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ABSTRACT

This paper provides an approach to building research-based knowledge in teacher education through program evaluation. This approach allows results of program evaluations to be compared and contrasted and theoretical constructs developed into practical models for use in improving teacher preparation. The paper examines Yarger and Smith's 1990 framework for studying teacher education programs. Their systematic approach included: antecedents or preexisting conditions, processes or transactions, and outcomes. They considered studies that followed this systematic approach "linking studies." Yarger and Smith believed that the three components and the associated links provided a vehicle for discussing appropriate methodology for research on teacher education, implementation of teacher education programs, and needs associated with program improvement. In following Yarger and Smith's writings, it is important to determine a unifying source which can pull teacher education institutions together in a common effort to build the research-based knowledge. Important initiatives are currently underway to develop more meaningful standards for teaching. This paper examines Stake's Countenance Model of Program Evaluation, which fits closely with Yarger and Smith's paradigm, and discusses a modification of Stake's Countenance Model, which is necessary to better fit the needs of today's education programs. The paper concludes that a research base in teacher education is possible if teacher education institutions publish research findings of their program evaluations (which are developed for each specific site, include Yarger and Smith's three components, and are based on a national perspective). (Contains 21 references.) (SM)

Establishing Research-Based Knowledge in Teacher Education

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Abstract

The lack of research-based knowledge in teacher education has forced institutions to develop teacher preparation programs without the benefit of theory related to the most effective methods of training teachers. An approach to building this research-based knowledge is needed in order to assist teacher education institutions in making well-informed decisions about their programs. This study provides such an approach through program evaluation. Through this approach, results of program evaluations can be compared and contrasted and theoretical constructs can be developed into practical models that can be used in improving the preparation of teachers.

Teaching today is a very difficult job. The increasing pressures of accountability, inclusion, societal change, and technology use are but a few of the concerns that teachers face. Training education students to be effective teachers is an overwhelming task for teacher preparation institutions. Not only must our future teachers be well prepared to teach academics, they must also be prepared to address the social, emotional, physical, and cultural needs of students in their classrooms. Providing prospective teachers with a firm foundation in curricular, instructional, evaluative, and management strategies is critical to the success of these teachers, as well as to the success of their students. How do teacher education institutions determine the most effective program for training its education students for their teaching career?

Schwartz (1996) found that "today no single, unifying theory of teacher education exists" (p. 3). Further, Sikula, Buttery, and Guyton (1996) stated, "Few of the several hundred professions have as little of a consensus about a common knowledge base as does the teaching profession" (p. xv). What then do teacher education institutions base their decisions for developing programs upon?

People attend school for a large portion of their lifetime and, typically, interact with schools during the early years of the lives of their children. From participation in these everyday interactions in schools, they formulate beliefs and ideas of what education should be. Doyle (1990) noted, however, that seldom do educators examine this type of knowledge "yet it shapes in fundamental ways our understanding of what teacher education is and what its problems are" (p. 4). It seems that the training programs for our nation's teachers are based on tradition, intuition, and common sense with little research-based knowledge to support these decisions.

Houston, Haberman, and Sikula (1990) noted that little progress had been made in developing research in teacher education. They stated the following conditions that perpetuate this condition:

1. Accounts of proposed and current teacher education programs are abundant, but few systematic studies report explanations of the results of these efforts.

2. Most studies are site specific incorporating local definition, instrumentation, and conclusions that are difficult to relate to findings of others in the same field.

3. Each teacher preparing institution rediscovers its own best way of educating teachers with little or no attention to either other institutions or the research literature. (p. ix)

Little exists in the way of written comprehensive descriptions of teacher education programs beyond documents prepared for regulatory or accrediting agencies (Howey & Zimpher, 1989). Further, over 400 institutions reported conducting evaluations primarily for accountability purposes, but Galluzzo and Craig (1990) found that there were relatively few evaluation reports in the literature.

