asked about the levels of support available (quality of teaching, resources provided, support from colleagues, support from administrators, support from parents, support from the community). We found that support (the mean of the five items) correlated moderately with changes in efficacy in the first year of teaching using both the Gibson and Dembo (1984) and Bandura (1997) scales to measure efficacy.

Based on these initial findings, we continued to examine the role of support in the development of efficacy. Megan Tschannen-Moran and I just completed a larger study of both novice and experienced teachers. We found that the quality of teaching resources available was related to novice teachers' sense of efficacy (assessed using our Teachers Sense of Efficacy Scale (TSES) measure), but none of the five sources of support was related to experienced teachers' efficacy perceptions. Using school-level measures of resource support, quality of facilities, principal leadership, and teacher professionalism, we found modest relationships between the teachers' sense of efficacy and the quality of the facilities, and between efficacy and teacher professionalism. We have not yet found clear, strong connections between school levels of support and individual teacher's sense of efficacy.

My guess is that efficacy judgments are specific to the teachers' individual situation (subject taught, teaching and managerial skills, knowledge, students, class size, etc.) and less affected by organizational level differences. There is little research showing that the principal has a direct impact on teachers' sense of efficacy.

Rich Milner is responsible for a line of qualitative case studies examining teachers' sense of efficacy, social support, and respect. He followed two teachers for a year and got to know them well. He found that respect from students and parents played key roles in protecting these experienced teachers' sense of efficacy, especially during difficult times (Milner and Woolfolk Hoy, 2003).

These lines of work are important because they can help us understand better how to create learning environments that support teachers in their work. Student learning is affected most directly by the hours they spend on appropriate tasks in classrooms. Teachers are the first line of defense against ignorance. We will never have the perfect curriculum or teaching strategy, but teachers who set high goals, who persist, who try another strategy when one approach is found wanting—in other words, teachers who have a high

sense of efficacy and act on it—are more likely to have students who learn. So the question of how to support and not undermine teachers' sense of efficacy is critical.

(4) You and your colleagues have developed some teacher efficacy scales and teacher confidence scales. What led you to pursue this work?

Our early research on efficacy left us unsatisfied with the most frequently used two-factor instrument, the Teacher Efficacy Scale or TES (Gibson and Dembo, 1984). We questioned whether the general teaching efficacy factor as assessed by the TES actually measured outcome expectancy, or even had much to do with an individual teachers' sense of efficacy. As we developed our integrated model of efficacy (Tschannen-Moran *et al.*, 1998), we encountered Bandura's instructional efficacy scale, read Tom Guskey's writings about efficacy measures, and decided to try to develop a measure that fit our model and also corrected some of the problems identified in other measures. In a graduate seminar class of teachers who averaged about 12 years of experience, we tackled the problem of developing a new measure, beginning with Bandura's instructional efficacy scale, and adding items we thought captured the important tasks of teaching. We reasoned that sense of efficacy would be connected to tasks that teachers thought were central to good teaching—not to routine tasks like taking attendance that do not really connect to student learning. We also heeded the guidance of self-efficacy researchers such as Bandura, Pajares, and Guskey who cautioned that measures must be situation specific.

The teachers in our seminar helped us develop items that were both specific and represented valued teaching tasks. In keeping with our model, we also thought about factors internal and external to the teacher that might support and hinder the accomplishment of the tasks. A series of pilot tests, factor analyses, revisions, and more tests led to our short and long forms of the Teachers' Sense of Efficacy Scales, or TSES (available at http://www.coe.ohio-state.edu/ahoy/researchinstruments.htm#
Sense).

The confidence scales are a different story and are truly situation specific or, more accurately, program specific. In our teacher education program, we asked all the course instructors to list those teaching strategies and skills that they believed the program fostered. What should students be able to do after completing the program? From these lists we compiled an instrument that simply asked the students how confident they were (on a 9-point scale) that they could accomplish each skill. As noted above, we wanted to follow their progress and also provide information for the program. We found that students' confidence about these skills increased during the program (as

we had hoped) and then held during the first year of teaching. However, scores on every other sense of efficacy measure fell during that first year (Woolfolk Hoy and Burke-Spero, 2003). So it appeared that after a year of experience, the new teachers still believed they could use the skills they had learned, but they realized that performing these skills did not insure student learning—no surprise for experienced teachers or researchers. We encourage programs to design their own confidence scales instead of using ours. The questions should be specific to the goals and content of each teacher education program.

(5) You refer to self-efficacy and self-regulated learning as the "dynamic duo" of school performance. How do teachers (and parents) enhance these two variables?

Here the best source of information is Pam Gaskill (Gaskill and Woolfolk Hoy, 2002). Pam has been a teacher for almost 30 years. As she read the research on self-efficacy and self-regulated learning, she saw possibilities for carefully designed interventions in her own class. She taught her students different strategies for organizing and remembering. She tried different kinds of feedback. And she saw results.

