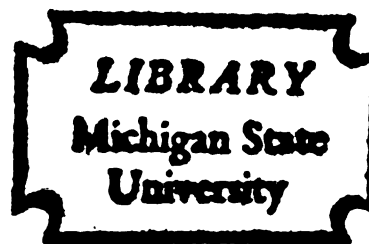


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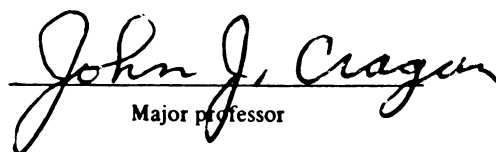
THE RELATIONSHIP BETWEEN MATCHED LEARNING
ENVIRONMENTS AND STUDENT SATISFACTION IN A
COMPETENCY BASED TEACHER EDUCATION PROGRAM

presented by

David L. Amundsen

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Student Teaching
and Professional
Development


Major professor

Date July 2, 1979



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THE RELATIONSHIP BETWEEN MATCHED LEARNING
ENVIRONMENTS AND STUDENT SATISFACTION IN A
COMPETENCY BASED TEACHER EDUCATION PROGRAM

By

David L. Amundsen

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
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ABSTRACT

THE RELATIONSHIP BETWEEN MATCHED LEARNING ENVIRONMENTS AND STUDENT SATISFACTION IN A COMPETENCY BASED TEACHER EDUCATION PROGRAM

By

David L. Amundsen

The effect of matching or mismatching of pre-service teachers' accessibility channels with the CBTE learning intervention environment was examined as related to post CBTE lab satisfaction and post student teaching satisfaction. The pre-service teacher's Conceptual Level was the independent variable. Dependent variables included: value orientation, motivational orientation, post CBTE lab satisfaction, and post student teaching satisfaction of the pre-service teacher.

Two populations, of 57 and 38 pre-service teachers respectively, were studied, (1) To determine which accessibility channels of the pre-service teacher were matched or mismatched with the CBTE learning intervention environment when grouped by Conceptual Level, and (2) To determine the effect of a pre-service teacher's accessibility channels as grouped by Conceptual Level when they were matched or mismatched with the CBTE learning intervention environment on the post CBTE lab satisfaction and the post student teaching satisfaction.

David L. Amundsen

Findings showed that: (1) all respondents' value orientations when grouped by Conceptual Level were mismatched with the projected value system of the program in Population I, while all respondents were matched in Population II; (2) all respondents' motivational orientations when grouped by Conceptual Level were matched with the source of feedback used in the program for Population I, whereas, all but one Conceptual Level group were matched for Population II; (3) with the exception of one Conceptual Level group in Population I, all of Population II post CBTE lab means were higher than Population I; (4) all Population I and Population II post student teaching satisfaction means were lower than the post CBTE lab satisfaction means; (5) the differences between post CBTE lab satisfaction and post student teaching satisfaction means for all Conceptual Level groups for Population II are greater than the mean differences for any Conceptual Level group for Population I. Hypothesis I was accepted for Population I and Population II; all other hypotheses were rejected, however the data showed trends in the predicted directions.

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John Cragun's waiting, questioning and encouragement supported me to succeed throughout the degree program. His depth, concern and friendship allowed a unique study, that was of interest to me.

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Marti and Keel, my children, have paid the big price in their "little" big way.

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CHAPTER I

PRESENTATION OF THE STUDY

Introduction

" . . . different people learn different things in different ways; thus, the planning and design of any educational program, including the training of teachers, should provide differential alternatives . . ." ¹ to accommodate individual learner differences.

To achieve this implied goal of teacher education, Hunt suggests, "A teacher training program, which provides alternative experiences modulated to trainee differences, is not only more likely to produce an efficient direct effect, but it will also be indirectly beneficial in providing the teacher trainee with an experimental example of what is meant by individualizing instruction and 'meeting the needs of the student'." ²

If educators would take into account how students learn (Learning Styles) within the Competency Based Teacher Education Model they could devise instructional activities.

¹David E. Hunt, Matching Models in Education, Monograph Series, No. 10 (Toronto: The Ontario Institute for Studies in Education, 1971), p. 68.

²Ibid, p. 67.

materials and strategies that would be optimal for the student's individual learning style. "'Every student (or trainee) is unique' and 'Because of his uniqueness, every student must be treated differently' . . ."¹

The Competency Based Teacher Education Model (CBTE) is an attempt at meeting the individual needs of the student, but often the developers overlook the student's learning style. By utilizing learning style research in the CBTE Model a student should learn more efficiently and a more effective approach to instruction could be developed.

Within most Competency Based Teacher Education Models educators have considered rate of learning, affective and cognitive domain, alternative instructional strategies, emotional and physical climate, but not the student's learning style. If the Competency Based Teacher Education Model could match its intervention with the student's learning style an optimal learning environment could be provided.

By chance, there are some "matches" between the student's learning style and the learning intervention. These chance matches provide an optimal learning environment for a few students but not all. As educators, we should be eliminating the chance element and work toward providing an optimal educational environment for all students.