It seems that concerns about accountability or accreditation motivate teacher educators to collect evaluation data. However, once the evaluation has been used to meet the requirements of accountability, the report has served its purpose and is not shared with other teacher educators. Galluzzo and Craig (1990) found that brief narratives describing particular programs have been published in education journals, but more thorough accounts incorporating the various perspectives of faculty, students, administrators, and those in schools who work with these programs are not available.

Howey and Zimpher (1989) further noted the absence of complete descriptions of teacher education programs which relate the similarities and differences across various types of institutions. Because of this absence, little is known in a detailed manner about the "nature of teacher preparation curricula, the instructional activities of faculties attached to these curricula, and the frequency, timelines, and quality of opportunities which prospective teachers have for learning how to teach" (p. 5).

The over 1,300 teacher education programs exist in the United States today represent a variety of institutions from large, public, urban universities to small, private, rural colleges. Each of these institutions operates with differing resources, philosophical backgrounds, and faculty and student characteristics. It is understandable that there are conflicts within the teacher education community about what preservice teachers should be prepared to do and how this preparation should be carried out (Doyle, 1990).

Need for Theory in Teacher Education

While no two programs are alike, Ayers, Clark, Doak, Moore, and Gephart (1987) noted that there are common patterns in many different programs. In view of the scarcity of published information on teacher education programs which is research-based, Doyle (1990) determined that we need to base research and practice on what is currently known about teacher education in order to implement an agenda for consistent, continued development of the field. Doyle further expressed the need to build on the conceptual constructs and research findings of other scholars.

Schwartz (1996) agreed that teacher education must find a set of constructs that will provide descriptive ways of addressing "the commonalities and uniquenesses, the beliefs and behaviors, and the mainstream culture of teacher education from the university to the classroom" (p. 4). To meet the needs of the institutions, additional work must be carried out to translate, through descriptive methods, theoretical constructs into practical models and systems that can be used in improving the preparation of teachers.

Programs in teacher education exist in many different types of institutions with variable resources. All of these institutions graduate and recommend prospective teachers for certification. Ducharme and Ducharme (1996) contended that teacher education needs research which will allow each teacher education program to measure its own program, giving consideration to the differing contexts of each program and the need for the best utilization of resources.

Evaluation Research

Systematic, thorough, published evaluations of teacher education programs could provide a great deal of missing information. However, according to Galluzzo and Craig (1990), it is alarming how little research has been published on program evaluation in teacher education. They stated, "Reading the literature, one gets the impression that program evaluation is teacher education's orphan" (p. 602).

Galluzzo and Craig (1990) further related that much has been written about evaluation research in other fields, but little has been written about it in teacher education despite millions of dollars spent on program development. Teacher education program evaluation should embrace a "commitment to inquiring into practice, to facilitating communications, to improving how teacher education is practiced, to advancing what is known about teacher education, and to raising important questions about issues and practices that need to be addressed" (p. 606).

From a research perspective, evaluation requires a formal design to examine the effectiveness of a program. To Patton (1990), this examination should be conducted systematically and empirically with careful data collection and thoughtful analysis. McMillan and Schumacher (1997) contend that evaluation research not only aids in decision-making at a given site, but also adds to the research-based knowledge about a specific practice regardless of site.

One purpose of conducting an evaluation is to improve the program under scrutiny. Evaluations should be conducted in order to inform participants of the strengths and weaknesses of the program in all respects. Stake (1967) believed these strengths and weaknesses should be determined by comparing the program to a set of explicit standards which are benchmarks of performance and have widespread reference value. Upon determination of strengths and weaknesses, informed decisions about improvements, enrichment, or termination of the program can be made.

Another goal of a program evaluation should be to develop a comprehensive knowledge-production effort about the relationships among all phases of the program's operation. The hope of the education system rests on the belief that we learn from inquiry. How we change and how we improve should be based on the answers to a set of questions that are systematically and objectively investigated. Subsequently, evaluation studies, properly designed, should ask questions that need to be answered to inform our thinking and decision making. In addition, the results of these evaluation studies should be reported so that research-based knowledge can be compared and contrasted to build theoretical constructs about effective teacher education (Galluzzo & Craig, 1990).