I believe that Pam would tell you that the most important ways to enhance self-efficacy and self-regulation are to find out what students need to know and then teach them that. Sometimes we forget that students do not all come to school with the basic strategies that guide successful learning. Primary-grade teachers must identify the needs of struggling students and offer fundamental guidance.

For example, Pam found it was necessary to point out to Chris, a student who never finished his *Problem of the Day* journal work, that the other students were hanging up their jackets, going directly to their seats, and getting their journals out. Instead of assuming that Chris knew that but intentionally avoided work, Pam taught a basic strategy—come in, hang coat, open journal, start problem. The type of persuasion that gives an initial boost to get started is sometimes all that is needed to promote active engagement. Fundamental strategies for a specific task, such as beginning by reading through the problem, may need to be pointed out to some students. Helping students to develop an awareness of the need for an action must be accompanied by a personal commitment to the action (e.g., I ought to do this and I can do it.) How do we accomplish this? We go back to the same four sources identified by Bandura that provide information for efficacy beliefs: modeling, mastery experiences, persuasion, and physiological arousal. From the research on self-efficacy and self-regulated learning, we identified several general principles to guide teachers. Here are a few of

the principles:

Modeling

- Allow peer models to demonstrate a task, verbalizing their thoughts and reasoning as they perform.
- Encourage peer tutoring when appropriate.
- Provide children with comparative information that focuses on behaviors that support learning ("Look at the way Rhonda keeps her numbers in a line up and down so she doesn't get mixed up in her addition.").
- Incorporate cooperative learning activities with partners or small groups, establishing goals and expectations for the group prior to their task (Woolfolk Hoy and Tschannen-Moran, 1999).
- Use flexible grouping for small group instruction to avoid labeling individuals. Form and reform groups on the basis of students' *current performance* in the subject being taught; change group placement frequently when students' achievement changes.
- Discourage comparisons between groups and encourage students to develop a whole-class spirit. Avoid naming ability groups ("tigers," "sorcerers," "hurricanes," etc.); save the names for mixed-ability or whole-class teams.
- Organize and teach groups so that low-achieving students get appropriate extra instruction—not just the same material again.

Mastery Experiences

- Create daily routines so that children have a sense of expectation and control over their environment. Signal the routines with a daily schedule or other cues so that all students are reminded and know what to do or where to go next.
- Ensure that learning tasks are on an appropriate level for all students. This requires both an intimate knowledge of each student's performance level in each subject domain along with the creation of individualized tasks as necessary.
- Create opportunities for students to experience the "practice effect" by providing familiar tasks in order to improve their performance.
- Provide instructional support as necessary to guarantee student success.
- Help students to maintain incremental views of intelligence and adopt learning goals rather than performance goals. For example, remove performance pressures by giving feedback and then allowing students to redo and improve work, use portfolios so that students see their own progress, periodically revisit earlier assignments to show students how much they have learned, recognize creativity and

partially correct answers—not just perfect papers, and avoid comparing students with each other.
- Teach cognitive and metacognitive skills such as planning, monitoring, and goal setting.
- Teach specific self-regulatory strategies that impact student performance, such as help seeking, maintaining task focus and attention, applying memory strategies, managing time, and organizing.

Verbal Persuasion
- Be aware of children's actual ability to succeed when giving encouragement. Don't say, "You can do that problem—it's easy." Instead, suggest "You might be able to get this one if you take your time and line up the numbers."
- Provide attributional feedback that focuses on effort ("Your hard work is paying off" or "I'm glad you did this last revision—your story uses more describing words now").

Physiological Arousal
- Make sure all instructions are clear. Uncertainty can lead to anxiety. Write test instructions on the board or on the test itself instead of giving them orally. Check with students to make sure they understand. Ask several students how they would do the first question or an exercise or the sample question on a test. Correct any misconceptions. If you are using a new format or starting a new type of task, give students examples or models to show how it is done.
- Avoid unnecessary time pressures and remove some of the pressures from major tests and exams. Teach test-taking skills; give practice tests; provide study guides. Develop alternatives to written tests. Try oral, open-book, or group tests. Have students do projects, organize portfolios of their work, make oral presentations, or create a finished product.

Teach Self-Regulation Strategies
- Provide a wide range of opportunities in the form of diverse tasks so that students can experience success and learn that effort pays off.
- Allow practice of new skills to the point of overlearning before introducing and expecting SRL strategies.
- Encourage the epistemological beliefs that learning is difficult and requires effort and that knowledge is rarely absolute.
- Help students to understand the utility of newly acquired strategies and conceptual knowledge.
- Make sure strategy execution during practice is easy.

- Help students improve monitoring awareness, possibly by prompts to monitor daily lessons.