¹Bruce Joyce and Marsha Weil, ed., Perspectives for Reform in Teacher Education (Englewood Cliffs, New Jersey: Prentice-hall, Inc., 1972) p. 54.

. . . we want to organize teacher education so that the individual differences of the teacher candidates are optimally matched to training methods and interpersonal climates so that learning will be comfortable and effective. Ideally, the climate of teacher education should modulate to the teacher candidates, so that a variety of conditions can meet the needs of the individuals.¹

This can be accomplished by matching the student's learning style with the instructional intervention; thereby, education should become more effective, efficient and relevant to the student. Isn't this part of most educators' goals?

Purpose of the Study

Current teacher education procedures include the learning of specific teaching skills that are fundamental to all forms of instruction. Teacher educators generally agree with the concept of teaching these basic competencies to teacher candidates because of their inherent value to the act of teaching. The purpose of this study is to determine the effect of the match/mismatch of the accessibility channels and the degree of structure of the CBTE intervention on the satisfaction of student teachers with the CBTE lab and with their student teaching experiences.

The mode of instruction in Competency Based Teacher Education (CBTE) is by individualized learning modules. These modules are constructed with performance objectives and stated performance criteria; included are a pretest to

¹Ibid, p. 49.

determine entry behavior and to prescribe one's learning activities, and a post-test to determine one's performance or evaluation. The modules are basically self-taught experiences, which will allow the learner to demonstrate the desired skills when completed. The modules let one learn at his own rate, and if the student does not meet the performance criteria he is directed to repeat certain activities until the learned teaching competency can be demonstrated. The learning activities are varied depending on the objective, but they generally include prescribed learning sequence and/or learning activity, observation (live and T.V.), participation by means of T.V., reading, and active participation in the classroom.

CBTE is an individualized program in terms of entry behavior, or an entry assessment of teaching performance; weaknesses and the rate of learning can be determined by the student. Within this individualized program, however, is an organized prescribed structure which provides an efficient means for implementation, but not necessarily for effective learning.

For the purpose of this study the structure of Michigan State University's Competency Based Teacher Education Program will be designated as a moderately-high structure by this author. The rationale follows from the discussion of the degree of structure. (See Chapter II). This CBTE program prescribes the learning activities, states the goal, content, procedures, performance criteria, and

reward/feedback system, all of which have been described as being part of a high structure intervention. As a result of the program design, two options are available that can be used to determine a moderately-high structure.

These two options provide that, (1) a student can avoid taking a module by utilizing his past experience and education to meet the performance criteria without participating in the CBTE learning intervention, and (2) the student can choose among several learning activities to learn the prescribed competency. As a result of the two options the structure can be defined as moderately-high structure.

The importance of the structure and learning style (Conceptual Level) of the learning intervention has been demonstrated by Hunt. Conceptual Level (CL) is defined as,

. . . a person characteristic, indexing both cognitive complexity (differentiation, discrimination, and integration) as well as interpersonal maturity (increasing self responsibility). A person at a higher Conceptual Level is more structurally complex, more capable of responsible actions, and, most important, more capable of adapting to a changing environment than a person at a lower Conceptual Level.¹

The Conceptual Level (CL) Matching Model with respect to the degree of structure is best explained by Table 1.

¹David E. Hunt, "Person-Environment Interaction: A Challenge Found Wanting Before It Was Tried," Review of Educational Research 45 (Spring 1975): 217.

Table 1. Contemporaneous Matching Model

Learning Style	needs much structure		needs little structure	
				
Conceptual Level	Low		High	
Degree of Structure	High		Low	

SOURCE: Hunt, "Person-Environment Interaction," p. 220.

Degree of structure or degree of organization is provided by the learning environment.

In high structure, the environment is largely determined by the teacher, and the student himself has little responsibility, whereas in low structure, the student is much more responsible for organizing the environment. Given the characteristics of low CL persons (dependent on external standards and incapable of generating their own concepts), they should profit more from a highly structured approach. Given the characteristics of the high CL persons (capable of generating new concepts and holding internal standards), they should either profit more from low structure, or be unaffected by variations in structure. The basic matching principle is summarized as, "low CL learners profiting more from high structure and high CL learners profiting more from low structure, or in some cases, being less affected by the variation in structure".¹

Using this theory we can assume that the CBTE structure will accommodate some of the CL and admixture students, but not all, because different CL students will process information differently. Therefore, in CBTE there are no alternatives for the mismatched CL and admixtures

¹Hunt, Matching Models in Education, pp. 219-20.

to learn the prescribed teaching competencies; the effective value of the learned competency will not be the same for all, nor will the learning be as effective as possible.

There are other matches/mismatches in the use of accessibility channels to define the appropriate environment for learning the prescribed competencies. First, value orientation identifies whether the ideas/competencies are within the latitude of acceptance of the student. If they are, he will see value in the intervention's competency; if they aren't, he will not value the competency and will not incorporate it into his teaching style; therefore, these mismatched students learn competencies for pragmatic reasons.

