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AN INVITATION TO TEACHER EDUCATORS TO ENGAGE IN AN IMPORTANT LINE OF WORK

Connecting the Dots: The Role and Range of Theory Connecting Teaching, Teacher Preparation, and K-12 Student Learning

Del Schalock, Mark Schalock, Robert Ayres
Teaching Research Institute, Western Oregon University

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The Invitation

Join with us and our colleagues at Western Oregon University, and others who are interested, in identifying, extending and systematizing the fragments of theory and method currently connecting teaching, teacher preparation and K-12 learning in today's standards-based, accountability driven schools. Work will not need to start from ground zero (see below, and the documents attached), but the work remaining is large in scope, complex in design, and demanding of conceptual and methodological accommodations across numerous disciplines.

Circumstances Prompting the Invitation

The stimulus to this work came in confronting the design and implementation of a longitudinal research project that had as its focus the investigation of teacher preparation effects on the thinking, beliefs, and classroom performance of early career elementary teachers, and the learning of their students (see www.tr.wou.edu/tep/TEP-2). In undertaking the project we searched, long and hard, for theoretical and methodological guidance, but found little that was helpful. Connecting teaching, teacher preparation and K-12 learning in a standards-based (pre-No Child Left Behind) school environment involves a long chain of conceptual and procedural connections, and these simply were not to be found in the literature available in the late 1990's. Nor are such connections available today, as guides to either research or practice. This is the case even though the demands of NCLB, NCATE's 2000 standards for the accreditation of teacher preparation programs, and the requirements of many state teacher licensing

policies have been crafted on the assumption that such connections do (or should, and will) exist.

Because of these pressing realities, and the importance of the work they point to, we plan to continue the work we started along these lines in carrying out the longitudinal research project. We realize, however, that what we are able to do in this regard would be enhanced appreciably if others having common interests would join in common cause.

Two groups of institutions currently engaged in similar lines of work appear to us to be particularly well suited to do so. The first of these are the eleven institutions participating in the Carnegie Corporation sponsored Teachers for a New Era initiative. By contractual agreement each of these institutions share a closely related research agenda, though no publicly declared commitment to related theory development. The second is the coalition of Renaissance teacher preparation institutions who have been refining and extending the methodology of teacher work sampling as a vehicle for connecting teaching and learning in the preparation and assessment of teachers for initial licensure. These institutions have been engaged in validation studies pertaining to the methodology, and share a common conceptual and methodological agenda, though they too have no publicly declared commitment to related theory building.

Other groups likely to share an interest in such an endeavor include teacher licensing agencies from states having policies that call for these connections to be made, for example, Colorado and Oklahoma; Regional Education Laboratories which have pursued related interests, for example, the Northwest and Mid-Continent Laboratories;

and policy research centers such as those at the University of Washington or the Education Commission of the States. Funds currently do not exist to support a broadly based undertaking of this kind, but there is good reason for thinking funds could be found for doing so if this line of work was viewed widely by others as important to do.

More on the Context in Which the Invitation Rests

A combination of events has coalesced within the past several years to bring added pressure and uncertainty to an already besieged teacher education community. These include

- ✓ the fragmentation and lack of coherence documented in the 1990's in most teacher preparation programs (Howey, 1996; Barone, et al, 1996) not changing appreciably;
- ✓ the lack of evidence in most teacher preparation programs on the impact of their graduates on the learning of their students;
- ✓ the growing skepticism around the capacity of the teacher preparation and licensing enterprise, as it currently is structured and managed, to successfully respond to the challenges it now faces;
- ✓ mounting pressure at the federal, state and local levels for "alternative" preparation and licensing programs, and the array of such programs now being offered;
- ✓ an alternative teacher licensing system being developed largely through federal funds (the American Board for the Certification of Teacher Excellence), that is to be managed from a Washington DC office, nearing completion;
- ✓ with passage of the No Child Left Behind Act of 2001 schools across the nation are now engaged seriously in shifting from the norm-referenced, textbook driven system of schooling that dominated K-12 education during the 20th century to the standards-based, accountability driven approach to

schooling the nation has been edging toward since publication in 1983 of the *Nation At Risk* report;

- ✓ with this shift in orientation to schooling, with its emphasis on high standards for learning by all students, "annual yearly progress" targets for schools in the improvement of learning, and having "highly qualified" teachers in every classroom providing content-focused instruction by 2006, the importance of quality assurance in the preparation and licensing of teachers takes on new meaning to everyone involved in public schooling;

- ✓ NCATE's new (2000) standards for the accreditation of teacher education programs responding to these new realities for students and teachers in the schools by requiring an "evidence-based" approach to preparation and licensure, including a) evidence of a prospective teacher's impact on student learning as a condition of recommendation for licensure, and b) a functional system for managing and assuring the quality of all data collected and used for licensure related decisions;

- ✓ sufficient frustration on the part of Congress with the quality of evidence it received in response to the Title II requirement of the 1998 Higher Education Act for comparative information on the quality of graduates from all teacher preparation institutions in a state (US Department of Education, 2003) that discussions around the reauthorization of the Act later this year have included the proposal that states rank teacher education programs by the test scores of students taught by their graduates;

- ✓ the shortcomings of teacher education research, long lamented and frequently reviewed (Kennedy, 1996; Sikula, et al, 1996; Munby, Russell & Martin, 2001), have recently been placed in bold relief (Wilson, Floden and Ferrini-Mundy, 2001; Wilson and Floden 2003; Allen, 2003) -- though , as Cochran-Smith cautions, its shortcomings depend on the question asked (Cochran-Smith, 2004a).

Given this combination of events Cochran-Smith argued in a subsequent editorial that teacher education as we have known it is facing dangerous times (Cochran-Smith, 2004b). The national study of teacher education just authorized by congress, modeled on the national examination of medical education nearly 100 years ago yielding the

"Flexner Report" and closure of more than half the medical schools then in existence, is not likely to make the years ahead less dangerous.

As antidotes to these conditions other events have occurred within the past decade that lead toward the revitalization of teacher education as a research-based clinical profession that can rise to the demands of the times. These include

- ✓ the continued formalization and expansion of the Professional Development School movement;
- ✓ the progress made by many institutions in creating programs that prepare teachers to work in inner city schools, and with children having English as a second language;
- ✓ the progress made by institutions in some states in creating programs that prepare teachers to work within standards-based schools;
- ✓ creation of the DELTA project by the Carnegie Foundation for the Advancement of Teaching to assemble and/or create measures teacher educators can use in addressing the demands of assessment when assuring quality in the preparation and licensing of teachers;
- ✓ the emergence and rapid spread of Teacher Work Sample Methodology as a vehicle for a) helping prospective teachers learn to meaningfully connect teaching and learning, and b) demonstrate their effectiveness in doing so;
- ✓ the outstanding contribution of a coalition of Renaissance teacher preparation institutions to refining, extending and validating teacher work sampling, and assisting other institutions in its use;
- ✓ the Carnegie Corporation of New York and other Foundations investing 5 million dollars over a period of 5 years in each of 11 teacher preparation institutions, with each institution matching the Foundations' grant, to a) address the many challenges currently facing teacher preparation, b) collect defensible evidence of these challenges having been met -- including the effectiveness of their graduates in impacting K-12 learning --, while c) clearly and explicitly recognizing teaching as "a clinical profession."

Important progress also has been made in recent years in extending and ordering the knowledge base underlying teaching and teacher preparation. These include

- ✓ the readable and highly informative syntheses of research on factors pertaining to school learning provided by Marzano and his colleagues (Marzano, et al, 2001; Marzano, 2003) for consumption by school practitioners;

- ✓ the current status of our knowledge pertaining to teaching provided through the 4th Handbook of Research on Teaching (Richardson, 2001);

- ✓ the report of the National Research Council in 2000 titled *How People Learn*;

- ✓ the report of the National Research Council in 2002 titled *Scientific Inquiry in Education*;

- ✓ the forthcoming report of the AERA panel on research in teacher education (M. Cochran-Smith and K. Zeichner, Eds., in press);

- ✓ what Cochran-Smith has referred to as "… the dramatic rise in prominence of the 'science of education' and/or 'the scientific research base' for education" (Cochran-Smith, 2004b, p5) within federal education policy. This is reflected in the US Department of Education's new Institute of Education Sciences and the "What Works Clearinghouse" created within it.

While these events may not balance those on the troubling side of teacher preparation and licensing, they represent counterbalancing forces that hold considerable promise for doing so in the future. All are forces, however, that would benefit from strong theory connecting teaching, teacher preparation and K-12 learning, and at this point in time such connecting theory does not exist.[1]

What We Propose To Do

Our aim is to bring as much order and understanding as current knowledge permits to the connections that exist among teaching, teacher preparation and K-12 learning within the context of standards-based schools. Our desire to do so stems from the view that many of the pressures confronting teacher education and the nation's schools, especially the enhancement of learning, can be resolved productively only if we have more useful knowledge around these connections than we currently have. Bringing order and understanding to these three interdependent dimensions of the effective schools puzzle would represent a significant step forward for everyone involved. As Floden puts it in his recent chapter on research on the effects of teaching (Floden, 2001), "The connections between teaching and learning would be easier to demonstrate if an empirically supported theory of teaching, connected to learning, were in hand…… A theory of teaching is a worthy goal…" (p 14).

The strategy we have chosen to follow in pursuing this aim is engaging in the process of theory building, *as this occurs within a maturing science,* not as it occurs within philosophy or the liberal arts. A remarkable book just published on theory building in the social sciences (Shoemaker, Tankard and Lasorsa, 2004), which we will follow closely in the systemizing work we are advocating, starts with the core meaning of the term: "… the word *theory* comes from the Greek *theoria* which means 'a looking at'" (p5). Theory building within a maturing science involves carefully prescribed ways, and a carefully prescribed sequence of, "looking at" the field(s) one wishes to theorize about. In combination these are designed to lead to a set of statements (a theory) that

lays out "… one's understanding of how something works" (Shoemaker, Tankard and Lasorsa, 2004, p6). The steps we will follow in this process are

I. Begin by identifying, sorting, relating, and organizing existing concepts (constructs) within the various literatures pertaining to teaching, teacher preparation and K-12 learning;

II. As concept maps take shape
   a) identify the concepts (constructs) that represent continuous variables, or those that can be transformed into dimensions (categorical variables converted into continua);
   b) define these variables both theoretically (conceptually), in sentences, and operationally (how they are to be measured);
   c) articulate the linkages expected among these variables using visual as well as other forms of symbolic or mathematical models, and the rationale for these linkages;

III. Develop hypotheses, through path diagrams and related analyses, to test the theoretically expected linkages among variables; and

IV. Identify defensible (reliable, valid) measures, or approaches to measurement, as accompaniments to each variable included in a path diagram, and describe these in CATALOGUES OF PROMISING MEASURES prepared as accompaniments to each concept map emerging from Step 1.

These four steps stop short of the full complement of steps involved in theory building, but they lay the foundation needed for the empirical, additive and refinement/correctional steps most frequently associated with the "doing" of science. These added steps involve

V. Conducting research that tests hypotheses developed in Step 3; and

VI. Reflecting upon the adequacy and appropriateness of Steps I through V as a whole, recording modifications needed anywhere along the way, and reporting these "findings" in venues that permit others interested in similar lines of inquiry to build upon findings reported. Reporting venues need to include one or more Catalogues of Measures, and one or more compendiums of related theory development.

We are presuming that all who are involved in helping with Steps I through IV will be engaged simultaneously, and independently, in Steps V and VI. In so doing they will contribute to the empirical testing and subsequent refinement/enhancement of the conceptual and methodological underpinnings being developed collectively through Steps I through IV.