A method of evaluation is needed that will systematically and thoroughly investigate teacher education programs. To be effective, this method would not only look for strengths and weaknesses, but would also provide the research-based knowledge that is so desperately needed in teacher education. When teacher education programs are evaluated using a universal approach and a set of common guidelines or standards, a basis for the comparison of programs will exist and theories of teacher education can be developed. When this occurs, teacher education institutions will have the research-based knowledge to support decisions for planning and enhancing teacher preparation programs.

Framework for Studying Teacher Education Programs

Yarger and Smith (1990) offered a framework as an attempt to move toward a coherent approach to studying teacher education. Their assumption was that with some coherency in the approach to studying the field, principles or theoretical perspectives would emerge and this would lead to a national research agenda for teacher education. In the absence of this framework, "the most we can hope for is sporadic work of varying quality, linked together only by the insightfulness of individual researchers and synthesizers" (p. 38).

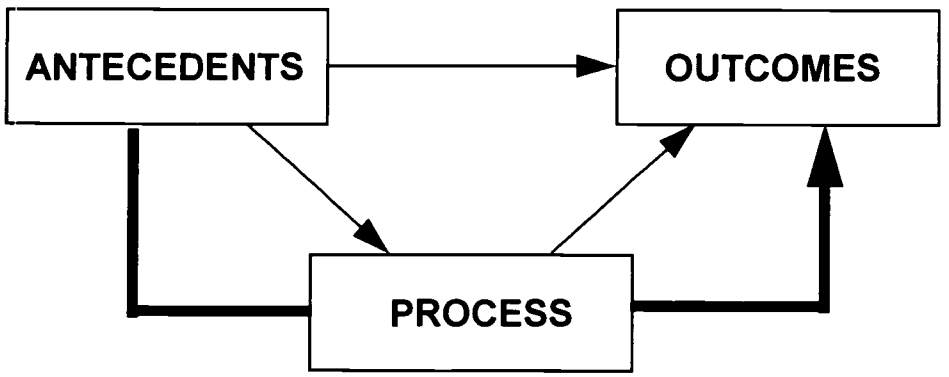
Upon reviewing the literature, Yarger and Smith (1990) found that a substantial amount of exploratory work had been conducted on segments of teacher education separately as program studies, implementation studies, or impact studies without consideration of contextual influences. To conduct a comprehensive investigation of teacher education, multiple modes of inquiry from various theoretical perspectives need to be considered. Research builds a knowledge base grounded in theories to better understand and to improve practice. Teacher education is at a time in "the developmental stage of the field where it needs more research and fewer opinions, reactions, and debates" (Yarger & Smith, 1990, p. 34).

Yarger and Smith (1990) proposed a systematic approach for studying teacher education which includes three components of a teacher education program (See Figure 1). These components are (a) the antecedents or preexisting conditions, (b) the process or transactions, and (c) the outcomes. The antecedents are the environmental conditions that set the context for teacher education, which includes student selection, physical environment, and the political/social context. Processes refer to those practices used to educate teachers and prospective teachers. Outcomes are those behaviors exhibited by teachers following participation in a teacher education program.

Studies which follow this systematic approach are considered linking studies because the components of the program are tied or linked together in order to examine the relationships between them (Yarger & Smith, 1990). Each of the components provides potential research areas that, after integration, could lead to a better understanding or an organized paradigm with which to consider theories of teacher education.

Linking studies are of four major varieties: (a) those linking antecedents with processes, (b) those linking antecedents with outcomes, (c) those linking process with outcomes, and (d) those linking antecedents with processes, which are, in turn, linked with outcomes. Most studies in education would fall into one of the former classes because they involve only a single link. However, Yarger and Smith (1990) contend that

Yarger and Smith's Framework for Studying Teacher Education



1. **Linking studies investigate the three components of a teacher education program:**

   linking Antecedents to Process
   linking Antecedents to Outcomes
   linking Process to Outcomes
   linking Antecedents to Process to Outcomes

   The study that would offer the greatest impact on the development of theory or a set of theories for teacher education is that which would involve all three components.