Second, motivational orientation is the form of feedback/reward from evaluation preferred by the student for motivation. Third, sensory orientation will not be considered in this study because the student has the choice of several modes of instruction when he selects a learning activity.

Hypotheses to be Tested

Satisfaction was chosen as a dependent variable as a result of the CBTE performance evaluation. The original purpose proposed for this study was to measure the effect of the match/mismatch of the accessibility channels and the degree of structure of the learning intervention on the performance of learned competencies. However, no statistical analysis could be done because the performance was

measured with pass/fail criteria. It is important to evaluate how well students demonstrate a teaching competency (not only that they "pass"); since pass/fail would not give any data on the degree of excellence in demonstrating a given competency, performance was not an acceptable dependent variable. As a consequence, satisfaction was chosen as a dependent variable, because the degree of satisfaction could be measured. Other dependent variables are the pre-student teacher's value orientation and motivational orientation.

The independent variable is the pre-student teacher's Conceptual Level (CL).

From reviewing the literature and the above discussion the following hypotheses are appropriate.

Hypotheses

1. There is a positive correlation between the pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a match between the CL and the structure of the CBTE instructional intervention.
2. There is a negative correlation between the pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.
3. There is a positive correlation between the pre-service student teacher motivational orientation and the post CBTE lab satisfaction when there is a match between

the CL and the structure of the CBTE instructional intervention.

4. There is a negative correlation between the pre-service student teacher motivational orientation and the post CBTE lab satisfaction when there is a mismatch between CL and the structure of the CBTE instructional intervention.

5. There is a positive correlation between the student's post CBTE lab satisfaction and the post student teaching satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

Assumptions and Limitations

Assumptions

1. This group of students is representative of typical Competency Based Teacher Education students.

2. The test to measure a student's Conceptual Level is reliable and valid.

3. The questionnaire to measure a student's value orientation is reliable and valid.

4. The questionnaire to measure a student's satisfaction with student teaching will be reliable and valid as developed for this study.

5. The questionnaire to measure a student's satisfaction with Competency Based Teacher Education will be reliable and valid as developed for this study.

6. If a student is satisfied with Competency Based Teacher Education, he will use the acquired skills;

if he is dissatisfied with Competency Based Teacher Education, he will not use the competencies.

Limitations

1. The sample studied cannot be of random selection, because it is the student's option whether or not to take the CBTE Program.

2. This group is not representative of all teaching majors.

3. The reliability and validity of the Paragraph Completion Method (PCM) is not as high as traditional parametric measures because this is a subjective test.

4. Value orientation, motivational orientation, and satisfaction are less than perfectly measured by questionnaire responses.

Definition of Terms

Accessibility Channels are the " . . . trainee's aptitudes,"¹ of cognitive orientation, motivational orientation, value orientation, and sensory orientation.

Cognitive Orientation indicates how a student will organize and interpret experience into useful knowledge.²

Competency Based Teacher Education (CBTE) is appropriately defined by Lindsey as,

¹Joyce and Weil, ed., Perspectives for Reform in Teacher Education, p. 50.

²Ibid, pp. 55-56.

The process of designing a competency-based program of initial teacher education (which) requires specifying in advance expected outcomes in terms of competencies to be demonstrated by graduates of the program, developing learning opportunities and environments expected to facilitate students' progress toward specified outcomes, and constructing and using evaluating procedures and instruments directly relevant to the stated competencies. In a well designed program, the result of these steps is a system where feedback channels are busy conveying evidence on the functioning and effect of the system.¹

Conceptual Level (CL) is the degree of abstractness of an individual in processing information in an environmental experience.²

Conceptual System is, " . . . a schema that provides the basis by which the individual relates to the environmental events he experiences."³

Intervention is a training procedure which utilizes a student's accessibility channels and skill level.⁴

Latitude of Acceptance determines the parameters of acceptance of divergent beliefs.⁵

¹Margaret Lindsey, "Performance-based Teacher Education: Examination of a Slogan," Journal of Teacher Education, 24 (Fall 1973): 181-82.

²David E. Hunt and Edmund V. Sullivan, Between Psychology and Education (Hinsdale, Illinois: The Dryden Press, 1974), pp. 221-22.

³Hunt, Matching Models in Education, p. 18.

⁴Ibid, p. 73.

⁵Joyce and Weil, ed., Perspectives for Reform in Teacher Education, p. 60.

Learning Style is a synonym of Conceptual Level (CL).

Matching is the appropriateness of a particular program characteristic for an individual, with respect to Conceptual Level, motivational orientation and value orientation.¹

Mismatch is the lack of appropriateness of a program's characteristics for an individual, with respect to Conceptual Level, motivational orientation and/or value orientation.²

Motivational Orientation affects preference for and reaction to different forms of feedback and reward.³

Structure is the degree of external control over an individual's learning environment.⁴

Value Orientation determines whether a student will be likely to learn skills designed as intervention procedures which will achieve objectives which are disagreed with.⁵

¹Bruce Joyce and Marsha Weil, Models of Teaching (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972), pp. 297-98.