Perhaps even more basic than these principles are such early self-regulated learning skills as focusing attention, maintaining task focus through to completion, seeking help as needed, and strategies related to task initiation. It was just such strategies that were effective in improving Chris's math performance. Through the modeling provided by successful students, Chris began to regulate his ability to follow the daily routine of the problem solving task by going directly to his seat, getting his materials ready, and focusing his attention on the problem. As his efficacy for successful solution improved because of his scaffolded experiences during math class, his motivation to engage improved accordingly. It was the combination of both improved efficacy and acquisition of the strategies that helped.

And it is never too late to become more self-regulating—corporate trainers who teach time management and goal-setting skills help adults to better organize their lives and thus become more self-regulating. But the longer students go in school without the skill and will to be self-regulated, the more discouraged they can become. The spiral up from self-regulation to higher self-efficacy to greater self-regulation can become a spiral down to learned helplessness, especially for students who face physical, emotional, or intellectual challenges.

The principles are the same at any age, but the applications vary. Goal setting and monitoring progress is especially powerful, as many people know who struggle to change their own unhealthy habits. Moving in small steps, then adding requirements as skills and confidence increase, can be useful. We need to help students of any age evaluate their own work. Often portfolios are helpful in recording and reflecting on growth and setting goals for the future. Something as simple as teaching middle school students how to use a daily planner to organize assignments can be a start. Or students might develop PowerPoint presentations for each other on how to tackle larger assignments to make them manageable and how to seek appropriate help when needed.

EDUCATIONAL PSYCHOLOGY AND TEACHING

(6) What is educational psychology's place in teacher education?

Educational psychology studies how people (with all their histories and abilities) learn something in particular physical and social settings. In earlier times the focus was on the person, but today educational psychologists study the learning of academic subjects such as mathematics and history; social,

metacognitive, and emotional self-regulatory skills; and multiple settings for learning. These understandings are fundamental for teachers. Teachers must know their students. They must know how their students make sense of specific subjects. They must know how situations—including other people—affect learning.

I doubt that there is one best way to prepare teachers. But any worthwhile program must solve several problems. First, prospective teachers must have a context for learning. Too often we expect students to build knowledge for answering questions that they are not yet asking. Whether through well planned and supervised field experiences, discussion of cases, assignments in teaching laboratories, or inventive uses of technology, prospective teachers must be surrounded with real educational problems that can be identified, analyzed, and solved by applying their growing understanding of the psychology, sociology, methodology, history, and philosophy of teaching.

Second, we have to solve the problem of a disconnected curriculum. Preparing teachers is everyone's responsibility and sensible designs require cooperation among faculty, school systems, and students. Everyone who teaches or supervises in a teacher preparation program should know what is happening in all the other courses and experiences. The administrative structure should make it simple for faculty and local school people to work together and to try new approaches. Years ago I worked with a small group of elementary and secondary teachers from around the country advising the Educational Testing Service about how to use cases to develop the licensing examination for the "principles of learning and teaching" component of the new Praxis II series. I wish my students had been in the room to hear the sensitive analyses of the cases we considered and the ways that these analyses drew upon the ideas and understandings of educational psychology. I wish my students could have heard these master teachers talk about their thinking. There should be ways for the beginning teacher education student to join in those kinds of discussions.

Third, the preparation of teachers should be seen as ongoing development, not as the completion of requirements. Any teacher preparation program must support and encourage increasing autonomy. Becoming a teacher should be seen as a continuing process, not something that magically occurs after all courses are completed. This means prospective teachers need to assume more and more responsibility for real teaching over the course of their preparation as they gain knowledge and skill.

Research is product—it produces useful knowledge. This is why educational psychology has so much to offer prospective teachers. Students should learn about the findings of relevant studies because teaching is not simple. "Holding students back" has effects; ability grouping has effects;

different approaches to teaching reading support and produce different kinds of learning; certain signs suggest that a student might have learning, vision, hearing, or emotional problems; stanine scores and percentiles tell us some things and not others about students' performances; there are alternatives to traditional testing and grading; there are advantages and dangers in small group learning; some explanations clarify and others confuse; certain ways of interacting with students support and others undermine motivation—the list goes on. As a profession, teaching has a vocabulary and base of specialized knowledge. Prospective teachers should own knowledge and know that the knowledge is constantly evolving.

Research is also process. Teachers must be researchers as they strive to understand their students and the effects of teaching. Teachers are ethnographers as they enter the world of their students and study life in their classrooms. They are experimenters as they try a different approach to the unit on fractions and carefully note the results in terms of the students' learning, not just the "feel" of the lesson. Research gives teachers new ways to think and new ideas to think about. Research should also produce a healthy skepticism as teachers consider alternative explanations for why things happened as they did.

(7) What do you see as your contributions to the domain of educational psychology?