In combination, and in endlessly repeated cycles, these six steps represent the essence of "the scientific method." As argued by Shoemaker, Tankard and Lasorsa

> "The goal of science is to produce and test theories. As we pointed out earlier, the major difference between science and other ways of knowing is that science constantly questions itself. Science tries explicitly to state its theories, to pose them in formal ways using precise statements so that it is clear what they are saying, to test them, and to confirm, modify, or discard them. Science is the ongoing business of coming up with new ideas and finding ways to challenge them. This notion of testing and revising is what separates scientific theories from the informality that characterize informal theories." (p6)

Our plan for accomplishing all the above is to involve a wide range of educators, teacher educators, and representatives from related social sciences in helping develop, respond to, clarify, extend, or replace working drafts of "theory-in-progress" documents Western Oregon faculty will assume responsibility for preparing. If funds permit, the core of this process will take place through face-to-face work sessions scheduled once or twice a year, in consultation with a national advisory panel selected for their expertise about related matters. If funds for face-to-face work sessions are not available the process will be carried out through regular mail, email, video conferencing and other available means for extended exchange with interested others around the

theory-in-progress documents. Publications reflecting progress made in the endeavor will follow at appropriate junctures.

Assumptions Underlying the Work Proposed

Assumption 1. The connections between teaching, teacher preparation, and K-12 learning can be addressed through the methods of science, with great benefit, if these methods are applied rigorously and in a way that lets both methods and findings be integrated and treated cumulatively across the three domains.

Faith in the methods of science to understand and improve teaching and learning was strong during the last decades of the 19th and much of the 20th centuries (Clifford, 1973). It ranged from philosophers like Dewey (1900, 1929) and Smith (1960); to psychologists like Thorndike (1912, 1928), Skinner (1954, 1968), Bruner (1960, 1966), Carroll (1963), Gage (1963, 1978, 1996), Gagné (1970) and Bloom (1976); to educators like Judd (1918), Buswell (1920, 1960) and Barr (1948, 1961). The first and second Handbooks of Research on Teaching (Gage, 1963; Travers 1973) were firmly anchored to this view, though in his preface to Handbook II Travers reported the disappointment of many who prepared chapters in the lack of advance in substantive knowledge about teaching in the decade since publication of Handbook I. Reviewers also reported the research being reviewed as "… a patchwork of unrelated items that neither fitted together nor yielded a useful set of generalizations" (p *vii*). Travers went on to say that the heavy emphasis in the volume on "what is wrong with educational research … reflects the general level of inadequacy of much of the research that has been undertaken" (p *vii*).

No chapter in Handbook I, and only one chapter in Handbook II (Peck and Tucker, 1973), was devoted to research on teacher education.

In his preface to the third edition of the Handbook, Wittrock (1986) was far more upbeat. He spoke of research on teaching as having "flourished" since publication of the second Handbook, with traditional lines of inquiry maturing and new areas evolving. This was especially the case with respect to "… the cognitive processes of teachers and learners that mediate the effects of teaching upon student achievement." (p *ix*) The first section of Handbook III, consisting of eight chapters, still carried the title "Theory and methods of research on teaching", but focus on theory was thin. Shulman's opening chapter (Shulman, 1986) dealt with theory largely as background to his focus on "paradigms and programs" of research, and only the last of these eight chapters (Biddle and Anderson, 1986) dealt explicitly with the role of theory in the enhancement of research and practice. Their view in this regard was far less upbeat than Wittrock's: "… research on teaching is still in its infancy… It is only now beginning to generate its most important knowledge products -- empirically based theories of teaching" (p 250).

Handbook III continued the pattern of a single chapter being devoted to research on teacher education (Lanier and Little, 1986), but the focus of their chapter was on "… the chronic problems associated with teacher education, with special attention to why they endure" (p 528). In taking this focus they made clear their belief that "…the study of social entities such as teacher education is apt to be advanced least by adherence to the classical natural science modes of inquiry" (p 528). This is a view that surfaced elsewhere in Handbook III, for example, the chapter by Erickson on qualitative

methods in research on teaching (Erickson, 1986) and the chapter by Clark and Peterson (1986), on teachers' thought processes.

By the time the fourth Handbook of Research on Teaching was published (Richardson, 2001) the attention given by Gage and Shulman in the first and third handbooks to "… an orderly evolution of research approaches drawn from work in related social sciences and disciplined by the methodological strictures of those fields" (Floden, 2001, p 5), had diminished even further. Richardson speaks at length in her preface to the volume of having to "… place research on teaching within the many descriptive and normative ideas about thinking, learning, and action that were and still are swirling around us" (p *ix*) which, "… in the words of some, created chaos in the field" (p *x*). A postmodernist view of the world, and an accompanying penchant for 'qualitative' research methods, had found their way to research concerned with teaching, teacher preparation and K-12 learning, and they "… raise questions that jar the very foundations of our understanding of research "(p *x*).

As a consequence, only two of the 51 chapters included in Handbook IV focus explicitly upon the contributions to be made through the traditional methods of science -- the first chapter by Floden (2001) and the last by Genishi, Ryan, Oschner, and Yarnell (2001). Other chapters embed discussions of theory and related matters within specific contexts, for example, the chapter by Oser and Baeriswyl (2001) on bridging instruction to learning, and the chapter by Shepard (2001) on the role of classroom assessment in teaching and learning. A majority of chapters included in Handbook IV, however,

reflect what Richards refers to as "… evolving research methodologies and strong, diverse conceptual frameworks" (Richards, p *xii*).

Attention given explicitly to teacher education in the fourth Handbook increased to four chapters. Those included a chapter by Darling-Hammond (2001) on changes in licensing, certification and assessment; one by Calderhead (2001) on international experiences in teacher reform; one by Munby, Russell and Martin (2001) on teachers' knowledge and how it develops; and one by Richardson and Placier (2001) on teacher change.

We think the advisory board and editor of Handbook IV made good decisions in capturing the turmoil and diversity that existed within the teaching and teacher education research communities at the close of the 20th century. As a consequence of events since the turn of the century, however (see pages 3 through 6 of this invitation), especially the high stakes now surrounding teacher quality and recent reviews highlighting the limited utility of our existing research as a guide to either policy or practice, we believe a concerted effort needs to be made to move beyond the "paradigm wars" and their related issues of the 1990's to a research strategy and agenda that address more directly the issues currently before us. We think the strategy we have outlined on pages 7 through 9 of this invitation, and elaborated in the accompanying PROSPECTUS, has the best chance of doing so. Because of the range and complexity of variables involved in undertaking such an effort, with a wide range of measures and approaches to measurement necessarily being involved, the continued divisiveness of paradigm talk needs to be laid aside.

Assumption 2. Theoretical work drives most advances made through science, and adds a powerful lens for improving practice.[2]

As stated in the earlier quotation from Shoemaker et al, the goal of science is to produce and test theories. Science is the ongoing business of coming up with new ideas and finding ways to challenge them. Shoemaker and her colleagues go on to say that

> "… although textbooks often state that theory is meant to describe, explain or predict, theory almost always is meant to explain *in order* (italics added) to predict. The goal of theory is not so much to explain things as to use explanations to predict things" (Shoemaker, Tankard, and Lasorsa, p 6).[3]

In the case of teaching and learning this means predicting (and demonstrating) that a particular instructional model will enable students at a particular stage in their learning, and having a particular set of characteristics they bring to a learning task, accomplish a particular type and level of learning outcome desired (Oser and Baeriswyl, 2001). In the case of teacher preparation this means predicting (and demonstrating) that a particular program of instruction will enable candidates seeking a particular license to teach be able to help most students of the kind they will be teaching make acceptable progress toward particular types and levels of learning outcomes desired. In the case of the continued professional development of early career teachers this means predicting (and demonstrating) that a particular program of support and assistance during the early years of teaching will enable teachers to help all of their students make steady progress toward the outcomes desired of instruction.

These are tall orders, but probably no more demanding than predictions sought in other domains of the social sciences, such as predicting the behavior of individuals in social contexts or predicting the social and intellectual development of children during their pre-school years.

One of the things that makes understanding and prediction difficult when tracing the connections between teaching, teacher preparation and student learning is the many levels and kinds of variables involved: the learning outcome(s) desired for a particular set of K-12 students; the instructional model(s) known to be successful in helping students reach the learning outcomes desired; the nature of home, classroom and school contexts that need to be taken into account in implementing a particular approach to instruction with a particular set of students; and the content and design of initial preparation and early career support programs that prepare teachers to deal effectively with all the above. Theory building always begins with looking at relationships between two variables, but extends quickly to relationships among three or four. Fortunately methods are now available in the social sciences for looking at relationships among many variables in a single analysis.

Given these capabilities we think that theory building of the kind proposed is feasible. Doing it will be demanding, and an initial start will be no more than that, but there is nothing mystical nor impossible about the six steps involved in theoretical work outlined previously. What we need to do is start with Steps I and II, which will require a year or two of collective effort to get working conceptual maps and related definitions drawn, and then proceed immediately to Steps III and IV. Initially these steps need to

be developed only at an ILLUSTRATIVE level (another year of collective work), for they will be fleshed out in detail as Steps V and VI are undertaken.

As soon as the first four steps have progressed to at least an illustrative level of maturity they will be ready to share broadly within both the education and teacher education research communities. Their sharing will be accompanied by an expanded invitation to join seriously in the long tem theory building/testing/refining effort that at that point can be illustrated far better than now.

As such, the theory work being proposed cannot be viewed as a short term fix, or a panacea with respect to the issues currently facing education and the preparation of teachers. While it can be viewed as work needing to be done for solid progress to be made on these intertwining issues over the long term, it must be viewed as work that will not be done within anyone's lifetime, and work that will be revised and revised again. That is the nature of science, and as Gordon Allport said in ending his classic introduction to modern social psychology (Allport, 1954)

> The student of social psychology has no choice but to learn many maps, realizing that the master chart is not yet available. Many maps, however, are preferable to no maps. Investigators who prefer to start from scratch do so at their own peril. When they attempt to put their myriad empirical findings together they may find they are entering blind alleys that have trapped many in the past; or they may find that their "discoveries" are, historically considered, mere truisms. But the investigator who is aware of the history of his subject is able to strike out with assurance. He will be able to distinguish new garbs from old, progress from platitude, and will thus help build a truly cumulative science.
> (p. 51)

Given the 200 year head start the physical sciences have had over the social sciences, and particularly over arenas within the social sciences dealing with the connections

among teaching, teacher preparation and student learning, our progress toward a cumulative science around these connections probably will progress slowly and awkwardly by comparison, but the six steps followed in the endless cycles of science are the same.

Assumption 3. Theoretical work pertaining to the connections among teaching, teacher preparation and K-12 learning should reflect the model of schooling within which teaching and learning are to occur.

With passage of the No Child Left Behind Act in 2000 the standards orientation to schooling that has been evolving since publication of the *Nation At Risk* report in 1983 was extended and codified into law. As a consequence, the nation is now on an accelerated path toward a standards-based, criterion referenced, accountability driven approach to schooling, and quickly jettisoning the norm referenced, textbook driven, standardized achievement test monitored approach that dominated American education for most of the 20th century. From our experience with this new model of schooling in Oregon, and the detailed analysis made of its implications for teachers and teacher educators (Schalock, 1993; Schalock and Cowart, 1993; and Schalock, Cowart, Myton, and Reinke, 1993), theory connecting teaching, teacher preparation and student learning needs to be carried out in the immediate future within this frame of reference. At present it is unclear what this means for the utility of our existing knowledge about teaching and learning, since it was created within a markedly different frame of reference. A comparable problem exists around our knowledge pertaining to S-R

learning in light of current thinking about learning being "constructed and situated." These are issues of enormous importance to resolve.