²Ibid.

³Joyce and Weil, ed., Perspectives for Reform in Teacher Education, p. 56.

⁴Bruce Joyce, Marsha Weil, and Rhoda Wald, Basic Teaching Skills (Chicago: Science Research Associates, Inc., 1972), pp. 27-30.

⁵Joyce and Weil, ed., Perspectives for Reform in Teacher Education, p. 56.

Importance of the Study

One of the problems of education has been the lack of psychological research being utilized by education. By utilizing the Conceptual Level from psychology and applying it to education, an appropriate educational model could be developed. This Conceptual Level Matching Model essentially prescribes different intervention structure, value content, and feedback/reward systems for different learners' characteristics.

From this one could design an educational program that is not modal, but comes closer to individualizing than a modal approach. Specifically, as CBTE becomes the standard, some consideration must be given to the student's accessibility channels to learning if CBTE is to be effective. This suggests a multitude of tracks to reach the same behavioral teaching objectives. When these option tracks are provided, as suggested by this study, a more effective, efficient, relevant teacher education program could and should be implemented.

Overview of Thesis

This study is divided into five chapters. In this chapter, Chapter I, the basic problem has been introduced and outlined. The terms are identified and the scope of the study has been defined.

In Chapter II, a review of the literature on structure, Conceptual Level and matching is given. It contains

two sections: (1) Historical Development, and (2) Application of the Conceptual Level Matching Model.

The operationalizing of definitions is discussed in the first portion of Chapter III. Methods used in the data collection and analysis are considered in the final section of the chapter.

Chapter IV contains an analysis of the Paragraph Completion Test and questionnaire data to determine the match/mismatch of the students and the CBTE intervention and the resulting effect on the subjects' satisfaction. Chapter V provides conclusions drawn from the research and consideration of the types of problems and issues which should be considered in future efforts to apply the Conceptual Level Matching Model.

CHAPTER II

RELATED LITERATURE AND RESEARCH

Introduction

The review of Related Literature and Research focuses on structure, Conceptual Level and matching. It contains two sections: (1) Historical Development, and (2) Application of the Conceptual Level Matching Model.

This review serves several purposes: (1) it serves as a conceptual and theoretical frame of reference for this study, (2) it selectively samples descriptions of research findings related to this study, and (3) it guides and substantiates the research methods used in this study.

Education has espoused the " . . . importance of originality, flexibility and creativity while using procedures (e.g., teaching machines) and methods of evaluation (e.g., machine-scored objective tests) which reward mechanistic stereotypy . . . "¹ This approach to instruction is now being used in many of the teacher education programs. These programs, now called Competency Based Teacher Education, are individualized instruction where one may attain competency in specific teaching skills. One way to indi-

¹O.J. Harvey, ed., Experience, Structure and Adaptability (New York: Springer Publishing Company, Inc., 1966), p. 290.

individualize Competency Based Teacher Education is to utilize individual differences as represented by learning styles.

The individual's learning style is best utilized when the educational intervention is adaptable to how a student learns (learning style). "For example, some learn better by listening to the teacher, some by discussions, and others by working on their own."¹ One's learning style can also prescribe the most efficient, and therefore effective, educational intervention structure. If a student does not learn best in a Competency Based Teacher Education structured sequential intervention, then the learning will appear to be of little relevance to him.

Teacher education programs must also adapt to individual differences because of the variance in skill level and personality, but programs like most Competency Based Teacher Education (CBTE) provide few options and are designed for the average student. "A teacher training program, which provides alternative experiences modulated to trainee differences, is not only more likely to produce an efficient direct effect, but it will also be indirectly beneficial in providing the teacher trainee with an experimental example of what is meant by individualizing instruction and 'meeting the needs of the student'."²

¹Hunt and Sullivan, Between Psychology and Education, p. 264.

²Hunt, Matching Models in Education, p. 67.

One way of individualizing would be " . . . a system for coordinating differences in educational environments (or training intervention) with trainee characteristics. We will use the concept of matching to describe the appropriateness of a particular training intervention, for an individual trainee, to accomplish a specific training objective."¹ Student characteristics which have been matched with learning environment include age-group, ability groups, social adjustment, and teachability.

The purpose of this study is to investigate another system for matching, Conceptual Level, which determines one's learning style (Conceptual Level/cognitive orientation). This is appropriate if one goal of education is, " . . . to provide the conditions to produce more abstract conceptual structure . . . "² Another major goal, as Harvey, Hunt and Schroder state is, " . . . the process of growth and progression, which should be the major goal of education."³ I also submit that, "growth and progression" is a major goal of teacher education.

Conceptual Level Matching Model is presented as the theoretical basis for utilization of the learning style

¹Ibid.

²Ibid, p. 23.

³O.J. Harvey, D.E. Hunt, and H.M. Schroder, Conceptual Systems and Personality Organization (New York: John Wiley & Sons, Inc., 1961), p. 340.

model. Learning style, or cognitive orientation, is a component of the Conceptual Level Model. Therefore, if the Conceptual Level Model can be justified by research, the use of Conceptual Level as a means of matching would also be inferred, and, in fact, is only a slight modification of what Hunt calls cognitive orientation.