My earlier work on student teachers' evolving beliefs about management suggests that teacher preparation programs need to acknowledge prospective teachers' struggle to develop personal theories about management. We do not listen to our students enough but rather give them solutions for problems they are not experiencing. Many of my students in elementary certification programs, for example, feel conflicted about the desire to be caring and the need to control. Jim McLaughlin identified this tension in his research on beginning teachers and I see it in my students as well. This important issue is never directly addressed in most teacher preparation programs, so much of what we "cover" on classroom management seems irrelevant or off target.

My work on teachers' efficacy judgements suggests that some cooperation among teacher and administrator preparation programs might be useful. Certain kinds of support encourage teachers' sense of efficacy (see Woolfolk Hoy and Hoy, 2003). The support that matters is not "cheerleading" or close supervision but help in doing the work of teaching—help in reaching the teachers' goals of reaching the students. But our initial research results suggest that different kinds of support are valuable for beginning teachers.

(8) Your text on Educational Psychology is the most widely read introduction to the field. What are you doing right? And what plans do you have for the text in the future?

I hope what I am doing right is making educational psychology interesting, accessible, and useful for my readers. My goal in writing is to strike a balance between clarity and complexity. Educational psychology is rich with ideas, theories, principles, and research results—but just presenting this wealth of information is not enough. Students must understand and value the ideas before they can apply them. I believe a textbook is only one of many resources that students need to understand educational psychology, but a text can provide a frame or support. The text should be clear and encourage students to think beyond the words on the page. Some books don't stimulate thinking beyond the words because students spend all their efforts dealing with the text's complexities. I am surprised when some students say to me that mine is the first psychology book they really understand. It is as if they expect a text to be difficult or confusing. I have taught educational psychology every semester for over 30 years; I respect the concerns of the students. I also teach a student teaching seminar and graduate courses, so I see students at different periods of their development. I try to incorporate a realistic understanding of the developing student/reader into my writing and talk directly to students, providing many examples and illustrations. Professors teaching educational psychology have to make the case for the value of the field. I try to help them make that case.

(9) What do you believe are the key elements of effective teaching?

I would organize the elements for effective teaching into three major categories. One notion I emphasize is the importance of understanding your students' understanding. No matter how you teach, no matter what the goal, no matter who the students are, as a teacher you must keep asking what sense the students are making. One of the most important things a teacher can do is to understand how students think about an idea or subject. Here, teachers need really good ways to observe and assess their students. Second, I often find myself saying, "students are just like people." By this I mean students don't happily repeat unpleasant events, they prefer work that is real and important, they like to grow more competent, and they need to be a valued and respected member of a group—just like all of us—just like people, because, of course, they are. Third, there is no one best way to teach. Know your students. Discover and respect their strengths. Understand how they learn. Try a range of approaches. Be persistent and inventive. Nurture their sense of efficacy and your own.

(10) How has mainstreaming and inclusion changed the nature of educational psychology education in general?

Early in my career I was like a "circuit riding" school psychologist for a 15-county area in Central Texas. My official title was, "Educational Psychologist: Regional Consultant." I worked with teachers, students, and even parents to assess student learning and behavior problems and develop educational plans. I learned quickly that the kind of careful attention to students' needs and strengths that led to success for these "special" students was exactly the kind of care and thinking needed in good teaching. So I merged knowledge about inclusion and teaching in my own practice early on.

Later, as an instructor, the passage of PL 94-142 that advocated mainstreaming meant that I added units on students with special needs to my educational psychology classes. When I wrote the first edition of my text, I included a chapter that addressed mainstreaming and all the related concerns. As I recall, most other educational psychology texts didn't have that same level of coverage at the time. Over the years, this focus has become required material in educational psychology classes and texts for prospective teachers.

As far as education itself, inclusion has had a tremendous impact on scheduling, funding, legal challenges, testing accommodations, and teacher stress. Many teachers will tell you that with the pressures from inclusion and accountability, they feel as though they are being asked to do more and more work with less and less support—and given the difficulties with school funding, resources are fewer as well. But there are clear benefits as well as legal requirements for including everyone in our classrooms—the challenge is giving teachers and schools the education and support they need to do the job well, so that both teachers and students share an authentic sense of efficacy for learning.

(11) How have computers and the Internet changed the way we teach and the way educational psychologists approach education?

Initially, I believe we saw the Internet as a way to do better what we have always done—so classes have websites that provide syllabi, readings, links to resources, copies of handouts, and PowerPoint presentations. Rather than saying, "read the chapter and we will discuss it in class," I now tell students to read the assignments and then post a question about the readings on the class listserv the night before class. Discussions are better—more people have read the material and thought about each other's questions. Many of my classes now include a lab time when we take online surveys, compare Webquest lessons, or analyze cases that require searching for and evaluating information on the web.

But I imagine these first uses are just at the surface of what is possible. In the latest edition of my text I have included a section in every chapter developed by Jim O'Kelly, that uses the web for continuing professional development.