There are four broad features of this "21st century design" for schooling that makes it markedly different than 20th century schooling:

1) It designates the kind and level of learning outcomes expected of students, in the form of standards for learning, as they progress from Kindergarten through graduation;

2) It has an aligned, defensible system for assessing these outcomes, and making public the success of disaggregated groups of students in achieving them;

3) It carries a requirement for school improvement if and when the learning progress made by any group of students served by a school is less than desired; and

4) It carries consequences such as added resources, plans of assistance, restructuring, or takeover by a replacement set of educators -- or even an external agency -- if desired improvement in student learning does not occur within a designated period of time. A recent report in *Education Week* (Keller, 2004) indicated that the State of Michigan currently has 112 schools that have failed to meet improvement targets for five years running, and now face reconstitution, with an additional 108 schools facing similar circumstances in 2005.

Both teaching and student learning take on dramatically new meanings within the context of such schools. Work for teachers, as well as students, is far more demanding when each student is expected to reach high standards for learning, rather than

working toward a "grade" that they and their parents are willing to accept that compares their work to the work of others. Also, the work of both teachers and students is more open to inspection than in the past, and more subject to sanction. In today's schools, the performance of both teachers and students contribute to the published success or failure of their school.

A change of even greater importance for teachers is when it becomes clear that a school is not serving a group of students well, teachers must join forces with others in their building to make the curricular or instructional improvements needed for all students to reach the goals for learning desired. This dimension of a standards orientation to schooling sets in bold relief the critical importance of teacher capacity, both individually and collectively as a school faculty, to help all students succeed in accomplishing high standards for learning in all subject areas within a school's curriculum (Schmoker, 1996, 1999; Haycock, 1998; Lambert, 1998; Schmoker and Marzano, 1999; Elmore, 1995, 2003). In this regard Elmore concludes his recent plea for strong practice on the part of teachers (Elmore, 2003) with some strong language:

> The task of developing powerful theories of school improvement is urgent. The urgency stems in part from the difficulty of the work itself. Schools are low performing in large part because their *instructional practice and organization* (italics added) are not strong enough to meet the demands of educating children.
>
> But the urgency also stems from the politics of education. Bad policy happens in part because of educators' weak knowledge, weak practice, and weak mobilization. We have deliberately chosen not to engage in powerful collaborative learning around the central problems of our work and have instead organized ourselves professionally and politically in fragmented ways. We have chosen to operate in ways that reinforce, rather than push against, the pathologies of the policies that affect our work. The discipline of developing a practice of improvement is one way to repair these problems. (p. 10)

Challenges and change of this magnitude in the public schools require change of equal magnitude in the preparation of teachers to work within them, and here is where theory, or the lack thereof, comes into play. What is needed to connect the preparation of teachers to the demands of 21st century schools, and the learning needs of 21st century students entering them? What knowledge, skills and dispositions need to be acquired by prospective and practicing teachers to secure the strength of practice needed for all students served by a school to reach the high standards for learning now expected? What evidence needs to be assembled that prospective and practicing teachers are in fact able to integrate and tailor the knowledge and skills they possess in ways that help the students they teach progress toward high standards for learning? And, finally, how are all the above to relate to licensure decisions and the interactions needed between teachers and parents as students make their way through a standards-based school environment?

Until there is theory and theory anchored models that tie all these pieces and parts together in a coherent and empirically supported whole, teacher preparation programs will continue to be loosely connected, often ill-fitting collections of courses and practicum experiences that are left for beginning teachers to meld into personally and contextually workable practice. If education is ever to reach the strong practice Elmore calls for we need to do better than that, both for the sake of teachers and those whose lives are influenced by teachers in an increasingly high stakes environment for learning.

Assumption 4. Theoretical work pertaining to the connections among teaching, teacher preparation and K-12 learning needs to build hierarchically, and irreversibly, from a) K-12 student learning; to b) connecting teaching and learning; to c) connecting teacher preparation and licensure to (a) and (b).

The reasoning underlying this assumption is fairly straightforward:

- ✓ student learning is the focus of teacher work, so above all else teachers must understand what students are expected to learn as they progress through school, and why, how, and under what conditions learning around particular outcomes at particular stages in a child's development is likely to occur;

- ✓ teaching builds on a knowledge of student learning and involves establishing and managing from moment to moment environments for learning that facilitate the progress of each student in one's classroom toward the particular learning outcomes targeted at a particular point in time;

- ✓ the preservice preparation of teachers rests on the twin foundations of knowledge about student learning and teaching, and involves helping prospective teachers develop an initial level of mastery around them, but it also involves helping beginning teachers learn to integrate and adapt these two knowledge bases to the point of being able to demonstrate to an established criterion their success in helping students in the supervised classrooms in which they teach progress toward high standards for learning;

- ✓ the support needed by early career teachers in their work, and in the continued professional development they need to pursue in order to move from a modest to robust capacity to help K-12 students learn, has all of the above as their foundations, but early career teachers also must be able to work effectively with parents and their colleagues if all students in their school are to reach high standards for learning.

Each segment in this sequence builds upon and extends the segment which precedes it, with all anchored firmly to student progress in learning.

This layered and segmental nature of the domains in which theory building will be carried out makes starkly evident the magnitude and complexity of the task. It is further complicated by having to consider the contextual variables within which each domain rests, particularly the characteristics of the classroom and school in which teaching and learning occur. District, family and community variables also need to be taken into account, though clearly as those more distant or peripheral to the teaching/learning process.

Is it reasonable to think that theory can deal with this level of complexity? After struggling with these issues for several decades, (see, for example, the 1996 *Progressive Summary* of related work prepared for review by a National Advisory Panel on teacher work sample validation), and particularly after confronting them face-on in the longitudinal research project just completed, we think the answer is yes. And we are buoyed in our view by the position taken by Shulman in this regard in his 1986 groundbreaking chapter on paradigms and programs in the study of teaching (Shulman, 1986).

> I begin with the assumption that there is no "real world" of the classroom, of learning, of teaching. There are many such worlds, perhaps nested within one another, perhaps occupying parallel universes which frequently, albeit unpredictably, intrude on one another…
>
> Indeed, I would contend that our most reasonable hypothesis is that each of these lives must be studied in its own terms. We must attempt to capture the essential features of each strand in one or more middle-range theories (Merton, 1967) which render accounts of the teaching-learning episodes that characterize that level. These episodes provide the dramatic material for lives in that context, and define the strategic research sites (Merton, 1959) within which we make theoretical sense of what occurs there. Since these strategic research sites are different in each strand, so must be the strategic investigations, hence the facts, principles and

> theories that emerge from those investigations. It is unlikely that any single theoretical frame can encompass the diversity of sites, events, facts and principles that cross all those levels.
>
> Any claim that the worlds of teaching, of schools and classrooms, of pedagogues and pupils, are so complex that no single perspective can capture them should be treated with skepticism…
>
> This map, however, cannot be a comprehensive theory of teaching. It is a representation of the variety of topics, programs, and findings of the field of research on teaching, related to one another as usefully as possible. For it to be useful, we must attempt to construct a map of the full domain of research on teaching (or several alternative maps, each highlighting different features, and analogous to political subdivisions, the physical features and elevations, climactic conditions, and the like), a map sufficiently broad and encompassing that we can locate upon it not only the particular sections of the terrain well captured by particular programs but also those left out. Moreover, we must seek to construct maps that themselves have some coherence or order, so our analyses can go beyond a mere shopping list of topics *qua* ingredients, some of which just happen to be omitted from any one particular treatment. (p 7)

An outline of the organizational structures we currently are using to "map" the teaching, teacher preparation and learning domains described previously, and their interaction, follows discussion of our fifth assumption.

Assumption 5. Faculty at Western Oregon University have the wherewithal to facilitate an undertaking of this nature and magnitude. As indicated previously, faculty at Western have been engaged in theory building of this nature for a long while, and in a wide array of venues. We list in Appendix C the more important of these, and some of the products and publications coming from them. We do this only by way of indicating the range of expertise and experience we bring to the task, and the success we have had in leading broad coalition efforts in the past.

The Theoretical Structure Proposed for Connecting Teaching, Teacher Preparation and K-12 Learning

Setting Boundaries on Theory Building

Factors affecting teaching and learning in a school are not only complex, they also are far ranging. In their chapter on "Classroom Cultures and Cultures in the Classroom" in the Fourth Handbook of Research on Teaching Gallego and her colleagues (Gallego, et al, 2001) use the schematic appearing on the following page in applying "… the notion of context to thinking about the organization of educational activity" (p 960). These many layers of context within which teaching and learning rest reflect the meaning of context as "that which surrounds", or "that which weaves together", and corresponds to "…disciplinary boundaries used by those interested in educational processes" (p 959).

Because our central focus in theory building is the connections among teaching, teacher preparation and learning, rather than the education process in general, we have chosen a slightly different organizing framework than shown in Figure 1 to convey the boundaries set for the theory building proposed. This modified framework is shown on page 26 as Figure 2, and is intended to both highlight and signify the weight given to those features within the school and broader environment that bear most directly on school-based teaching and learning -- and thus on the focus and content of teacher preparation and continued professional development as an early career teacher.

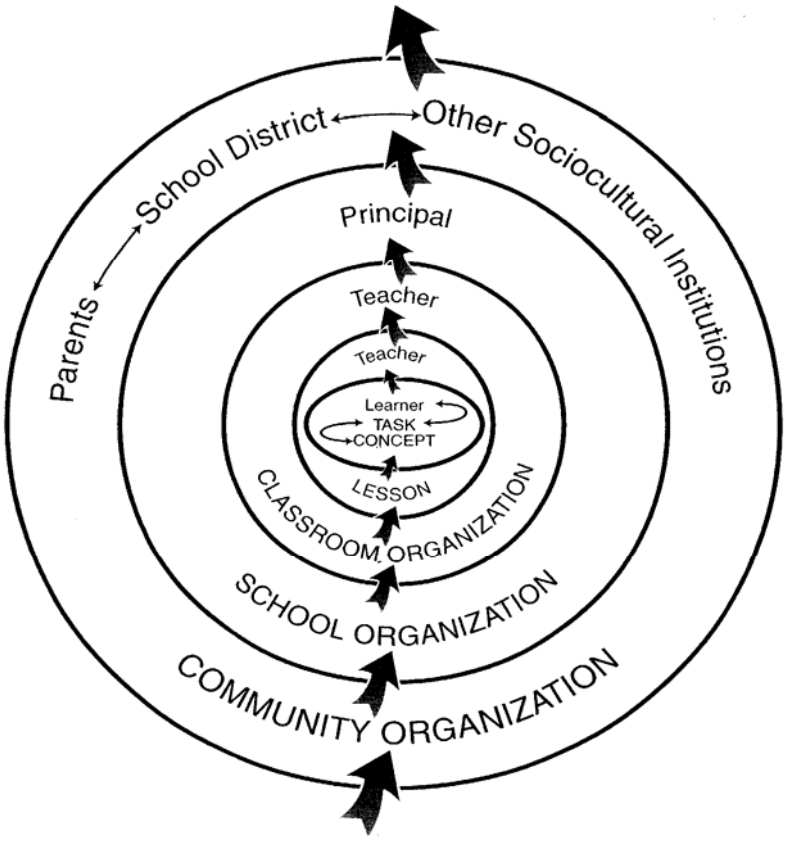


Figure 1. An application of the notion of context to thinking about the organization of educational activity. *Source:* From Contextual Factors in Education (p 7)., by Cole, Griffin, and the Laboratory of Comparative Human Cognition, 1987, Madison, WI: Center for Education Research.

A Layered Approach to Theory Building With a Lattice of Connectors

As a point of departure in mapping these connections we have adopted a "layered" approach somewhat like Shulman discussed in 1986 (see page 22) with a "latticework" of connectors between layers. Using another metaphor, the structure resembles a post-and-beam construction design for houses: a support structure of posts, with as many floors and rooms attached to the posts as desired.