2. **Determination of a unifying source that has the capacity to pull teacher education institutions together in a common effort to build research-based knowledge on teacher education programs.**

Figure 1 Framework for Studying Teacher Education
From "Issues in research on teacher education" by S. J. Yarger and P. L. Smith, 1990. In W. R. Houston, M. Haberman, & J. Sikula, Eds. Handbook of Research on Teacher Education (pp. 25-41). New York: MacMillan.

linking studies which involve only a single link are weak in the sense that any inferences or conclusions drawn from such studies must make extremely strong assumptions about the missing link. The type of study that would have the greatest impact on the development of a theory or set of theories for teacher education is that which would involve a double link among the components: antecedents to processes and processes to outcomes. They are necessary for the complete understanding of the phenomenon under study.

Yarger and Smith (1990) believed that these components and the links associated with them provide a convenient vehicle for discussing the appropriate methodology of research on teacher education, the implementation of teacher education programs, and the needs associated with improvement of the program. Like Yarger and Smith, Galluzzo and Craig (1990) believed that one goal of a program evaluation effort should be to develop a comprehensive knowledge-production effort about the relationships among a program's antecedents, processes, and outcomes.

Unifying Standards

In following the writings of Yarger and Smith (1990) to create a national research agenda for teacher education based on the antecedents, processes, and outcomes of a program, it is important to determine a unifying source which has the capacity to pull teacher education institutions together in a common effort to build the research-based knowledge. Important initiatives are presently underway to develop more "meaningful standards for teaching, including performance-based standards for teacher licensing; more sophisticated and authentic assessments for teachers; and national standards for teacher education, licensing, and certification" (Darling-Hammond, 1996, p. 7). These national efforts are being led by the National Council for Accreditation of Teacher Education (NCATE), the National Board for Professional Teaching Standards (NBPTS), and the Interstate New Teacher Assessment and Support Consortium (INTASC).

The standards established by the NCATE could be adapted for use as a common source to look at individual teacher education programs within institutions. It is important to note here that evaluation procedures to maintain accreditation standards are viewed quite differently than evaluation procedures from within a department or institution to determine what, if any, improvements need to be made (Zimpher & Loadman, 1986). NCATE, consisting of 28 national organizations, has established a system of national accreditation for teacher education programs. This accreditation system functions to uphold high standards and strengthen the credibility of institutions who choose to participate. Although this accreditation process is voluntary, over 500 of the approximately 1,300 teacher education institutions are NCATE accredited (Roth, 1996).

Roth (1996) related NCATE's role as one which serves as a vehicle to establish quality programs, particularly through program renewal. The standards set by NCATE are "derived from what a significant number of vanguard institutions are now doing, and thus are deemed reasonable expectations" (p. 259). The study, What Matters Most: Teaching for America's Future (Nicklin, 1996), called on educators, policy makers, and citizens to require all colleges of education to meet the standards of NCATE by 2006, or be closed.

NCATE standards may be characterized in terms of the focus of the standard. These include input (resources, library, facilities), process (instruction, field-based opportunities), and product (evaluation of graduates). These categories fit into the components established by Yarger and Smith (1990). The NCATE standards are comprehensive and cover all aspects of a teacher education program. Further, NCATE encourages teacher education programs to use the standards and their indicators to conduct ongoing renewal and improvement activities (National Council for Accreditation of Teacher Education, 1995).