I also expect that the Internet will continue to challenge our notions of schools as physical spaces. One of my students dissertation examines web-based collaboration in learning for students all over the country. This kind of learning raises fascinating possibilities and some very practical questions—such as what is the meaning of "in-state" tuition.

(12) Why are student perceptions of teachers important?

It seems that research in many areas points to the need for respect and trust in relationships—marriages, families, companies, countries, and classrooms. When students see teachers as caring and capable, they are much more likely to cooperate in the classrooms activities and discussions that can lead to learning. Walter Doyle pointed out years ago what all teachers know—that no productive activity can take place in a group without the cooperation of all members. This obviously applies to classrooms. Even if some students don't participate, they must allow others to do so. The basic management task for teachers is to achieve order and harmony by gaining and maintaining student cooperation in class activities. Without students' trust, respect, and cooperation, even the best materials and methods can fail. Like all of us, student's perceptions are their reality. If students believe teachers distrust them, they are not likely to cooperate. If they believe teachers have nothing to teach them, students are not likely to cooperate. I once asked a gifted educator in an urban New Jersey high school which teachers were most effective with the really tough students. He said there are two kinds: teachers who can't be intimidated or fooled and expect their students to learn, and teachers who really care about the students. When I asked, "Which kind are you?" he answered "Both!" He is an example of a "warm demander" that research is showing is more successful in urban schools. Teachers who are perceived as both warm and demanding may be excellent in gaining their students' cooperation.

(13) The gifted, talented, and creative seem to be continually neglected in schools. Is this my perception or is there another explanation?

I have no systematic data, so I can only speak of my perceptions too. There are many ways that high ability students may not be well served in our schools. Handling extreme differences is difficult for schools—they often are underfunded and the staff is overextended. Finding an appropriate program for a child who is many grade levels advanced, but still a child, is not easy. High ability students can be difficult to manage—assertive, challenging,

even insulting to teachers. At the other extreme these students may simply withdraw or tune out.

Some insights into what schools can do right and wrong came out of Bloom's study of talent in the 1980s. Bloom, and his colleagues found that teachers both supported and undermined the learning of the highly accomplished mathematicians. One teacher simply gave an advanced math book to a young student and encouraged his interest. On the negative side, another teacher made a student do all the same drill and homework as the rest of the class, even though the student's math knowledge was years ahead of the class.

I encourage prospective teachers to at least get out of the way—"do no harm" —when they work with gifted students. In working with gifted and talented students, a teacher must be imaginative, flexible, tolerant, and unthreatened by the capabilities of these students. The teacher must ask: What do these children need most? What are they ready to learn? Who can help me to challenge them? Challenge and support are critical for all students. But challenging students who know more than anyone else in the school about history or music or science or math is the real challenge. Answers might come from faculty members at nearby colleges, retired professionals, books, museums, or older students. Strategies might be as simple as letting the child do math with another grade. Other options are summer institutes; courses at nearby colleges; classes with local artists, musicians, or dancers; independent research projects; selected classes in high school for younger students; honors classes; and special-interest clubs.

(14) You have indicated that "we need to place learning at the center of teaching." Yet schools have pep rallies, sports are extolled, assemblies and the like permeate the school day with interruptions and "time on task" is neglected. Will our educational system ever understand the importance of making learning central to education?

Many good teachers do have that understanding. I find that the best teachers in my graduate classes are the ones who see the most practical potential for theories of learning, development, or motivation. It is the students with the least experience with teaching and children who complain that knowledge in educational psychology isn't practical enough.

As to school level decisions about time spent on nonacademic activities, I believe some districts have lost their way and overvalue sports. I say this as a Texan who grew up where football is king and as a Buckeye who knows sports frenzies. I believe schools should aim for an emphasis on academics that makes learning as valued as winning. Don't eliminate sports—fitness is a real challenge for Americans—but give greater attention, money, time, energy,

and enthusiasm to science and technology, arts and humanities, languages, history, social and cultural studies, mathematics, vocations and trades, and—well you get the idea. Not *either* sports *or* academics, but both in balance.

(15) Why do we need to teach developmental psychology to teachers? How good a job are we doing in your estimation?

Pick up any child development textbook and you will find a big section or chapter on the context of school. Developmental psychologists such as Erik Erikson talked about school as an important context for growing children's socioemotional development. Look at the research on the role of childhood friendships in adults' development. Read the research on bullies and victims, relational aggression, and student depression to see the importance of peer relations in schools. Teachers are around more than many parents. Often teachers can see the first signs of eating disorders, abuse, anxiety disorders, learning disabilities, drug use, depression, hearing or vision problems, as well as the indications of talents, interests, and abilities. Attention to these signs and signals can change students' lives—developmental psychology teaches us about the signals. In addition, there is a vast range in normal development and teachers need to know what is within normal ranges (so they won't label or stigmatize kids) and what is outside the range (so they can seek appropriate resources for students).