In our proposed design for theory building we have opted for four corner posts dealing with Learning IN A STANDARDS-BASED SCHOOL. We have separated these into

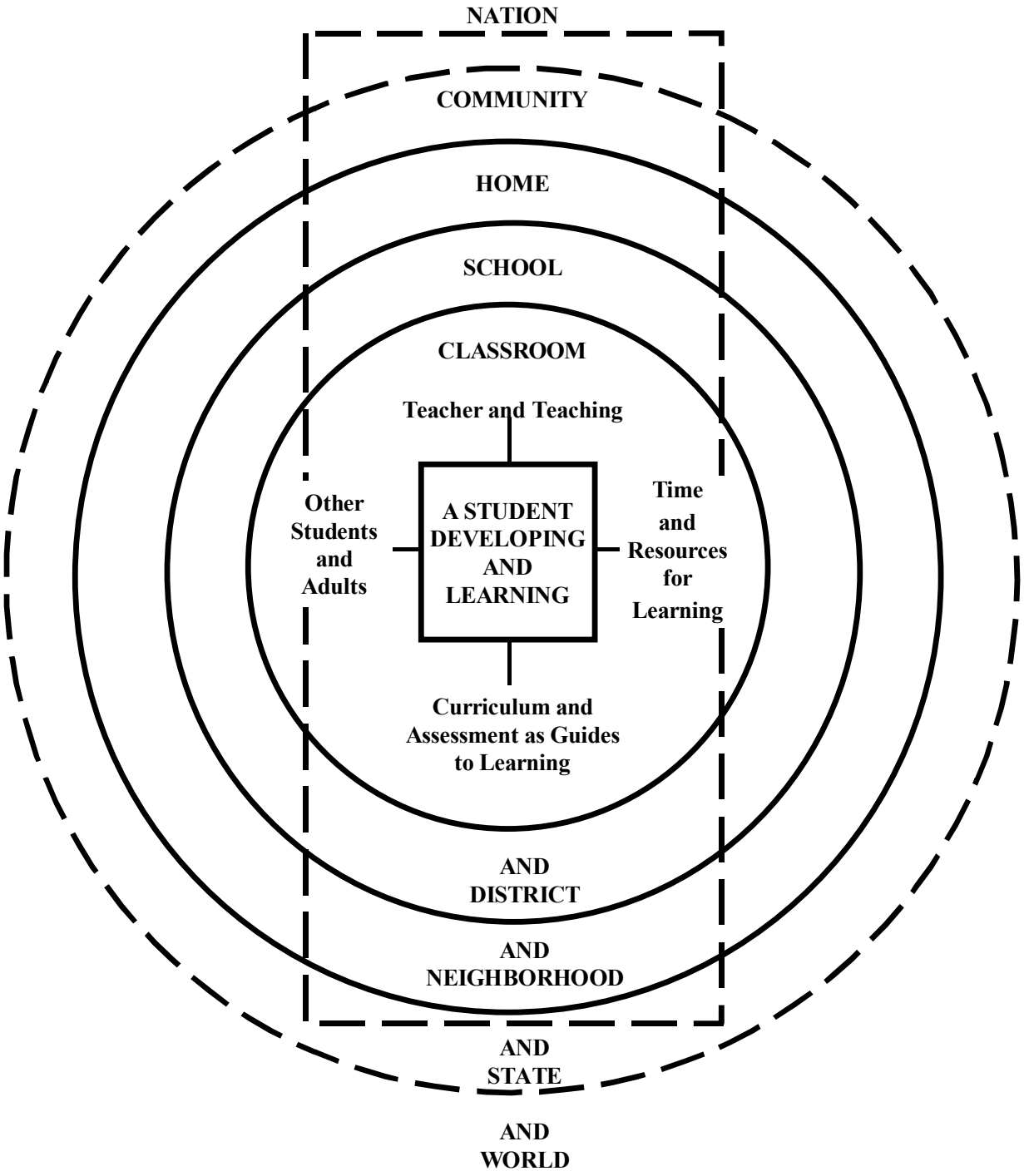


Figure 2. The focus and boundary of our theory building around connections among teaching, teacher preparation, and K-12 learning is signaled by the cross-cutting rectangle of broken lines. The greater the proportion of a circle enclosed by the rectangle, the greater the attention the content of the circle will receive in our work.

1) human development and learning to high standards during the school years (LEARNING);
2) teacher effects on standards-based learning (TEACHING);
3) school effects on standards-based learning (A PLACE CALLED SCHOOL); and
4) family, neighborhood, and community effects on standards-based learning (A PLACE CALLED HOME).

These are inclusive of the center square and four circles shown in Figure 2, and constitute both the primary knowledge base and theoretical anchors for the work of teachers.

Within this anchoring framework we propose to prepare THEORY MATRICES that connect each of these four broad and interacting dimensions of school-based learning to one another. We are of the view that this should be done additively and hierarchically, with Level 1 theory building providing a foundation for Level II, levels I and II providing a foundation for Level III, and so on. Our thinking in this regard is shown schematically in Figure 3, with the recognition that one level can never be separated completely from another. Solid lines are intended to convey primary focus; broken lines the contexts within which a primary focus rests.

5) The preparation, licensing and support of teachers necessarily build upon these four broad dimensions of learning in school, but they also involve distinctly different levels of TEACHER LEARNING AND DEVELOPMENT around them. While over simplistic, we propose separating these into the *initial* preparation and licensing of teachers to work within a standards-based school (PRESERVICE PREPARATION); and
6) the *support and continued professional development* needed by early career teachers working within such schools (EARLY CAREER SUPPORT).

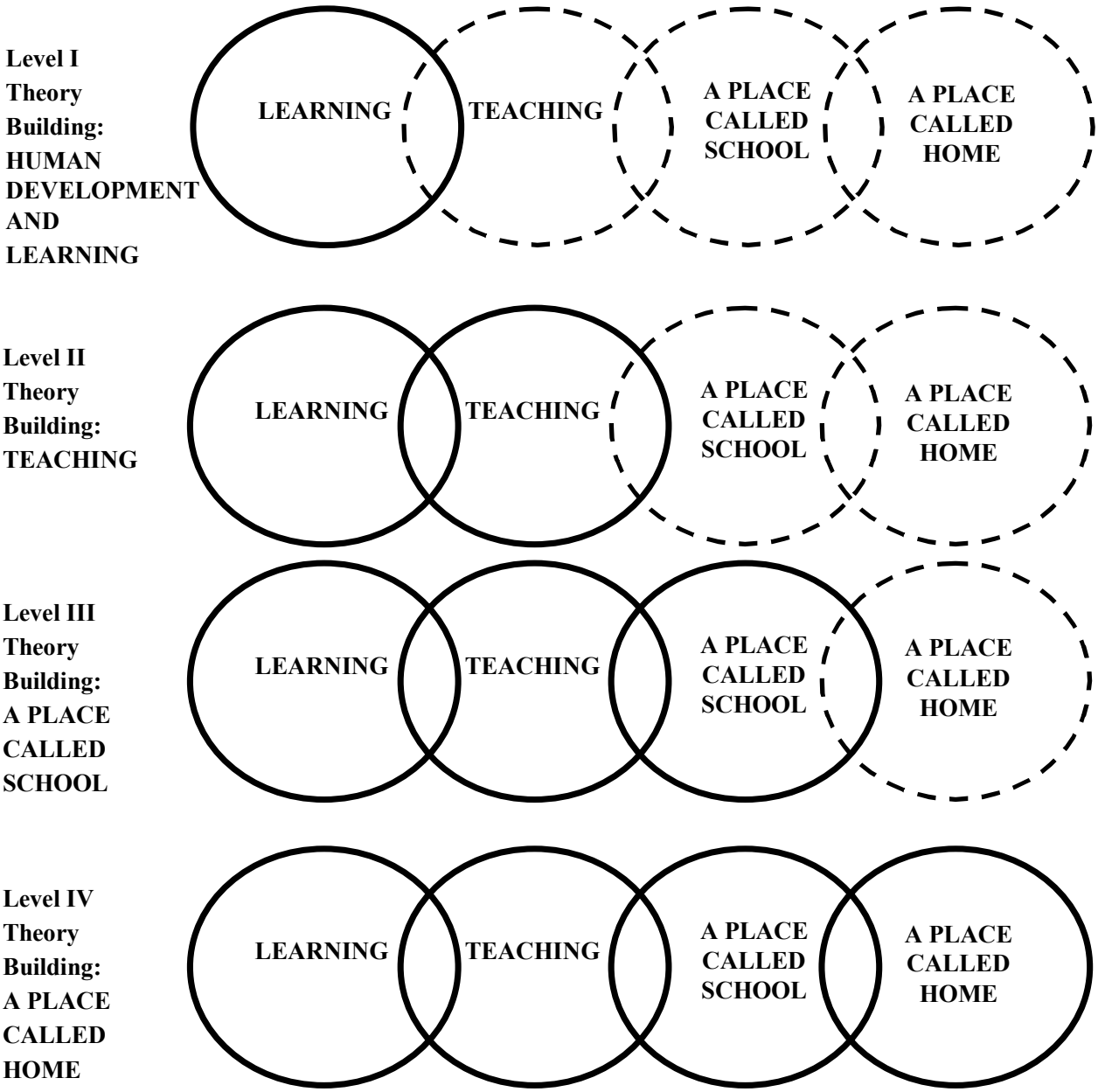


Figure 3. The structure proposed for orchestrating theory pertaining to school-based learning, circa 2004.

So, as a whole, the theoretical work we are proposing involves six interactive (and interdependent) levels of theory building: Levels I through IV as the central knowledge base for teacher preparation, licensing, and continued professional development; and Levels V and VI which focus upon teacher development, learning, and effectiveness within a standards-based school environment. The connections between Levels I through IV, and Levels V and VI, are shown schematically in Figure 4. Heavy solid and broken lines are intended to convey the depth and breadth of knowledge teachers are expected to master at these two stages in their professional development, with an accompanying inference about their probable effectiveness as facilitators of learning and contributors to school effectiveness and improvement.

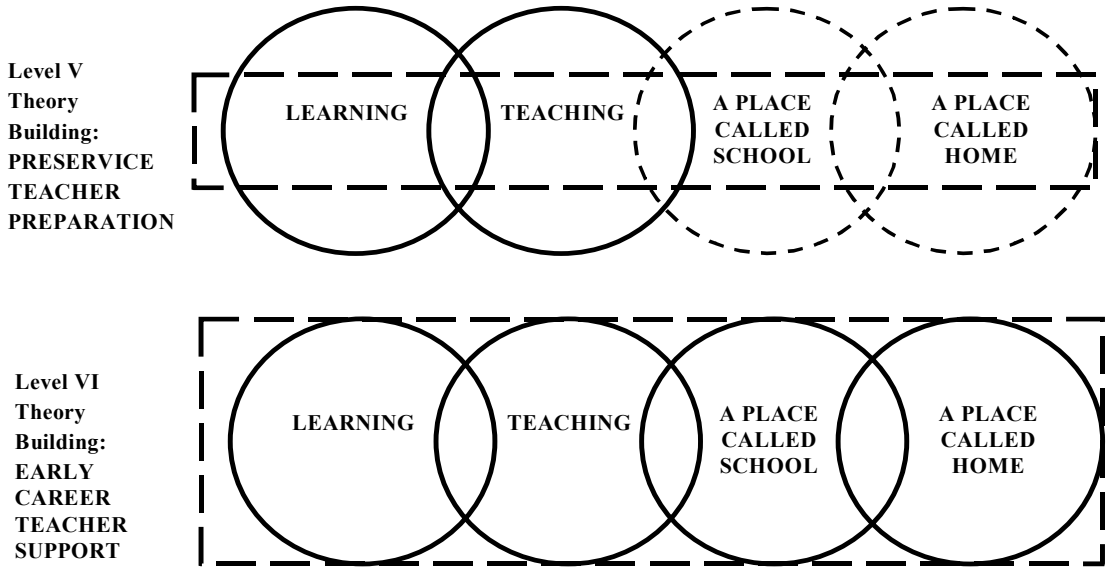


Figure 4. The structure proposed for orchestrating theory pertaining to school-based learning with theory pertaining to teacher development, learning, and effectiveness, circa 2004.