NCATE's most recent set of standards stipulates that a college's teacher candidates are to demonstrate specific skills. Its new standards are coordinated with the new model set of licensing standards oriented toward outcomes (Wise and Leibbrand,1996). These

teacher outcome standards were developed by the Interstate New Teacher Assessment and Support Consortium (INTASC), under the umbrella of the Council of Chief State School Officers. NCATE has incorporated this work into the latest version of its accreditation standards in order to integrate reforms in accreditation and licensing. NCATE states that:

> Teacher candidates should be able to use strategies for developing critical thinking, problem solving, and abstract reasoning. They should be able to use formal and informal evaluation strategies to ensure continuous student learning. They should be versed in educational technology, including the use of computers and other technologies for instruction and student evaluation. Prospective teachers should be skilled in classroom management and able to collaborate effectively with parents and others in the community. They should know and use research-based principles of effective practice; that is, they should be able to explain why they decide to use a certain strategy and teach a particular idea a certain way. In short, prospective teachers should demonstrate essential knowledge and acceptable levels of proficiency. (Wise and Leibbrand,1996, p. 203)

INTASC was established in 1987 to develop a common vision to ensure the compatibility of approaches taken by different state authorities to improve student achievement and to provide consistency of direction at every point in the career development of a teacher. As of 1996, 36 states are involved in the INTASC projects (Ambach, 1996). State departments of education have begun to realize the benefits of teacher education institutions holding accreditation from NCATE as well. As Roth (1996) recently noted, 40 states were conducting joint state-NCATE program reviews.

Model of Program Evaluation

Stake's Countenance Model of Program Evaluation (1967) fits closely into the paradigm which links antecedents, processes, and outcomes as set forth by Yarger and Smith (1990). Stake contended that program evaluation should be reported through a rich,

detailed description of the program with judgments about its strengths and weaknesses including recommendations for improvements. He believed that the only way to achieve this goal is by looking at all aspects of the program including: (a) preexisting conditions or antecedents; (b) processes, which he calls transactions; and (c) outcomes. He related that the only way to get a true picture of what the program is like is to become involved in the program and include responses and reactions of the participants of the program in the data collected.

Stake (1967) contended that educational evaluation should begin with the rationale of the program. The rationale is the overriding philosophy, the history, and the purposes of the teacher preparation program. The rationale provides the basis for selecting the reference groups to participate in the study and the basis for judging whether the parts of the program form a coherent whole.

Nelli and Nutter (1984) explained that Stake built his model on two matrices (see Figure 2). The first matrix was a Description Matrix, which included (a) the intentions of the program and (b) observations. The category listed as intentions refers to the goals of the program set by the developers. This includes what the teacher education students are expected to master before they leave the program. Observations indicate the descriptive facts collected by evaluators to assess whether program intentions are realized and whether significant, unintended events occur. The second matrix was a Judgment Matrix, which was comprised of (a) standards and (b) judgments. The standards, as referred to on the model schematic, constituted the rules or guidelines against which the quality or value of the teacher education program and its outcomes are measured. The guidelines established by the National Council for Accreditation of Teacher Education (NCATE) and the Interstate New Teacher Assessment and Support Consortium (INTASC) are examples in this case. Judgments are statements of the effectiveness of a program and its components upon completion of the evaluation process.