How well are we doing? Unfortunately, around the country, colleges are more likely to cut courses and time for the study of development than to expand them. It is difficult for 19-year olds who have little experience with children or teaching, adolescents who are still developing themselves, to gain a sophisticated understanding of the development of children across years and different cultural contexts—but that is our challenge as educational psychology teachers.

(16) Reading continues to present a challenge to teachers. Whole language people fight the phonics people. What are educational psychology's contributions to helping students become better readers?

Perhaps our greatest contribution is to move beyond idelogical commitments to ask what works, with whom, and why. Advocates of whole-language approaches believe that reading is a kind of guessing game in which students sample words and make predictions and guesses about meaning based on the context of other words in the passage and on their prior knowledge. Children should be immersed in a print-rich environment, surrounded by books worth reading and adults who read—to the children and for themselves. When students write, they write for an audience; their goal is to communicate effectively. But is whole language the whole story? There are now three

decades of research in educational psychology demonstrating that skill in recognizing sounds and words supports reading. Advocates of code-based approaches cite research showing that being able to identify many words as you read does not depend on using context to guess meaning. In fact, it is almost the other way around—knowing words helps you make sense of context. Identifying words as you read is a highly automatic process. It is the poorest readers who resort to using context to help them understand meaning. Alphabetic coding and awareness of letter sounds are essential skills for acquiring word identification, so some direct teaching of the alphabet and phonics is helpful in learning to read.

The best approach probably makes use of both phonics and whole language. After all, we want our students to be both fluent and enthusiastic readers and writers. If students need help cracking the phonics code—give them what they need. Don't let ideology get in the way. You will just send more students to private tutors—if their families can afford it. But don't forget that reading and writing are for a purpose. Surround students with good literature and create a community of readers and writers.

TRENDS AND ISSUES IN EDUCATIONAL PSYCHOLOGY

(17) What are the biggest trends in educational psychology that you have seen over the course of your career? Who do you feel has made the greatest contributions?

When I speak of trends in educational psychology, you know that I speak only of the areas of educational psychology that connect most directly to teaching and teachers. That has been my world for 35 years or so. There are realms of work in our field that I cannot comment on because I have not followed their progress closely.

The educational psychology of my graduate school days was filled with Skinner, Bruner, and Ausubel; Carl Rodgers and Fred Keller; Wittrock, Rosenshine, and Gage; Anastasi, Bloom, and Wechsler. I taught an undergraduate course in educational psychology using the Personalized System of Instruction—the Keller Plan. In the field, the debates were between behavioral and cognitive explanations of learning and language, nature versus nurture in the origins of intelligence, and discovery versus exposition in teaching. *Education and Ecstasy* (Leonard, 1968) was a popular book that challenged traditional views of schooling. In some ways, the players and the positions were more defined—more clear-cut. This is oversimplifying, but there was an either–or character to many of the discussions.

In my early years as a professor, the great excitement for me and for many in the field was research on teaching. I remember joining the Invisible

College for Research on Teaching, sponsored by the National Institute of Education and Michigan State University. There was such a sense of discovery and purpose as the results of many large, well-designed studies converged on a base of knowledge for teaching.

During that time in the 1980s and early 90s, the meetings of the Invisible College took place right before AERA every year. They were engrossing. Many of the attendees left exhausted but sure that nothing we would hear at AERA would top the presentations and discussions of the two days at the Invisible College. The notion of knowing something valuable and true about teaching was exhilarating.

Of course that time of research and discussion in many ways spawned the seeds of its own demise. Closer looks at teaching added new concerns with context and culture. New methodologies drawn from anthropology, sociolinguistics, and literature led to views of teaching that challenged the coalescing research on teaching. What began as paradigm expansion seemed to become, as Gage (1989) called them, "paradigm wars." My concern in the wake of those wars is that we will forget much of what we learned in the early days of the research on teaching, only to discover it again in a few years and think we have come upon something new. So I encourage my students to read and understand the early work, even if they agree with some of its criticisms. It is dangerous to ignore whole areas of study because you believe that they have been discredited and thus you "needn't bother."

Unfortunately, it seems that some of the fallout from those wars has been a questioning of the value of educational psychology in teacher preparation. As Richard Mayer—and before him, John Carroll and Jere Brophy—had noted, educational psychology has had to face the charge of irrelevance. In 1963, Carroll observed that educational psychology was "a discipline with a large, but by no means wholly realized potential for effective application, and we shall continue to teach educational psychology to teachers with a mixture of pious optimism and subdued embarrassment" (Carroll, 1963, p. 119). One reason that the discipline had not realized its potential for effective applications could be traced to the lack of research on the problems of classroom teaching. In 1974, Brophy called for research in educational psychology "that has immediate practical application" (Brophy, 1974, p. 46). He argued that psychology had produced theories and findings about learning when what was needed to inform practice were theories and findings about teaching. Brophy asserted that, "the problem is not quality; it is relevance. By and large, we simply are not studying problems that are related to the needs of the classroom teacher" (Brophy, 1974, p. 48).