In addition to the four dimensions of work within today's schools that anchor each level of theory building, concepts addressed within each of these dimensions are organized into one of four broad categories: CORE, PROXIMAL, DISTAL, and PERIPHERAL. These classifications represent an initial ordering of possible variables *within each dimension* addressed (either an *a priori* ordering, or based on existing evidence) for subsequent steps in theory building. As listed on page 8 these involve the provision of conceptual and operational definitions; developing models and path diagrams of hypothesized relationships among variables; locating or developing measures for all variables of interest; and selecting research designs for testing expected relationships among variables. What constitutes a *core* variable in one dimension, however, for example, instructional strategies and procedures used in TEACHING (Level II), will carry a different classification at another level, for example, a *proximal* variable in LEARNING (Level I).

We view this set of elements within each level of theory building as a latticework connecting one level of theory to another as the whole structure progresses from Level I through Level VI. The pieces and parts projected for each theory matrix are listed in Exhibit A on the next page.

Exhibit A. Sections Projected for Inclusion at Each Level of Theory Building

I. Critical Properties

A brief introduction to the focus of a particular concept map, and how this focus is uniquely influenced by a standards-based, accountability driven orientation to schooling.

II. Essential Concepts

A listing of the concepts needed to think about the dimension of theory building being addressed (LEARNING, TEACHING, A PLACE CALLED SCHOOL, A PLACE CALLED HOME) within today's standards orientation to schooling, ordered into one of four broad categories: core, proximal, distal, and peripheral.

III. Conceptual Definitions and Theoretical Grounding

The "working" definitions we will use as a point of departure in the theory building enterprise. These may represent commonly accepted, dictionary definitions or highly abstract definitions already embedded in theory or used in research. Extant theory pertaining to connections among any of the concepts appearing in PART III of a particular map will be identified, cross-referenced, and placed in meaningful juxtapositions within the context of the concept map being constructed.

IV. Operational Definitions and Empirical Grounding

Whatever their source the concepts defined will be accompanied by references to key studies and/or research reviews that provide empirical support for the concept as defined and its inclusion within a particular concept map. Map building within this frame of reference is a dynamic, continuing process informed by the interactions of theory, research, and construct refinement across time and contexts.

In addition extant measures pertaining to concepts appearing in PART III of a concept map which have demonstrated reliability, validity and utility also will be identified, cross-referenced, and placed in meaningful juxtaposition within the context of the concept map being constructed. They also will be assembled in a Catalogue of Concept Related Measures.

V. Illustrative Path Diagrams

Path diagrams are the vehicles through which connections between and among concepts (variables) appearing within and across levels within a concept map (core, proximal, distal, peripheral) can be hypothesized and tested. It is through such diagrams, and the research findings accompanying their testing, that the ongoing empirical grounding and conceptual refinement involved in theory matrix construction occurs.

Two Additional Notes on the Theory Building Process

Testing the Robustness of Theory Against Learner and Curriculum Differences

In discussions around the philosophy of science distinctions are drawn between a theory, an hypothesis, and a law. Distinctions rest on the amount and uniformity of evidence supporting relationships established between two or more variables (Shoemaker, Tankord and Lasosra, 2004). As such, these are relative rather than absolute terms. A set of relationship treated as *a scientific theory* is one which has considerable evidence in its support, and considerable agreement within that evidence. A *hypothesis* is a statement that may or may not have evidence supporting it directly, but there is reason to believe -- usually through related theory -- that such evidence can be garnered. It is, as Shoemaker and her colleagues say, ".. a scientific statement that asks to be tested." (p 9) By contrast, *a scientific law* is an established relationship based on a great deal of scientific evidence that is *unvarying* in its support. The stronger the evidence in support of theory the more useable (and defensible) it will be in supporting practice.

For the foreseeable future relationships carrying the status of scientific law are not likely to be established around the linkages between teaching, teacher preparation, and K-12 learning. Many relationships among variables within these domains have been and will continue to be established, however, that will carry the status of scientific theory.

Once such relationships are established, a second question immediately arises: How robust is the theory? At the simplest level, this is a matter of replicability. Will similar findings be obtained if a study is repeated under comparable conditions? A more demanding test of robustness is to see whether findings obtained under one set of conditions holds under another. Competing conditions might involve 3rd graders vs 6th graders, or mathematics vs language arts. They might also involve differences in classroom and school characteristics as conditions for teaching and learning. Differences between students doing the learning and the subject areas within which learning is to occur, however, and the interactions likely to occur between the two, make these two dimensions of teacher work important frames of reference for determining the generalizability of theoretical statements.

Aides To Theory Building in Teacher Preparation

Any vehicle that provides order and hypothesized or empirically demonstrated relationships among variables within a domain of theory building offers a useful entry to the theory building process. Distinctions between elementary and secondary education within the context of teacher preparation, for example, or between general and special education bring a starting focus and definition to variables of interest, and usually a rationale for their selection. In an applied context such as teacher preparation and licensing, they often include statements of purpose and outcomes to be accomplished as well.

NCATE's recent standards for the accreditation of teacher education programs are remarkably helpful along these lines. Starting with its 1995 "Refined Standards" NCATE began requiring a conceptual framework statement as the foundation for program design, and in the 2000 revision of its standards this was extended to include clear and explicit linkage to K-12 learning -- including the collection and use of evidence as to a prospective teacher's ability to help students progress in their leaning. These are changes at the policy level that aid the theory building process immensely when theory is to connect both teaching and teacher education to K-12 learning.

In responding to either NCATE or state standards for program approval teacher education faculties wishing to engage in theory building can further that work by the delineation of their programs one from another. This can occur along many dimensions, for example, early childhood, elementary, middle school and secondary, and by detailing various operational models within each program, for example content acquisition, skill development, assessment, or the field experiences needed to integrate and be able to adapt knowledge and skills to help all students taught progress in their learning. Each of these delineations both sharpens and narrows theory building tasks through the added definition, clarification and ordering they provide.

Notes on Ongoing Research as Part of Theory Building

The various steps in the theory building process that have been discussed in previous pages are on-going and cyclical in nature. They usually start with an attempt to bring order and clarity to the concepts and fragments of theory currently existing

within the boundaries established for theory building. They also are accompanied by a cataloguing of measures used in studies pertaining to the concepts involved. These early aspects of theory building, however, are only ground laying in nature. They need to be accompanied by, sharpened through, and expanded as a consequence of testing hypothesized relationships emerging among the concepts (variables) thus organized. In short, the conceptual, theoretical, and methodological grounding that sets the theory building process in motion need to be accompanied by related research, and through such research be refined and extended on all fronts.

The notes that follow about research connecting teaching, teacher preparation and K-12 learning within the context of a standards orientation to schooling bring this invitation to a close. To illustrate differences in the impact of research on practice, distinctions are drawn between "basic" and "applied" research. As all researchers and evaluators know this distinction can be arbitrary and misleading, particularly when employed within a field of professional practice. We believe the distinction to be useful, however, and in the paragraphs that follow we use the distinction to highlight differences in the purposes served by these two broad approaches to research, as well as differences in design that necessarily accompany differences in purpose. As in medical research, "basic" studies focus both on underlying causes and mechanisms involved in health or illness, while "applied" studies focus on the effects of various protocols for the maintenance of health or the treatment of an illness.[4]

Basic Research

As used here we view basic research on the connections among teaching, teacher preparation and student learning as having the same purpose that basic research has in any area of science: clarification, understanding, and prediction. We also view it as being similar in method: gaining conceptual clarity through definition, classification and ordering; translating conceptual definitions into operational definitions for purposes of measurement and treatment as variables; investigating expected (hypothesized) relationships among variables of interest; establishing relationships among variables that hold under designated conditions (principles); and establishing the predictive power and range (generalizability) of established principles. The focus and specifics of this process are driven largely by the interests of individual investigators, or teams of investigators, with guidance from related knowledge, theory and methodologies of measurement. As knowledge, theory, and measures evolve, individual studies take sharper focus and contribute more clearly to a growing body of knowledge, theory defined variables, and validated measures. If done well, and strong modes of communication exist among researchers with common interests, this far flung and widely varying collection of individual efforts become additive -- and increasingly powerful in their applications.

Priorities may be established for such work through policy decisions or agency adopted research priorities, but in general research leading to understating the myriad connections among teaching, teacher preparation and student learning will be carried

out by individual researchers working within their own disciplinary specialties with students and colleagues who share similar interests.

> *Particularly vexing problems to overcome for basic research to be fruitful on this broad span of relationships are:* 1) A way of dealing systematically with context effects; and 2) a way of meaningfully and defensibly assessing a teacher's impact on the learning of his or her students.

Applied Research: Teaching and Learning

As we are using the term, applied research refers to research focused on a particular problem or aspect of practice. While basic research on the connections between teaching and learning can take endless forms and foci, practice oriented research is more restricted in both form and focus. Practice oriented research requires a clear description of the problem being addressed, the practice to be investigated, and the conditions under which the practice is to be applied, for example, the nature and number of learners, time and resources for learning, and other features of context in which the practice is to be applied that are likely to influence its effects on learning. While these restrictions bring some limits to the kind of research on teaching and learning that can be considered as applied in nature, and places some reasonably harsh demands on design, the scope remaining for such research is still broad and many faceted.

With respect to the breadth and depth of such research one needs only to track its cumulative documentation through the Handbooks of Research on Teaching (Gage, 1964; Travers, 1973; Wittrock, 1986; Richardson, 2001). It is

widely distributed across grade levels and curriculum areas, and it is widely varied with respect to the learning problems and instructional methods investigated, the characteristics of learners and types of learning tasks addressed, and the contexts in which learning occurs. In combination the handbooks provide an impressive testimony to the curiosity, inventiveness and commitment to understanding within this complex arena of inquiry.[5]

The problem we face as educators and teacher educators is that for all the effort that has been expended on research connecting teaching and learning the issues we currently face around learning in our public schools are as pressing and unresolved as ever. More pointedly, from the perspective argued here, only disconnected lines of theory have evolved from all the effort expended, and as a consequence the contribution of our collective knowledge base to the design and implementation of instruction that helps all students progress in their learning is limited. This is particularly the case with respect to students accomplishing the high standards for learning that guide instruction in today's schools. Most of the knowledge base accumulated during the past 60 years around teaching and learning pertain to these activities within the context of norm referenced, textbook driven, standardized achievement test monitored schools of the 20th century. This is not the model of schooling being implemented as we enter the 21st century, and it is not at all clear that findings on teaching and learning obtained from this earlier model of schooling will apply within today' model.

Another cause for concern around the utility of past research connecting teaching and learning is its undulating, largely disconnected nature, and its traditional weakness in design (Clifford, 1973; Dunkin and Biddle, 1974). It also has been relatively molecular in focus, moving from the study of individual teaching acts in the 1950's and 60's (Medley and Mitzel, 1963), to "teaching functions" in the 1970's ad 80's (Rosenhine and Stevens, 1986), and anchored largely to standardized measures of student learning.