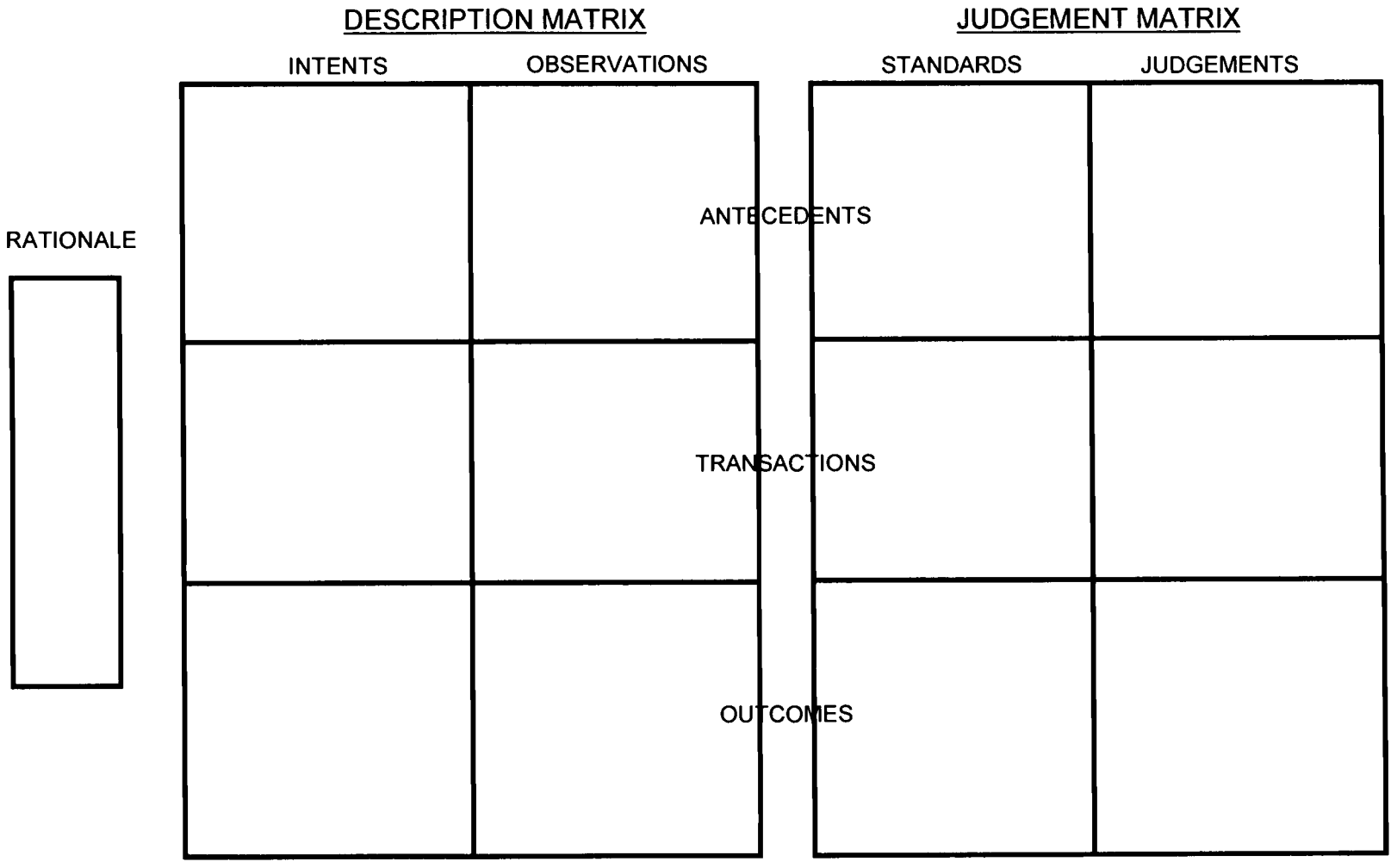


Figure 2. Stake's Countenance Model of Educational Evaluation

From "The Countenance of Educational Evaluation," by Robert Stake, 1967, *Teachers College Record, 68*, p. 529. Reprinted with permission of the author.

Stake (1967) recommended a rich description of the three phases of the program: (a) the antecedents, (b) the transactions, and (c) the outcomes. Antecedents, as depicted in the framework, referred to any condition which exists prior to teaching and learning which may affect the outcome of the program such as characteristics of the students, faculty, institutional policy, program history, state mandates, facilities, and resources. Transactions constituted the process of events and experiences that make up the curriculum of the program. This includes the interactions between students, between students and faculty, between students and field personnel, and between students and the knowledge imparted. The outcomes are those effects attributable to the program. These include the abilities, achievements, attitudes, knowledge, and aspirations of students resulting from the teacher education program.