Historical Development

Conceptual Level Model was derived by application of the Conceptual System Theory of personality development and organization of Harvey, Hunt, and Schroder, and a revision of Schroder, Driver, and Streufert's, "Four Levels of Integrative Complexity."¹ From this theoretical framework, Hunt derived the current form of the Conceptual Level Matching Model, which applies these theories to education.

In the Conceptual Level Model development is viewed as having both the dimensions of increasing conceptual complexity and interpersonal maturity. Thus, the stages of the Conceptual Level Model are a combination of both the Conceptual Level and integrative complexity. Therefore, Hunt's Conceptual Level Model can best be understood by summarizing stages with matched optimal training environments as shown in Table 2.

Conceptual Level is a person characteristic, indexing both cognitive complexity (differentiation, discrimination, and integration) as well as interpersonal maturity (increasing self-responsibility). A person at a higher

¹Joyce and Weil, Models of Teaching, p. 30.

Table 2. Optimal Training Environments

Stage	Characteristics	Optimal Environment
I	Individual uses fixed patterns of response, sees things in terms of rights and wrongs, categorizes the world in terms of stereotypes, prefers hierarchical social relationships and distorts information to fit it into existing categories.	Environment needs to be well-structured, supportive, fairly controlling with stress on self-delination and negotiation.
II	Individual breaking away from rigid rules and beliefs, actively resists authority and control, tends to dichotomize the environment, has difficulty seeing other points of view and balancing task orientation with interpersonal relations.	Environment needs to emphasize negotiation in interpersonal relations and divergence in the development of rules and concepts.
III	Individual develops concern with interpersonal relations, has some difficulty maintaining task orientation, begins to balance alternatives and to build concepts which bridge differing points of view.	Environment should strengthen re-established interpersonal relations, with an emphasis also placed on tasks of the individual as a member of a group.
IV	Individual maintains a balanced perspective between task orientation and interpersonal relations, can build new constructs and beliefs, can negotiate with others the rules to govern behavior and negotiate conceptual systems for approaching abstract problems.	Environment should be interdependent, information-oriented, complex.

SOURCE: Joyce and Weil, Models of Teaching, pp. 303-305.

Conceptual Level is more structurally complex, more capable of responsible actions, and, most important, more capable of adapting to a changing environment than a person at a lower Conceptual Level.¹

Under ideal conditions, by advancing one's CL, a person will develop, " . . . from a low level of conceptual organization in which he is cognitively simple, dependent and not capable of generating his own concepts, to a higher level in which he is more cognitively complex, independent, and capable of generating his own concepts."²

From the theoretical framework of Harvey, Hunt, and Schroder, Hunt derived the current form of the Conceptual Level Matching Theory.

One of the first revisions made in developing the Conceptual Level derivative was to note the occurrence of a form of conceptual organization not anticipated earlier; because this represented the lowest point on the CL dimensions, it was initially referred to as a 'Sub I stage' (Hunt, 1966_a) and, more recently, it is considered in continuous terms as very low in CL. Next, on the basis of cross-sectional investigations in the 12-to 18-years age range, the motivational orientation hypothesized to characterize the hypothetically 'superior' stage III persons (mutuality and affiliation) did not occur more frequently in older than younger children as might have been expected. Further, persons with stage IV characteristics were essentially non-existent. Therefore, the CL derivative extended the dimension lower (a step that in turn led to a reconsideration

¹Hunt, "Person-Environment Interaction," pp. 217-218.

²Peter D. Tomlinson and David E. Hunt, "Differential Effects of Rule-Example Order as a Function of Learner Conceptual Level," Canadian Journal of Behavioral Science 3 (1971): 238.

and redefinition of the 'negative independence' in Stage II, with this high CL group being reconceptualized as more conceptually complex and independent), and seriously questioned the usefulness of the motivationally based system -- specific characteristics of Stage III and Stage IV. In sum, the CL derivative views personality organization as a continuous dimension, with very general anchor points at what we have referred to earlier as Sub I Stage, Stage I, and Stage II, which are hierarchically ordered. Most of our work described here is based on persons in the 12 to 18 years age range so that the reservations expressed about the usefulness or occurrence of patterns above Stage II should be considered in terms of the samples studied and the methods used, i.e., it is possible that higher levels may occur in older samples.¹

This change in model from stage specific classifications to the high-low CL continuum has many implications for CBTE.

Given the characteristics of low CL learners - categorical, dependent on external standards, and not capable of generating their own concepts - the prediction follows that they will profit more from educational approaches providing a high degree of structure. Given the characteristics of high CL learners - capable of generating new concepts, having a greater degree of internal standards, and being capable of taking on different perspectives - either they should profit more from approaches that are low in structure, or degree of structure may not affect their performance.²

To utilize the CL model in an educational setting Hunt expanded the model to incorporate other characteristics of the individual. These characteristics, which will

¹David E. Hunt, "A Conceptual Level Matching Model for Coordinating Learner Characteristics with Educational Approaches," Interchange 1 (1970): 70.