During the 1980's attention shifted to the cognitive dimensions of teaching, for example, teachers' thought processes (Clark and Peterson, 1986), the role of content knowledge in teaching (Shulman, 1986), and teacher learning (Munby, Russell and Martin, 2001), with few studies in this genre connecting to any measure of student learning. With this shift came the "paradigm wars" between quantitative and qualitative methods that has dominated the research literature on teaching during the last decade (Donmoyer, 2001), and a continuing pattern of failing to link studies of teaching to student progress in learning (Shulman, 2003). As Richardson put it in her preface to the latest Handbook (Richardson, 2001) "Since the third *Handbook* was conceived, much has happened that has, in the words of some, created chaos in the field." (p *x*) Hamilton and McWilliam (2001) refer to recent research on teaching as "moribund".

We share the view of many that it is time to move beyond the chaos and lack of productivity in research connecting teaching and learning (productive in

the sense of being helpful in informing practice), and return to an earlier focus on the study of teacher and teaching effects (Floden, 2001). Our view, however, is much like Florio-Ruane's (2002) in the belief that both the unit of analysis in such research (what teachers do) needs to be more powerful and reflective of the complexity of the context within which teachers work than teacher effects research has reflected in the past, and the dependent variable in such research (the impact of a teacher on student progress in learning) needs to be more comprehensive and nuanced than student performance on a state or district administered examination once a year that has only partial overlap with the curriculum goals that both students and teachers are working toward. Marilyn Cochran-Smith's (2003) language of "the unforgiving complexity of teaching" captures our view precisely (p 3).

In moving toward a more powerful conception of what teachers do to facilitate student progress in learning we are impressed by the work of Oser and Baeriswyl in Switzerland on their "choreographies of teaching" that bridge instruction to learning (Oser and Baeriswyl, 2001). They label these choreographies as "basis-models", and view them as student "learning scripts".

> A choreography of teaching, therefore, is composed of the planning and processing of teaching (sight structure) and of the planning and processing of the learning process (basis-model) in the classroom. Planning is defined as organizing in advance a structured form of action (instructional plans) in which the mental models of the steps can stimulate cognitive operations in learners. (p 1032)

This inseparable linkage of teaching to the mental operations required of learners to accomplish a particular category of learning outcome involves a degree of linkage between what a teacher does to what a student is expected to learn that goes far beyond any such linkages we have attempted to draw in any of our research traditions, with the possible exception of those drawn in "direct instruction" (Gersten, et al, 2001).

While the research and theoretical structure underlying the work reported by Oser and Baeriswyl is complex and unfamiliar, it carries an elegant simplicity in its linkage of teaching to the mental operations known to be needed for students to master a particular kind of learning outcome, and in the limited number of such "basis-models" they have been able to identify thus far (12). These range from "Learning Through Personal Experience" and "Discovery Learning" to "Problem Solving", "Knowledge Building", "Concept Building", "Use of Learning Strategies" and "Social Learning." They identify in their chapter the mental operations that need to be pursued by students in pursuing these various kinds of learning, as well as the implications of each for the planning and delivery of instruction. They also demonstrate how basis-models can be combined in particularly long sequences of instruction.

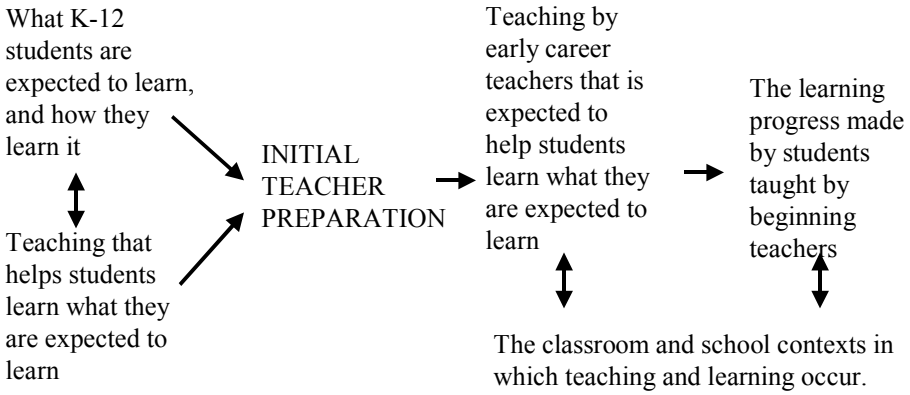
There are three features of Oser and Baeriswyl's work that makes it so attractive to us within the context of theory building around the connections among teaching, teacher preparation and learning. One is the theoretical tack they have taken in linking teaching to learning: learning drives teaching, rather

than the other way around. Another is the limited number of such linkages that need to be established, and thus mastered, for a teacher to be broadly effective in a classroom. A third is that research on such linkages provides a vehicle for *applied* research on the connections between both teaching and learning, and between teacher preparation, teaching and learning. If Oser and Baeriswyl's theoretical breakthroughs hold for teaching and learning in America's standards-based schools we may have ready made the means by which to take our own research on teaching and learning to a level of utility in informing practice in our schools heretofore undreamed of, and a level of success on the part of learners that still eludes us. To simplify the language used by our European colleagues, we began to think about this line of applied research as research on *teaching protocols*.

Applied Research: Initial Teacher Preparation

As indicated in earlier pages the knowledge base for the initial preparation and licensing of teachers tied to learning on the part of K-12 students is far thinner than it is for connections between teaching and learning. If true, how does one account for this apparent contradiction? Why should the knowledge base for the preparation of teachers be other than what we know about the connections between teaching and learning?

The answer is twofold. First, almost no teacher preparation research exists that addresses fully this multi-stage network of conditions, which involve minimally…



Second, even though there is an appreciable knowledge base on the connections between teaching and learning, three intervening issues complicate its translation into a teacher preparation program: 1) Of all there is to know about these connections what is it beginning teachers need to know?; 2) What is the best (most efficient and effective) way for prospective teachers to master the knowledge, skills and dispositions selected?; and 3) What kind of practicum and other supervised teaching experiences *lead to prospective teachers being able to integrate, apply and adapt their knowledge and skills to accommodate the widely varying learning needs of students as they progress toward high standards for learning?*

A third issue that relates to each of the others is that of performance standards to be met in order to be recommended for an initial license to teach. What level of mastery should be required around knowledge, skills and dispositions, and what level of success should be required for impact on the learning of students taught for an institution to recommend that a graduate be licensed to teach?

Each of these issues places added demands on a faculty charged with preparing teachers for initial licensure, and each places added demands on both theory and research pertaining thereto.

If this analysis is correct, how might applied research on teacher preparation incorporate all of the connections outlined in the flow diagram on the previous page? Both conceptually and procedurally, we think it will need to resemble the approach to applied research proposed for studying connections between teaching and learning. Such research would START WITH A TEACHING PROTOCOL (a known set of instructional plans and practices leading to the mental operations needed by students to master a particular type of learning outcome) and *focus on the kind of learning experiences prospective teachers need in order to understand and effectively apply the protocol with a wide variety of students within an appropriate range of classrooms*. For purposes of initial licensure the knowledge and skill level needed around a particular instructional protocol will not be exhaustive, and the level of proficiency gained in its application will

be modest, but both would be sufficient for first year teachers to be reasonably successful as facilitators of learning in their classrooms.[6]

Beginning teachers also need to understand, at least at a cursory level, how schools work as social and political institutions, and the full range of their roles and responsibilities within them as a place of work (Lortrie, 1975; Zeichner and Gore, 1990; Gold, 1996). The same is true for their connections as teachers with families and the broader community (Epstein and Salines, 2004; Scherer, 2004). The modest level of sophistication around all of these matters that can be expected of a newly licensed teacher is shown schematically in Figure 3 (Level V) on page 25.

To distinguish this applied research agenda for teacher preparation from that proposed for connecting teaching and learning, we suggest the language of TEACHER PREPARATION MODULE be used to indicate the attention to issues of teacher preparation that accompany a particular teaching protocol. Our assumption is that a separate preparation module will be needed for each teaching protocol developed.

When compared to what teacher preparation and teacher preparation research currently involve, what has been described here sounds like cumbersome and complex business. It is. And that is because the connections between teaching, teacher preparation, and K-12 learning are complex. It may be that basic research on teaching and learning in the future, or basic research on the preparation of teachers, will produce some general principles that will be

more efficient and powerful as foci for teacher preparation than the applied strategy that has been outlined, but we doubt it. Based on the history and findings of such research over the past 50 years, we are betting that general principles will not be found that give prospective teachers the focused knowledge, skill and practice they would receive through a "preparation module." Arming prospective teachers with a set of general principles, which they are then expected to integrate and adapt to accommodate the learning needs of widely differing students as they work toward widely varying goals for learning, no longer appears to us as a promising formula for the assurance of effective teachers. Bundling what we know about teaching strategies and procedures that engage students in the cognitive activities they need to pursue to accomplish a particular type of learning outcome, as called for in a "teaching protocol", and then helping prospective teachers become modestly proficient in understanding and implementing these protocols appears to us as an approach to teacher preparation that holds much greater promise of success from the perspective of learning on the part of K-12 students.

Developing such teacher preparation modules is an applied research and development agenda of huge proportions, and depends on a parallel R and D agenda for developing teaching protocols (or verifying those already developed through the work of Oser, Baeriswyl and their colleagues in Europe). But given the work of the Europeans as a starting point, these R and D tasks should not be overwhelming. The requirements for carrying out such research are largely the

same as those outlined for applied research connecting teaching and learning. The role of teacher preparation programs as contexts for carrying out such research is discussed briefly in the closing pages of this document.

Applied Research: Early Career Teacher and School Enhancement

As LEVEL VI in Figure 3 is intended to convey, support for the continued professional development of early career teachers differs greatly from that which has been discussed for preservice teachers. This is the case in three important ways:

1) Its aim is to help beginning teachers move from a modest to a robust level of proficiency as a facilitator of learning in a standards-based school;

2) An accompanying aim is to develop and nurture proficiency in carrying out the broader roles and responsibilities required of teachers as members of a school faculty, especially those involving work with parents and colleagues to enhance their school as an environment for learning; and

3) It needs to be delivered through means that accommodate the work, family and other demands of adult living that accompany life as a full time teacher.

To capture these fundamental differences that exist when working with early career in contrast to preservice teachers, we use the language of SUPPORT SYSTEMS rather than instructional systems.

Given this frame of reference the aim of applied research that supports the early career development of teaches is research on support systems that a) help

them progress from a modest to a robust capacity to assist students in their learning, and b) develops and nurtures their capacity as members of a teaching faculty to work with parents and colleagues to enhance their school and district as productive environments for learning Their initial preparation as teachers will allude to these broader professional responsibilities, and lay the groundwork for the continued professional development they will need to become proficient as facilitators of learning, but the specifics of the continued professional development required on both counts far exceeds what preservice teachers are ready to comprehend.

What will such support systems look like? What form are they likely to take? For openers they probably will need to focus separately, but interdependently, upon work within a classroom, work with parents, and work with colleagues. Those dealing with enhancement of proficiency as a facilitator of learning will need to build upon, but extend appreciably, the training modules used in preservice preparation. Those dealing with capacity building for work with parents and colleagues will represent entirely new entities. All, however, probably will be built around "on-line" resources for learning and the concept of "distance" education. While the specifics of these various support systems are far from being determined they all have precursors, in one form or another, within many of today's schools. Also, the general characteristics of on-line support systems for teacher learning are becoming increasingly well known (Carter, 2004).

Treating the development and implementation of such systems as an applied research and development effort casts them in the same mold with comparable demands on theory, design and research as discussed previously for instructional protocols (connecting teaching and learning) and preservice preparation modules (using instructional protocols to connect teaching and learning in the preservice preparation of teachers). The support systems to be developed for early career teachers are likely to be more complex and loosely structured, however, in both focus and design, than either instructional protocols or teacher preparation modules -- and thus more difficult to submit to standard research designs --- but this should not make them impossible to pursue within an applied R and D paradigm.