This concern with relevance in research has continued. Grinder (1989) listed withdrawal from education-based problems and irrelevance—the retreat to the laboratory and away from classrooms—as difficulties in the field.

Klausmeier (1988) made a plea: for more research that addresses educational problems and explores improvements at all levels—the classroom, school, and school district.

The calls for relevance in educational psychology had an impact. Thirty years after he questioned the potential of educational psychology for effective application, Carroll was ready to claim that, "no longer must we be embarrassed about our potential contribution to educational practice; indeed, we should be openly forthright about the usefulness and validity of our claims" (Carroll, 1993, p. 90). Mayer (1992) agreed that educational psychology had met the challenge of relevance in research because cognitive research had turned to the study of subject matter knowledge and learning—topics that had been removed from texts for teachers by about 1956. But other educational psychologists remain skeptical. As recently as 1998, Chase lamented that "educational psychologists do not understand the classroom situation and on a practical level we have not related theories to solving the problems teachers face every day" (Chase, 1998, p. 239).

As educational psychologists, we must be clear about who we are and why we matter. In some states we have been told we are not needed in the preparation of teachers. We are not consulted when our own universities make decisions about teaching and learning without benefit from our expertise. We must resist the accusation that we are irrelevant.

Besides the concerns with relevance and respect in teacher education circles, educational psychology has moved beyond the examination of individual learning and development to consider culture and context in teaching and learning as well as social and interactive constructions of knowledge. The challenge here is to develop appropriate methodologies and to avoid knowing too little about too much—mistaking superficiality for multidisciplinary. Finally, we have to resist splintering into camps that spend most of their energy attacking the worldviews of the other camps

(18) Sternberg and Gardner's work on intelligence has certainly been influential over the past 20 years. In your estimation, how important is IQ testing and this thing we call "intelligence?"

In many ways, the concept of intelligence has fallen from favor. To talk about intelligence or intelligence testing today is to risk condemnation in many schools of education. But the fact of individual differences in cognitive abilities is undeniable to every teacher and parent. The questions are "What are these abilities?" and "So what?" Because test results have been used too often against children and adults, we forget that cognitive abilities testing began as part of a children's rights crusade. Alfred Binet wanted to protect

children from low-income homes from being tossed out of school on the basis that they did not have the abilities to learn.

The individual intelligence tests that have been developed and improved over the years do assess abilities that are relevant in schooling—of course that was Binet's goal. As we learn more about the brain and cognition, we also learn more about human cognitive abilities. Both Gardner and Sternberg have expanded our ideas about what these abilities are, the role of culture in defining which abilities are important, and the cognitive processes that underlie abilities.

Of course, as we move from theory and explanation to application, there can be misuses—just as happened to some of Binet's work. Gardner's theory of multiple intelligence has been particularly oversimplified and misapplied, with a few teachers creating silly lesson segments just to reflect every intelligence all the time. Rather than mindlessly applying a simplistic version of any theory of intelligence, we should ask why some theories have become so popular in education. I believe that teachers appreciate any explanations that allow them to find capabilities in kids who don't seem to be classically "intelligent." The idea that you might reach a child by identifying or teaching to a "different intelligence" is very appealing to many teachers. I believe most teachers want to see all their students succeed. To the extent that this orientation keeps teachers and parents open to recognizing and developing a whole range of abilities and talents—this is great. To the extent that teachers are inspired to try new ways of teaching and carefully observe the effects, classrooms will be better places to learn. But to make it in the world, people still need to read, write, and compute and to deny the development of these intelligences is to do children a disservice.

(19) Albert Bandura, Frank Pajares, and Bernie Weiner have all done work on the construct of self-efficacy. In the big scheme of things, how important is this construct?

Pretty important. Over the centuries humans have been fascinated and tormented about questions of the self. Psychology is filled with research and theory on various self-schemas. In fact, interest in the self in psychology has grown steadily. In 1970, about 1 in every 20 publications in psychology was related to the self. By 2000, the ratio was 1 in every 7 (Tesser *et al.*, 2002). For my money, self-efficacy is the most useful self-schema for education because it relates to choices and actions that affect learning such as goal setting, persistence, resilience, effort, and strategy. Everyday experience, literature, films, sports, and mythology are full of stories—real and invented—that attest to the power of effort and persistence. I was tempted to invoke the construct of self-efficacy as I watched the football victory of my National Champion Buckeyes over the University of Miami in January 2003—but

maybe that is going too far. Also self-efficacy provides a connecting thread through the work on attributions, self-regulation, and goal theory—all important tools for understanding motivation and learning. It seems to me that much of achievement can be explained in terms of ability, self-efficacy, and opportunity.