²Ibid, p. 76.

be defined later, are cognitive orientation, motivational orientation, value orientation, and sensory orientation.

Application of the Conceptual Level Matching Model

If one of the purposes of pre-service teacher education is to foster growth in students as teachers, then it follows that the same approach should be used in their training.

Maintaining a developmental perspective becomes very important in implementing person-environment matching because a teacher should not only take account of a student's contemporaneous needs by providing whatever structure he presently requires, but also view his present need for structure on a developmental continuum along which growth toward independence and less need for structure is the long term objective (Hunt and Sullivan, 1974).¹

One of the solutions in providing for contemporaneous needs of the student has been proposed by Hunt as the Conceptual Level Matching Model.

This Conceptual Level matching model hypothesizes a relation between structure of presentation and CL on the basis that the low CL person will need more structure because of his relative incapacity to generate concepts, while the high CL person should require less structure since he is capable of generating his own concepts.²

By use of this Conceptual Level Matching Model, the emphasis will be on progression, therefore one must concen-

¹Hunt and Sullivan, Between Psychology and Education, p. 208, cited by Hunt, "Person-Environment Interaction," p. 221.

²Tomlinson and Hunt, "Differential Effects of Rule-Example Order," p. 238.

trate on the optimal educational environment. "From the Conceptual Level matching viewpoint, the crucial question is, 'Given this kind of person, which method is better for certain objectives?'"¹

Hunt states that if and only if the environment produces progression are the student and the environment matched, whereas if it causes arrestation, this is a mismatch. Hunt's revised Matching Model contains only two extremes on a continuum, low and high, instead of four separate and distinct stages. Table 3 best summarizes the necessary environment for progression.

Table 3. Stage Specific Matched Environments

Desired Development	Matched Environment
Stage A - B (i.e., Low CL)	Highly structured, clear, and consistent.
Stage B - C (i.e., High CL)	Moderately structured, encouraging self-expression.

SOURCE: Hunt and Sullivan, Between Psychology and Education, p. 211.

This implies that matched environments are educationally relevant and can be achieved. "Once learner characteristics have been specified and measured, the edu-

¹John F.C. McLachlan and David E. Hunt, "Differential Effects of Discovery Learning as a Function of Student Conceptual Level," Canadian Journal of Behavioral Science 5 (1973): 152.

cational objectives should be stated explicitly and attention devoted to developing theoretical ways of coordinating these two factors with the planning of more effective educational environments."¹

The educational relevance of the Conceptual Level Matching Model is developed from Hunt's research as well as from Cross, Noy and Hunt, and McLachlan and Hunt.² "Thus, the heart of the CL matching model is a generally inverse relation between CL and degree of structure: Low CL learners profiting more from high structure and high CL learners profiting more from low structure or, in some cases, being less affected by variations in structure."³

The generic dimension of the educational environment in the CL matching model is degree of structure, . . . Degree of structure may take the form of variations in rule-example sequencing in which example-only would be regarded as low structure while rule-example would be high structure. It may also be represented by variations from the low structure of a discovery approach to the high structure of a lecture approach, from in-

¹David E. hunt, "Adolescence: Cultural Deprivation, Poverty, and the Dropout," Review of Educational Research 36 (1966): 470.

²H.J. Cross, "The Relation of Parental Training Conditions to Conceptual Level in Adolescent Boys," Journal of Personality 34 (1966): 348-365; Joyce E. Noy and David E. Hunt, "Student-Directed Learning From Biographical Information Systems," Canadian Journal of Behavioral Science 4 (1972): 54-63; McLachlan and Hunt, "Differential Effects of Discovery Learning as a Function of Student Conceptual Level."

³Hunt, Matching Models in Education, p. 44.

dependent study to highly organized study, and from student-centered approaches to teacher-centered approaches.¹

Degree of Structure

Degree of structure tends to be ambiguous, and ill-defined; each researcher uses his own terminology, i.e., teaching style, leadership-style, student centered, student constructed, and teacher directed. All of these, however, have some characteristics in common. Therefore, it seems advisable to look at several approaches so that a frame of reference can be obtained for the meaning of low structure and high structure.

The basic dimension of environmental variation is degree of structure. In high structure, the environment is largely determined by the training agent (parent, teacher), while the person himself (child, student) has little responsibility for what happens in the environment. In low structure, by contrast, the person experiencing the environment is at least as important in determining the environment as the training agent.²

From Hunt's general statement one develops an understanding of the parameters of degree of structure.

Joyce, Weil and Wald identify structuring as,
 " . . . varying the source and degree of control over behavior in the learning environment through the organization

¹Hunt, "A Conceptual Level Matching Model for Coordinating Learner Characteristics with Educational Approaches," p. 75.