Teacher Education Programs as Contexts for Research Connecting Teaching, Teacher Preparation and K-12 Student Learning

In thinking about how best to proceed with theory development having the focus and magnitude proposed, with accompanying research programs of the quality and duration needed to support it, there seems little alternative to ongoing teacher preparation programs being the contexts for such work. These are the contexts where connections need to be made systematically and defensibly among the many variables involved, and need to be made routinely and repeatedly as each new cadre of prospective teachers enter their preparation programs.

Opportunities abound in such contexts for *grounded* theory development and refinement, with *practice anchored* research and measurement as its crucible, *by virtue of replication made possible through the continuing cycle of response to the obligations of preparing and licensing teachers to work in an evolving system of schools*.

As most teacher preparation programs are now constituted, however, few can serve such purposes. To be productive contexts for research that support theory development, testing and refinement four conditions need to exist:

1. A faculty actively involved in, and preparation programs reflecting, theory development pertaining to the connections among teaching, teacher preparation and K-12 learning in a standards-based school environment;
2. Strong, defensible measures of the theory related constructs being addressed in program design and program anchored research;
3. A data collection and management system that supports data-driven decisions around candidate entry to and progress through their preparation program, is coupled to their performance as early career teachers, and is used systematically for program related research, evaluation, and theory development; and
4. Established policies and resource commitments that support all the above.

The two sets of teacher preparation programs referred to in the opening pages of this document, and who have been designated as "lead" institutions in the accompanying PROSPECTUS, provide a nucleus of the contexts ultimately needed to carry out the kind and quality of work required to implement and sustain the theory development initiative proposed.

The concept of and call for teacher preparation programs as contexts for research and theory development are not new. In a paper presented by the first author of this invitation at a conference held nearly 25 years ago at the University of Texas to establish a research and development agenda for teacher education (D. Schalock, 1980), many of

the arguments and proposals made here were made at that time as well. To see the case made then, and an elaboration of the introductory comments made here, we have included excerpts from that paper as APPENDIX D.

In pursuing these excerpts the reader should be aware that Nate Gage, as critiquer of the paper (Gage, 1980) and author of the then recently published The scientific basis of the art of teaching (1978), expressed the view that "Dr Schalock makes altogether good sense, but I think he speaks much too negatively of what has been yielded by previous research on teacher education." (p 552) Perhaps so, but as evident from the review of current theory and research on the connections between teaching, teacher preparation and K-12 learning that has been provided in the present document, particularly as these play out within a standards orientation to schooling, sufficiently little has changed in our knowledge of practices around these matters to make the view expressed about them in 1980 change.

Starting Small, Thinking Long Range, and Working Collaboratively

A systematic, profession-wide approach to theory building with the focus proposed is a new venture in education, and without precedent in teacher education. Because of its size and complexity, as well as its ground-breaking nature, there is no way to predict its success. We think it has a good chance of succeeding, however, by crafting a plan of procedure that starts small, builds on related capacities and expertise, takes a long-range view, and banks on the benefits of collaboration. The work plan and its rationale is spelled out in an accompanying PROSPECTUS that is available at

http://www.tr.wou.edu/tep/index.htm/, then click on the link AN INVITATION TO TEACHER EDUCATORS TO ENGAGE IN AN IMPORTANT LINE OF WORK, or upon request from one of the authors of the present document.

End Notes

1. This is not to say that current knowledge about these connections is totally missing, nor that some teachers, schools, and even districts are able to do what they need to do to have most of their students reach high standards for learning (see, for example Schmoker, 1996, Haycock, 1998, and Reeves, 2004). Such capability, however, is not a widely spread occurrence. Most schools in most districts, particularly middle schools and high schools, have fewer than 50% of their students reaching these heights. This "stubborn fact" leads many to argue that factors other than teacher quality and knowledge about effective teaching, for example, family's culture and economic status, need to be taken into account when thinking about school improvement (see, for example, Cochran-Smith, 2004c), even though the growing case literature and value added research findings (Sanders and Horn, 1998; Rivers and Sanders, 2002) indicates that student background factors can in fact be overcome in many classroom and school environments for learning. The question of what characterizes these conditions, and how they are created and maintained, is increasingly understood (see the Schmoker, Haycock and Reeves references cited above), but even with this expanding knowledge base the capacity of most school and College of Education faculties to accomplish what is now being asked of them is in serious doubt.

2. Methodological breakthroughs also enable major advances in science, for example the telescope in the exploration of space and the cloud chamber in the splitting of atoms. So do technological advances, such as the printing press and computer. Questions stemming from theory, however, seem to be more powerful for the advancement of understanding.

3. Shulman (1986), citing Toulmin (1961), takes a somewhat different stance around the relative importance of prediction vs explanation as the overriding goal of science.

> "… paraphrasing Aristotle, men (at least the non-Skinnerian among the scholarly species) is a theoretical animal. Humans seek to identify mechanisms or processes that will *explain* why stimuli elicit responses, why behaviors are associated with performances, and most compellingly, why some do under some circumstances and not under other. Even experiments that may help somewhat in distinguishing causes from co-occurrences do not necessarily explain. And the best scientific theory is not necessarily the one that predicts or controls best, but indeed that which renders the most comprehensive and compelling account consistent with the available evidence. (p 13)

4. Given the distinctions made and language used in the previous pages we considered using the typology of RESEARCH ON SCHOOL LEARNING and RESEARCH ON TEACHER DEVELOPMENT to highlight differences in focus and intent, instead of

basic and applied. As work progresses clearer and more functional language should emerge around these distinctions, but the language of basic and applied has been used for the present. In the *Teacher Educators Handbook* (Murray, 1996) Virginia Richards uses the language of "formal research" and "practical inquiry" (Richards, 1996, pp 715-737), and Mary Kennedy uses the language of "searches for contributions to learning", "comparing the haves and have-nots", "ask the teacher", "experiment in teacher education", and "watch teacher candidates change" in describing the foci of teacher education research (Kennedy, 1996, pp 120-152).

5. Research on connections between teaching and learning growing out of an early history of research around Head Start and Follow Through programs in the 1970's, are not reviewed in the Handbooks. These studies have expanded since the early 1990's to include the effects of "whole school" programs on student learning, many of which require the work of teachers to be either prescribed or carefully orchestrated. "Success For All", "Accelerated Learning", and "Direct Instruction" were early entries in this arena, but in 1991, with the creation of the New American Schools Corporation, eight additional whole school models were developed and tested for their effects. Though not all eleven models proved to be equally effective in helping unsuccessful schools became successful, federal support to districts is still available to implement these "research tested" models of school improvement in schools serving students predominantly from poor families. In a recent report on the merger of the New American Schools corporation with the American Institutes for Research (Olson, 2004) James McPartland, the director of Talent Development High Schools at John's Hopkins University was quoted as saying"… While some places continue to adopt the (whole schools) models in their entirety, districts increasingly are putting together parts of various models to create a customized fit (p 12).

6. Prospective teachers should not be recommended for an initial license to teach without demonstrating a designated depth of knowledge and level of proficiency around each of the instructional protocols deemed essential for beginning teachers working within their state's standards-based schools, *including evidence that they are able to apply their knowledge and skill in helping students taught progress in their learning*.

7. The participation of doctoral students in theory building, and their contribution to it through dissertation research, would strengthen graduate study in teacher education and carry the likelihood of enhancing long term research interests and continuing contribution to the research and theory base within the field.

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APPENDIX A

Policy Driven School Enhancement Efforts Pursued From the 1960's Through 2000

School reform efforts of the 1960's and 1970's were initiated largely through small, federally funded special interest programs created by Congress as part of Great Society legislation during the Johnson and Carter administrations. Apart from desegregation, a developing emphasis on serving children with learning disabilities, the targeting of resources to help schools better serve children of poverty, and allocating additional funds for education research as a means of increasing the knowledge base for improvement, no clear federal role in the improvement of schools was discernable.[4] The 1978 reauthorization of the landmark 1965 Elementary and Secondary Education Act, which formalized bi-partisan support for these four previously established emphases, set the stage for the evolving federal role in education from that time to the present.

Immediately following publication of the *At Risk* report in 1983 debate and action around school improvement took place in many forums, and moved in many directions. At the federal level, the Reagan administration maintained the central targets of the 1978 ESEA reauthorization but reduced overall federal spending on education and consolidated many of the special interest programs inherited from previous administrations. A system of "block grants" was created which sent federal monies directly to states, with few strings attached as to how they were to be spent, but these grants carried the seeds of the accountability relationship that was to evolve between schools, states, and the federal government. A clear expectation for evaluative information on results obtained through the expenditure of federal funds received accompanied each block grant.

The growing public demand for information about the outcomes of schooling, in addition to process, had found its voice in policy.

This sea change in federal policy washed onto state and local education agencies, causing them to think and work in far different ways than previously with their federal partners. But state and local policy makers also had to deal simultaneously with pubic response to the *At Risk* report, and take into account the flurry of reports issued by professional organizations and "blue ribbon" study groups created in response to the report. One of the first of these to appear (1986) was from the Carnegie Forum on Education and the Economy titled *A Nation Prepared: Teachers for the 21st Century*. During that same year the National Governor's Association published their groundbreaking response titled *Time for Results*. These, and a continuing flow of reports like them throughout the 1980's -- including early reports from the research community on "effective schools" -- triggered enormous debate and action on the part of state and local educators.

By the end of the decade state and local educators had confronted, and dealt in one way or another, with concepts and/or regulations centering on

- ✓ federally prepared "wall charts" that plotted state-by-state SAT and ACT scores, poverty rates, teacher salaries, average per pupil expenditures, and dropout rates;
- ✓ an upgrading of "the nation's report card" (the National Assessment of Educational Progress) to provide comparable achievement information for students at benchmark grades for each state;
- ✓ the upgrading of curriculum, with academically demanding courses and a solid "core curriculum", added to graduation requirements;
- ✓ the traditional meaning of "basic skills" re-examined, and "minimum competency" requirements established and assessed for graduation;
- ✓ the concept of "the thinking curriculum", and "new basic skills" needed to power a new economy;
- ✓ "criterion referenced" examinations and "authentic" modes of assessment beginning to challenge traditional standardized (norm referenced) achievement tests; and
- ✓ new approaches to school organization and management that resembled those used in "high performing" industries.

State and local policy makers also had confronted the fact that in spite of all the improvement efforts they had undertaken, the expected gains in student performance were not materializing. Sizeable learning gains had been made by black and urban poor students between 1971 and 1984, but few if any gains occurred throughout the last half of the 1980's and 1990's. Improvement rates for various sub-groups of students did not move appreciably, and large gaps in achievement continued to exist between them.

All of this also was clear to policy makers at the federal level by the early 1990's, and the first Bush administration, followed by the Clinton administration, moved dramatically in the last decade of the 20th century to fundamentally alter the nature of our public schools -- and the nature of the federal-state-local partnership in which they rest -- as a means of enhancing learning on the part of all students. While the transformation had clearly started in the 1980's, with all the conceptual and procedural shifts listed above, the transformation of the 1990's took on new dimensions, and a sense of wholeness, it had lacked previously.

At root was the concept of national goals for education, and within this concept the idea of clearly designated standards for learning within each of the curriculum areas designated within the national goals document. This idea grew from an Education Summit meeting called by the first President Bush in 1989 that involved 49 of the 50 state Governors. Participants in the meeting agreed to six broad goals, and a National Education Goals Panel to refine and advance the concept into legislation. Though the work of the Panel was formed and supported by key leaders from the private sector

Congress was slow in acting upon the proposal, in large measure because the issues of school vouchers and school prayer were repeatedly attached to any related legislation. Thus stymied through lack of formal Congressional action, the Secretary of Education was still able to fund professional organizations to develop the necessary standards documents, and to fund states to start the process of translating these documents into state-level goals for learning.