Stake (1967) further described contingencies and congruences as aspects of the context of the program. Contingencies are external factors that influence the program, such as state mandated changes in certification procedures. It is also important to note that each level on the model is built on the previous level. Therefore, the fulfillment of standards and objectives listed in the Transaction section is contingent upon the fulfillment of those listed in the Antecedent section. Likewise, the mastery of the standards and objectives in the Outcomes section is contingent upon the fulfillment of those in the Transaction and Antecedent sections. Congruence refers to the amount of correspondence between what is intended to take place in the program and what actually occurs. Careful data collection and thoughtful analysis reveals how closely the program is operating to the expectations set for it.

The incorporation of Stake's Countenance Model of Program Evaluation (1967) along with the use of national standards as common guidelines for evaluation form the method of evaluation as outlined by Yarger and Smith (1990). The utilization of this evaluation approach will provide the research-based knowledge needed to initiate the development of theoretical constructs through comparison and contrasting of the results

of teacher education program evaluation. Some modifications to Stake's model would seem appropriate to better fit today's educational programs.

Modification of Stake's Countenance Model

Stake's Countenance Model of Educational Evaluation (1967) provides a basis for teacher education program evaluation that fits the framework offered by Yarger and Smith (1990). A modification of the model is necessary to better fit the needs of today's education programs. Often the standards set by state departments of education and accrediting agencies are used to determine how teacher education programs are organized and implemented (Mississippi State University College of Education NCATE Continuing Accreditation Report, 1996). In accordance with this, the Standards column in the Judgment Matrix has been moved to the Intents column of the Description Matrix (See Figure 3).

A second modification to Stake's model has been a change in the name of the second column in the Description Matrix. Rather than Observation, the heading for the column has been changed to Data Collection. The purpose of the Data Collection column is to determine what actually takes place in the teacher education program concerning preexisting conditions, implementation, and student outcomes. Data should be collected from a variety of sources using a variety of methods, such as interviews, observations, questionnaires, and archival documents.

Another change to the model entails the addition of Recommendations in the title of the Judgment column and then a move of the Judgments/ Recommendations column to the first column in the Judgment Matrix. Judgments should be made concerning how closely the preexisting conditions, the implementation of the program, and outcomes that are real in the teacher education program match the standards and objectives set for it. From these judgments, recommendations for improvement should be made by the researcher.