²Hunt and Sullivan, Between Psychology and Education, pp. 213-214.

of the learning activity."¹

Hunt clarifies that degree of structure to include both the structured-flexible dimension, or the degree that the student can interact with the material and the degree of organizational complexity of the intervention.²

Degree of structure refers to the amount of organization or clarity of expectations the person encounters. In low structure, there is little organization, and the responsibility for clarifying and organizing is placed on the person himself. In high structure, the organization is clear, well organized, and more often determined by a training agent than by the person himself.³

Hunt specifies low structure as,

. . . exemplified by student-centered approaches, discovery learning and presentation of examples before presentation of the principle (inductive teaching). In all these cases the student is primarily responsible for organizing the material. High structure is exemplified by teacher-centered approaches, learning through lecture, and presenting the rule or principle before the examples. Here the responsibility lies with the teacher.⁴

Joyce and Weil expand Hunt's definition of less structure to include, " . . . roles, relationships, norms, and activities become less prescribed or externally imposed,

¹Joyce, Weil, and Wald, Basic Teaching Skills, p. 5.

²Hunt, Matching Models in Education, p. 74.

³McLachlan and Hunt, "Differential Effects of Discovery Learning as a Function of Student Conceptual Level," p. 153.

⁴Hunt and Sullivan, Between Psychology and Education, p. 214.

and more emergent and within the students' control . . ."¹

Joyce, Weil and Wald generalize degree of structure into three models, teacher-directed structure, negotiated, and student-constructed structure. These structuring techniques can be summarized as follows.

1. Teacher-directed structure
 - a. No student options available
 - b. No negotiating of activities
 - c. Teacher selects goals, activities, content and procedures
 - d. Teacher expects his plan will be followed
 - e. Teacher control
2. Negotiated structure
 - a. Some negotiation through options available to students
 - b. Students make decisions within a context structured by the teacher
 - c. Teacher presents several ideas and students select
 - d. Teacher may plan general activity but students work out specific plans
3. Student-constructed structure
 - a. All options concerning goals, activity, content, and procedures lie with the student
 - b. Student decisions are relatively free of external structure
 - c. Teacher acts as an advisor and participant²

"The question of structure, therefore, is best phrased, 'Within the prescribed subject matter how many of these organizational options are available to the student?' When we tabulate this we can characterize the structure."³ Table 4 identifies the rough configurations.

¹Joyce and Weil, Models of Teaching, p. 15.

²Joyce, Weil, and Wald, "Basic Teaching Skills, pp. 29-30.

³Ibid, p. 28.

Table 4. Structure as Determined by the Source of Control

Organizational Element	Type of Structure		
	Teacher- Directed	Negotiated	Student- Constructed
Goal	Teacher selected	Teacher selected	Student selected
Content	Teacher determined	Teacher determined Student determined	Student determined
Activity	Teacher determined	Student determined Teacher determined	Student determined
Procedures	Teacher responsible and paced	Student responsible and paced	Student responsible and paced

SOURCE: Joyce, Weil, and Wald, Basic Teaching Skills, p. 28.

Structure of the learning intervention has been exemplified by other generalization methods also. In the Cross study, unilateral conditions are high structure, and interdependent conditions are low structure. These are summarized by Hunt and Sullivan in Table 5.

Table 5. Variations in Environmental Structure

	Low	High
Examples	Interdependent Student-Centered Discovery Example-rule	Unilateral Teacher-Centered Lecture Rule-example

SOURCE: Hunt and Sullivan, Between Psychology and Education, p. 214.

Noy and Hunt also have defined two learning conditions, student-directed and system-directed.

In the student-directed condition, subjects were free to ask whatever questions they wished after which they would be provided with appropriate information. In the system-directed condition, each student was yoked with a student in the student-directed treatment so that he obtained exactly the same material in exactly the same order as his yoked partner but asked no questions.¹

One extensive analysis of structure with teaching models was done by Joyce and Weil. Table 6 also indicates appropriate Conceptual Level (CL) of the learner as well as the teaching model and degree of structure.

Measurement of Degree of Structure

The definitions and examples of degree of structure determine the next problem which is how the degree of structure is measured. Objective measures are: The Program

¹Noy and Hunt, "Student-Directed Learning From Biographical Information Systems," p. 55.

Table 6. Classification of Models by Amount of Structure

Name of Model	Amount of Structure	Appropriate Conceptual Level
1. Inductive (Taba)	Moderate	Moderate
2. Inquiry Training (Suchman)	High	Low
3. Science Industry Model (Schwab)	Moderate	Moderate
4. Jurisprudential Teacher (Oliver & Shaver)	High	Low
5. Concept Attainment (Bruner)	Moderate	Moderate
6. Developmental (Piaget)	Can vary from low to high (usually high)	Low
7. Advance Organizer (Ausubel)	High	Low
8. Group Investigation (Thelen)	Low	High
9. Social Inquiry (Massialas & Cox)	Moderate	Moderate
10. Laboratory Method (National Training Laboratory)	The T-Group is exceedingly low structure while the exercises can be moderately structured	High
11. Non-Directive Teaching (Rogers)	Low	High
12. Classroom Meeting (Glasser)	Moderate	Moderate-High
13. Synetics (Gordon)	Moderate	Moderate-High
14. Awareness Training (Shutz)	Moderate to Low	High
15. Conceptual Systems (Hunt)	Varies from Low to High	—
16. Operant Conditioning (Skinner)	High	Low

SOURCE: Joyce and Weil, Models of Teaching, p. 305.