(20) Memory is a central educational psychology construct. Yet, all too often, teachers and parents seem to neglect the development of memory skills. What can we do to change things?

Good point. In my teacher education classes, I stress the difference between understanding and remembering—but I mean this in two ways. First, there is great emphasis today in teaching for understanding—an excellent goal. Who would want to teach for misunderstanding or confusion? Gardner talks about understanding as being able to apply knowledge appropriately. Bloom's taxonomy reminds us that we must go beyond simple repeating of the words to understanding, using, and finally creating meaning.

But many people assume that memory is only rote memory or the first level of the taxonomy. What about remembering your understandings, your applications, your analyses, and your creations? This is the second important distinction between understanding and memory. I remind my students, "Think of all the things you once truly understood in algebra, geometry, chemistry, history, or even in using the intricacies of your word processing program. Did that understanding guarantee that you could use the knowledge right now? Have you ever faced a task that you have not done for months and thought—I forget how to do this?" I really understood my calculus work in college—but I don't remember it now. Inquiry lessons that help students understand may not insure that they remember information or apply it appropriately. For understanding with memory we need practice, practice, practice in varying contexts with different kinds of problems and with mindful applications. Learning is understanding plus hard work. Practice and drill are not bad as long as you are practicing understanding and becoming more expert and fluent in the process.

(21) Can you put behaviorism, information processing, and constructivism in proper educational psychology perspective? What have been their contributions?

When I try to communicate the value of all three approaches, I talk about the insights or contributions of each area. In doing so I oversimplify a large body of work, but I want to make the point that there is value for teaching in each tradition. Here is the sound bite version of my pitch.

Behaviorism has taught us about the power of consequences and practice. Practicing skills and understandings makes them more accessible, fluid,

and permanent. But practice without feedback is useless and consequences are a kind of feedback. Reinforcers and punishers give humans clear feedback about what is likely to follow certain actions in specific contexts. We could not learn without this feedback.

Information processing has taught us about individuals and their cognitive tools. These tools are remarkable—but they have limitations. Attention has limits. Working memory is limited. Even the processes associated with long-term memory are limited causing failures in encoding and retrieval. Information processing models have also demonstrated the critical role of knowledge in attention, perception, comprehension, memory, problem solving, and learning.

Constructivism, particularly social constructivism, has shown us the importance of culture, context, and conversation in learning and identity, and of authenticity in motivation. We have found, among other things, that talk that is interpretive (generated in the service of analysis or explanation) is better than talk that is merely descriptive when it comes to fostering students' understanding (Palincsar, 1998). And we have learned that students need a sense of identity and agency as learners to succeed in schools.

(22) Who has influenced your career path in educational psychology and in what way?

My greatest influences have been my family and my teachers. My grandmother taught me to take care of others but always be ready to take care of myself, no matter what comes along. She was born in 1902, married at 19, and had six children, yet knew the value of being in charge of her own life. She lived 100+ years and never stopped teaching me. My mother taught me to be concerned about children's development and to turn to research to learn more. She remembers being an undergraduate in Harry Harlow's classes at the University of Wisconsin.

My father taught me to understand, not just memorize, and he insisted that girls could be excellent mathematicians and anything else for that matter. A youth minister, Julian Rush, helped me make sense of my commitments in life. My daughter taught me that knowledge is not enough and helped me understand compassion and humility. My husband continues to teach me how to work with graduate students so they become lifelong colleagues and friends. My fourth grade teacher, Ms. Guthrie, showed me how learning can be exciting—we never knew what color her hair would be week to week. My first English teacher in college, Mr. Adams, taught me to write, but gave up trying to teach me to spell. I was blessed to have wonderful professors at the University of Texas who showed me that psychology was a valuable and fascinating field. In my own career, I am indebted to the colleagues in educational psychology who keep doing work that makes this a

dynamic field—too many names to list. And then there are my students—they continue to raise new questions that connect educational psychology to classrooms.

(23) As a final question, what research still needs to be done in educational psychology?

I would like to see more bridging research—more work on how prospective teachers and experienced teachers use the knowledge provided by educational psychologists. How do they think about it? What do they remember? What meaning do they make of what they experience in our classes and what do they do with it. I realize this is a tiny area of our field but an important one (see Woolfolk Hoy, Demerath, and Pape, 2002; Woolfolk Hoy and Murphy, 2001). Also, I am waiting for some truly powerful uses of the research in neuropsychology. Teachers and administrators are fascinated by "brain-based education" and I would like to have more to say about teaching that is informed by solid neuropsychological research. I also expect that we will see more work on how students learn from electronic media and that will be quite helpful.

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