The sense of wholeness came from the concept of "systemic reform" that grew out of the experience of states and schools during the 1980's. The concept was based on the conclusion that the nation would not achieve significant advances in student performance unless the system aligned curriculum with standards, assessments, teacher training, and resource allocation. This simple but far reaching concept, when added to the articulation of standards for learning on a subject-by-subject basis and the growing commitment to accountability for student progress in learning that had already been negotiated, provided the fundamental structure and working assumptions for the standards-based and accountability-driven model of schooling that emerged full-blown in the No-Child-Left Behind legislation of 2001. The outline of this model of schooling, however, was clearly present in the 1994 Improving America's Schools Act.

By the turn of the century most states and local schools had been working for a number of years to translate this new model of schooling into practice. In making this transition they had chosen differing routes to pursue and varied greatly in the degree of commitment brought to the task. Not surprisingly, under these conditions, "systemic reform" meant one thing in one state or school district, and something else in another. As a consequence, improved performance of students in the schools still varied enormously from state-to-state, across districts within states, and across student groups within districts.

The quality of standards for learning, and the quality of measures used to assess learning progress made, also varied a great deal from state-to-state.

The current President Bush entered office in 2000 with this picture firmly in mind from his experience as Governor of Texas, and declared next steps in the improvement of American education as his first priority. He also brought with him the Texas vision of a standards-based, accountability driven model of schooling as a frame of reference for what these next steps should be. Congress was ready and waiting, and in 2001 shaped and passed with large bi-partisan majorities in both the House (301 to 41) and the Senate (87 to 10) ESEA reauthorization in the form of the No-Child-Left-Behind Act.

As a result of this congressional action we now have an approach to schooling in our nation that is dramatically different than the norm-referenced, textbook-driven, sorting-and-grading model that dominated American education throughout most of the 20th century. The new model will undoubtedly be refined with experience, but given the

steady march of policy makers at all levels of the education enterprise toward the general model that has been adopted it is unlikely that its central features will change soon.

It is this reality within which the present call for theory development rests. The work of teachers and students is no longer as it was in the schools of the 20th century. Theory connecting teaching and teacher preparation to student learning in today's schools needs to take these new realties into account. Theory building around these connections also needs to take into account the fact that essentially all existing theory pertaining to teaching, teacher preparation, and K-12 learning has been shaped to accommodate the demands of our 20th century model of schooling. More importantly, our existing research base in education reflects this earlier model as well. At present it is unclear how much of either will be able to be used in the theory development initiative being considered.

APPENDIX B

(forthcoming)

APPENDIX C

ILLUSTRATIVE WORK ACCOMPLISHED THROUGH COALITIONS FACILITATED BY WESTERN OREGON UNIVERSITY FACULTY

From 1969 through 1973:

- ✓ Led a three state coalition (Washington, Oregon, Idaho) in designing one of 8 USOE sponsored model elementary teacher education programs (the ComField Model), the combination of which gave rise to the "competency-based" teacher education movement of the 1970's and early '80's.

From 1970 through 1978:

- ✓ Developed and operated with representatives from the public schools Western's elementary teacher preparation program patterned after the ComField design, and structured as an ongoing context for research in teacher education. The program was recognized in 1974 as the outstanding teacher preparation program in the nation.

From 1972 through 1992:

- ✓ Established and managed for two decades a three county consortium of small school districts, their county-wide education service districts, and the University to understand and deal collectively with emerging federal mandates around special education and Oregon's emerging redesign for schools which, in 1991, became one of the first fully defined standards-based designs for schooling in the nation.

From 1978 through 1986:

- ✓ Helped the Oregon State Department of Education and the Oregon State System of Higher Education establish, and then managed, a statewide Council for the Continued Professional Development of School Personnel to help both school and state agencies deal with the implications for continued professional development of the emerging model of schooling within the state.

From 1980 through 1996:

- ✓ Developed, pilot tested across all teacher preparation programs offered through the University, and validated locally over a period of ten years, Teacher Work Sample Methodology as a vehicle for meaningfully and defensibly connecting teaching and K-12 learning within the context of the initial preparation and licensing of teachers to work in Oregon's standards-based schools.

From 1982 through 1996:

- ✓ Worked cooperatively with Oregon's Teacher Standards and Practices Commission, and all public and private teacher preparation programs in the state to refine, adapt and adopt teacher work sampling as a required measure of teacher competence in shifting to the nation's first "outcome-based" approach to teacher licensing in 1986.

From 1991 through 1993:

- ✓ Led, in cooperation with Oregon's Teacher Standards and Practices Commission, a two year statewide analysis of the implications for teacher preparation and licensing of the state's 1991 comprehensive design for standards-based schools.

APPENDIX C continued…

From 1995 through 1998:

- ✓ Established and managed a national external review and validation panel around the role of teacher work sampling in the preparation and licensing of teachers.

From 1995 through 1998:

- ✓ Designed and managed three national conferences around teaching and learning in standards-based schools, and the implications ,of the changes involved for personnel preparation and school management.

From 1996 through 2000:

- ✓ Formed working partnerships with the American Association for Colleges of Teacher Education and the Education Trust to work cooperatively in carrying the discussion initiated through the three national conferences to the broader audiences each organization serves.

From 2000 through 2003:

- ✓ Designed and carried out, in partnership with participants in a statewide Title II instructional improvement grant (data collection completed in 2002) a longitudinal research study on the effects of preparation emphases consistent with the demands of standards-based schooling on the performance of early career (1st, 2nd and 3rd year) elementary teachers and the learning of their students. The research required both theory and methods connecting teaching, teacher preparation, and K-6 learning.

From 2000 through 2003:

- ✓ Co-chaired a state-wide design team for translating newly adopted standards for the CONTINUING licensure of teachers in Oregon into an evidence-based licensing system anchored to clearly established performance standards, including a teacher's impact on his or her students.

From 2000 through 2003:

- ✓ Shared statewide leadership in drafting legislation to support teacher induction and mentoring programs in the schools.

From 2003-:

- ✓ Currently chairing an Interagency Management Team to bring all of the resources of the state to the table in dealing with the enormous implications for school personnel and their preparation that flow from the No Child Left Behind legislation of 2001, and the forthcoming reauthorization of IDEA and Title II of the Higher Education Act.

From 2003-:

- ✓ Currently completing the refinement of Western's recent award winning teacher preparation programs to accommodate all the above. This work includes refining and extending the various measures used within programs to assess teacher knowledge, skills, dispositions, and their impact on the learning of students taught. It also includes pilot testing a newly developed data management system that supports both evidence-based decision making at all levels of program operation *and* the operation of all preparation programs as contexts for ongoing research.

APPENDIX D

AN EARLY PLEA, AND RATIONALE FOR, TEACHER PREPARATION PROGRAMS AS CONTEXTS FOR RESEARCH*

"Research on teacher education should be a diverse and many-faceted enterprise. It should chart the characteristics of those who enter teacher preparation programs, and those who survive to enter teaching; it should study the relationship between characteristics at point of entry to a program, or point of exit, and subsequent success of practice; it should focus on the interaction of program entry characteristics, the nature of preparation programs, and subsequent success in practice; it should be searching much more than it has for the relationship between knowledge or skill mastery and subsequent success in practice; it should be searching for early indicators of competence as a teacher, and studying the extent to which these are effective as predictors of success in first, third or fifth year teaching; it should be investigating the relationship between the nature of field placements in preparation programs, subsequent job placements, and subsequent performance in those job placements. It should even be investigating the matter of costs and benefits associated with alternative preparation programs.

"A basic assumption on which the present paper is based is that if research in teacher education is to be this diverse and many-faceted, the methodology needed for its support must be equally diverse and many-faceted.

"For purposes of the conference, I want to argue the position that research on teacher education has not been this far-ranging, and that at present, we do not have the methodology that enables it to be so. After completing a review of the research literature pertaining to teacher selection (Schalock, 1979), I am of the opinion that we know very little about any of the items mentioned above, and what is more, we do not even have good hypotheses about them. We clearly do not have "up and running" research designs or measurement systems needed to get good information about them. A case in point is the essential absence of tested methodology that can be used by teacher education institutions in responding to the NCATE requirement for evaluative follow up studies of teacher preparation programs.

* Excerpts from Schalock, H.D., (1980). Eating humble pie: Notes on methodology in teacher education research. In G. E. Hall, S. M. Hord, and G. Brown, (Eds.). Exploring issues in teacher education: Questions for future research. Austin, TX: Research and Development Center for Teacher Education, University of Texas at Austin. Pp 519-536.

"I have come to the opinion that we have a very limited knowledge base about teacher education per se, and that we are essentially without tradition when it comes to teacher education research. I read that Peck and Tucker (1973), and those who have reviewed the literature before them [for example, Cyphert & Spaigts (1964); Denemark & MacDonald (1967)], hold a similar view.

"This is not to say that teacher education is without a research base. In fact, it draws upon a number of research bases, but these historically have come from the disciplines of biology, psychology, and anthropology. Within recent years, educational researchers have begun to establish a knowledge base that pertains directly to teaching, but as yet very little information that informs decisions by teacher educators about teacher education has come from research on teacher education. It is my hope that this conference will lead to steps that in time will change this indefensible state of affairs. (p 520)….My remarks are based on the assumption that the methodological issues facing researchers in teacher education are infinitely more complex than was once imagined, and that at present we do not have either the concepts or the methods needed to implement a full-scale program of research in all areas mentioned in the opening paragraphs. If this assumption is true, research on substantive issues will need to be paralleled by research methodology." (p 521)….

"Teacher education research has not had a strong history, and during the past decade it has been essentially overshadowed by research on teacher effectiveness. While much can and should be taken from the teacher effectiveness research when planning research on teaching education, both in substance and methodology, teacher education research has its own unique set of research questions and methodological dilemmas. It has been argued that these are as important to the public good as are questions revolving around teaching effectiveness and school learning, for they pertain directly to who enters the teaching profession and the likelihood of their effectiveness once there.

"In planning an agenda for teacher education research, close attention needs to be paid to what appears to be a fundamental shift in how people are beginning to think about educational research, and how it should be conducted. Some of these emerging views have been described in the previous pages. In addition to what has been said, however, I would argue that for teacher education research to make an appreciable difference in the manner in which teachers are selected and prepared in institutions across the nation, multiple sites must be engaged in both hypothesis formulating and hypothesis testing studies. I would also argue that in order to make a difference, these studies will need to be longitudinal in nature, reflect a high degree of external validity (Schulman, 1970), and be subject to numerous

replications. As Gage (1977) has pointed out "Far more than the statistical significance of any single study, confirmation by independent studies is relied upon by behavioral scientists before they begin to take a finding seriously… what we want in most fields of research before we become truly impressed, is replication " (p 1-2). For this to be feasible, ways must be found to carry out research on teacher education at low cost.

"I would argue, as I have previously (Schalock, 1975; Schalock and Girod, 1975), that the only context that has a chance of meeting such requirements is that of ongoing teacher preparation programs. A number of conditions must be met for teacher preparation programs to become viable, low-cost contexts for research (for one listing of such characteristics, see Schalock, Kersh & Garrison, 1976, p. 68-71), but these are not impossible conditions to meet. The program of research at Stanford University is well known in this regard, but more importantly emerging programs of research at Houston, Toledo, West Georgia, and Oregon College of Education attest to the fact that institutions that resemble most other teacher preparation institutions in the nation can become contexts for research.

"As the conference progresses, I would urge participants to spend time with this proposition, and see whether our teacher preparation programs might not in fact become the counterpart of the laboratories that our colleagues in the parent disciplines so long have had at their disposal, and through which they have contributed so much." (p 534)

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