Clinical Pedagogy:
Defining and Measuring the Teaching of
Essential and Higher Order Thinking Skills

DONOVAN PETERSON
Professor of Education, University of South Florida, FAO 100U, Room 196, H202 E. Fowler Ave.,
Tampa, FL 33620-7750

JEFFREY KROMREY
Assistant Professor of Education, University of South Florida

ARTHUR LEWIS
Professor of Education, University of Florida

JEAN BORG
Instructor, University of South Florida

Several types of knowledge and skill must merge in the development of competent teachers. Included are general academic knowledge, subject matter knowledge, and pedagogical knowledge. General academic knowledge provides a broad educational base for teachers, including an understanding of the humanities and the arts and advanced skills in writing and speaking. Subject matter knowledge provides teachers with an understanding of the basic structure and the concepts of the disciplines which they will be teaching: for example, art, foreign language, language arts, mathematics, science, or social studies. Academic and subject matter knowledge are primarily obtained outside of colleges of education but complemented through course work in colleges of education.

The major function of colleges of education is to provide the skills, knowledge, and attitudes associated with the art of teaching, that is, pedagogy. Through course work in areas such as educational philosophy, psychology, and sociology, students learn concepts that help them once they become teachers to select content for inclusion in the curriculum; to use concepts such as readiness, motivation, and retention to help them understand how students learn; and to utilize concepts related to racial discrimination, urban environment, and family to help them understand the abilities, attitudes, and goals of students. These concepts, focused on what to teach and how students learn, may be termed academic pedagogy. Internalizing these concepts is central to the development of competent teachers.
Another dimension of pedagogy, termed clinical pedagogy, focuses on how teachers teach. Researchers have found that how teachers teach, as measured by classroom performance, is the second most powerful predictor of how much students will learn (Evertson, 1980; McDonald, 1976; Soar, 1968; Stallings, 1981). According to these same researchers, the most powerful predictor of how much students will learn in a given class or year is the entry level of knowledge of students. Since a given teacher cannot control the entry level of students in his or her class, how a teacher teaches is the primary controllable predictor of student learning. Colleges of education have major influence over and responsibility for how teachers teach.

While there is strong empirical support for the primacy of teacher performance as a predictor of student learning, the recognition and use of empirically based concepts of teacher performance are only now becoming an influence in the clinical pedagogy education of teachers. One reason why empirical research on concepts and indicators of teacher performance was used so sparingly in the past is the nature of the research. For example, the sheer numbers and varieties of studies that provide evidence of effective and ineffective practice has made condensation of the findings difficult. The future of clinical pedagogy, however, rests on our ability to synthesize the research on teaching, describe the findings in ways classroom teachers can understand and apply, and relate the research on teacher performance to the various goals and contexts of teaching.

One key to organizing empirical research on teacher effectiveness is to examine the dependent variables. Two dependent variables common in much of the research on teaching are student achievement on tests of essential skills and student acquisition of higher order thinking skills. For example, teacher performance variables such as the use of time, handling of materials, questioning, providing feedback, emphasizing, and targeting student disruptions have been found to relate to improvements in student achievement on tests of essential skills. Similarly, student acquisition of higher order thinking skills has been found, for example, to relate to teacher performance that leads students to identify subject-related problems and variables, hypothesize and test hypotheses, and evaluate hypotheses and generalizations.

Concepts of teaching that relate to student achievement we have termed teaching essential skills. For example, these skills include discipline in the classroom, organization in instruction, and effective interaction with students. Concepts of teaching that relate to student acquisition of thinking skills we have termed teaching for higher order thinking. For example, the literature in this field shows that if teachers work with students in identifying problems, formulating possible solutions in the form of generalizations or hypotheses, and evaluating consequences of possible solutions, students learn how to engage in higher order thinking.

Through library and empirical research over the past decade we have assembled knowledge bases for essential and higher order thinking skills (Knowledge Base: FPMS Domains, 1983; Teaching for Higher Order Thinking (THOT) Domains, 1990), and developed and tested instruments for observing teacher classroom performance in these two dimensions. Several articles reporting the findings of these