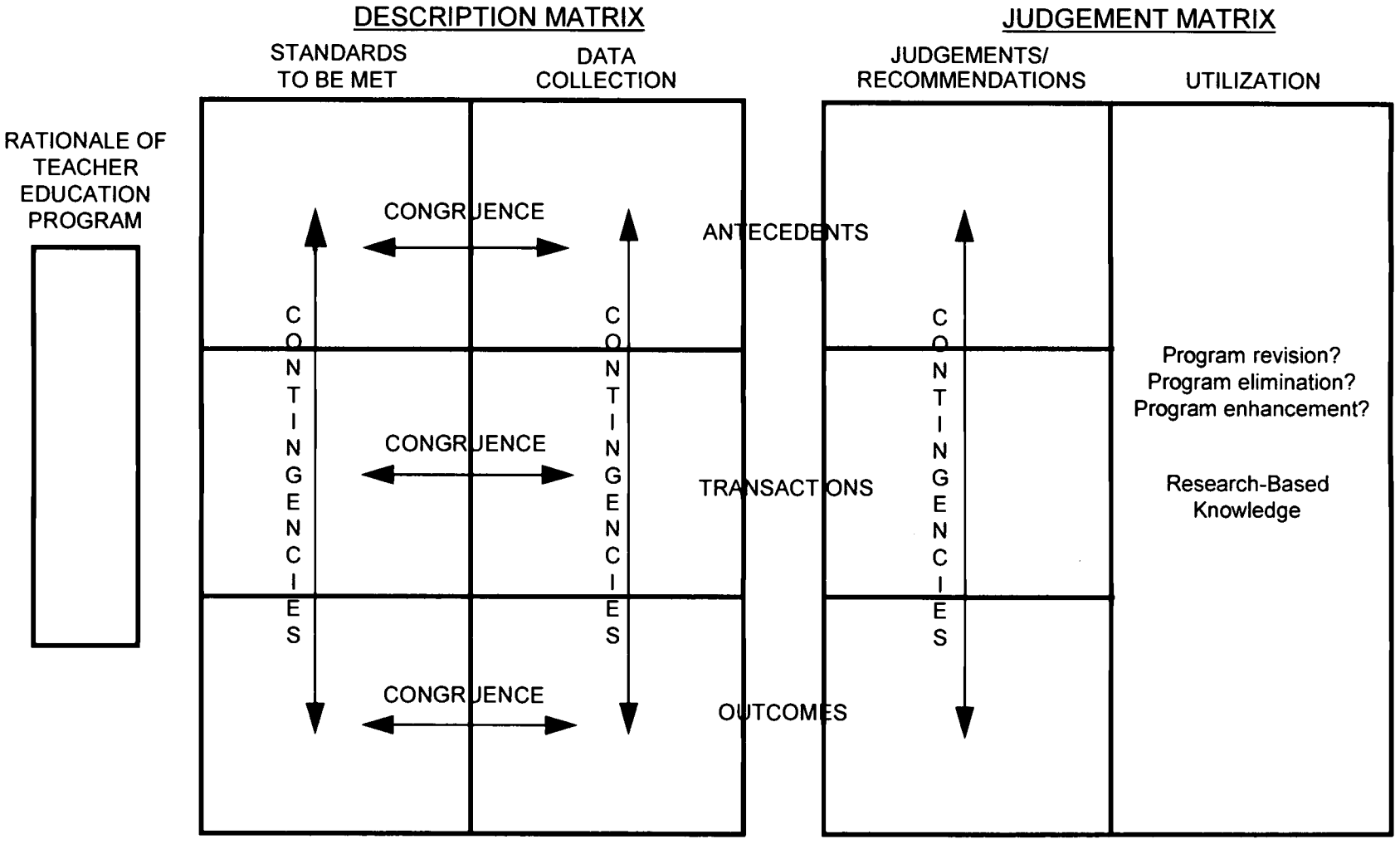


Figure 3. Modified Model for Evaluation of Teacher Education Programs

From "The Countenance of Educational Evaluation," by Robert Stake, 1967, *Teachers College Record, 68,* p. 529. Modified with permission of the author.

The final change in the model has been the addition of the Utilization column to the Judgment Matrix which indicates a determination of how the results of the evaluation will be used. The results of an evaluation and recommendations for improvement of the teacher education program should be presented to the appropriate members of administration at the institution. Decisions on how these results would be used should be determined by the administration.

It should be noted that arrows have been placed on the modified evaluation model to show that the Antecedents, Transactions, and Outcomes components of the Standards and Data Collections columns are contingent upon each of the other components. Also, that there should be congruence between the standards set and the data collected.

In addition to pointing out the strengths and weaknesses of a specific program and making recommendations for change, this evaluation approach would also provide research-based knowledge about all phases of a teacher education program for use by other institutions. By compiling the same type of data on many teacher education programs, comparisons of the programs could be made and the foundation for research-based knowledge on teacher education can be established.

This research-based knowledge would provide empirical evidence related to the most effective ways to structure programs in certain situations, with certain populations, and under certain conditions. It would provide program developers with important information which they could relate to their own program in order to make well-informed decisions.

Conclusion

The importance of establishing a research base in teacher education is evident. Research-based knowledge of teacher education could be established if teacher education institutions published research findings of studies of their programs. These studies should be developed for each specific site, based on their own particular needs and

circumstances. However, they should include the three components of the program as suggested in the literature and they should be based on a national perspective or a common set of standards such as NCATE and INTASC standards so that programs may be compared and contrasted to look for similarities and differences. It is only from the opportunity to compare and contrast empirical research on programs that theoretical constructs can be developed which will eventually lead to the development of theories in teacher education.

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