Climate Questionnaire (Hunt and Hardt, 1967), and the College Characteristics Index (Stern, 1970). Both measure the subjective interpretation of the environment.¹ Other systems are: environmental complexity (Schroder, Driver, and Streufert, 1967); structured - flexible programs (Hunt and Hardt, 1967); and reflective environments (Hunt and Joyce, 1967).²

Hunt suggests three other methods for indexing the degree of structure," . . . by asking the student ('Do students have a chance to determine what goes on?'), asking the teacher ('Who is responsible for determining procedures?'), or by observation."³

There are several studies that indicate or can be interpreted to show the validity of structure on learning. Those studies that indicate a relationship between structure and learning, as reported by Brophy and Good include:

¹D.E. Hunt and R.H. Hardt, "Characterization of 1966 Summer Upward Bound Program," 1967, Syracuse University York Development Center, cited by Hunt and Sullivan, Between Psychology and Education, p. 99; G.G. Stern, People in Context: Measuring Person Environment Congruence in Business and Industry (New York: John Wiley & Sons, Inc., 1970).

²Harold M. Schroder, Michael J. Driver, and Siegfried Streufert, Human Information Processing (New York: Holt, Rinehart and Winston, Inc., 1967); Hunt and Hardt, "Characterization of 1966 Summer Upward Bound Program;" David E. Hunt and Bruce R. Joyce, "Teacher Trainee Personality and Initial Teaching Style," American Educational Research Journal 4 (May 1967): 253-259.

³Hunt and Sullivan, Between Psychology and Education, p. 214.

Zussman and Pascal, (1973); Tuckerman, (1969); and Feitler, Wierner, and Blumberg, (1970).¹

Studies that show a relationship between CL and structure are summarized as follows. McLachlan and Hunt (1973) investigated the effects of learner CL and variations in structure, discovery (low structure) versus lecture (high structure). Results indicated that low CL students performed significantly better with high structure than with low structure. (P less than .05).²

Heck (1968) found that high CL trainees profited more from the unstructured form of sensitivity training, while low CL trainees profited more from a structured human-relations training. Bundy (1963) found that high CL educational administrators were adversely affected by a structured guide, while those lower in CL tended to profit from

¹D. Zussman and C. Pascal, "The Interaction of Divergence and Convergence of Students and Teachers with Personality and Instructional Variables Affecting Educational Outcomes," paper presented at the annual meeting of the American Educational Research Association, 1973; B. Tuckerman, "Study of the Interactive Effects of Teaching Style and Student Personality," American Psychological Association, Proceedings of the 77th Annual Convention (1969); F. Feitler, W. Wierner, and A. Blumberg, "The Relationship Between Interpersonal Relations and Preferred Classroom Physical Settings," paper presented at the annual meeting of the American Educational Research Association, 1970, all cited by Jere E. Brophy and Thomas L. Good, Teacher-Student Relationships (New York: Holt, Reinhart, and Winston, Inc., 1974), pp. 246-249.

²McLachlan and Hunt, "Differential Effects of Discovery Learning as a Function of Student Conceptual Level."

the structured guide.¹

Several studies show that the high CL or abstract students do significantly better in low structure interventions, whereas low CL or concrete students do significantly better in highly structured interventions.² This suggests that low CL students will do better in the high structure of CBTE whereas high CL students will do better in some alternative.

Tomlinson and Hunt investigated the differential effects of rule-example order as a function of learner Conceptual Level. Analysis of the results indicated a highly significant CL x treatment effect and the expected pattern was borne out when comparing mean scores. Under low and moderate structure, the low CL were significantly lower than high CL. The low CL groups under low and moderate structure were also significantly lower than the low CL

¹E.J. Heck, "A Study Concerning the Differential Effectiveness of Two Approaches to Human Relationship Training in Facilitating Change in Interpersonal Communication Skill and Style of Interpersonal Perception," (Ph.D. dissertation, Syracuse University, 1968); R.F. Bundy, "An Investigation into the Use of a Programmed Guide on the Effectiveness of Problem Analysis Behavior in Public School Administrators," (Ph.D. dissertation, Syracuse University, 1968), both cited by Hunt, Matching Models in Education, p. 76.

²Hunt, Matching Models in Education, p. 67; Hunt and Sullivan, Between Psychology and Education, p. 215; and Brophy and Good, Teacher-Student Relationships, pp. 312-313.

group under high structure. (P less than .05).¹

The present study investigated the effect of varying orders of rule and example (e.g., rule-example, example-rule) upon different kinds of learners. To present the learner with the rule before he receives examples of the rule would represent generically the advance organizer approach advocated by Ausubel (1968), while the example-first procedure may be considered generically similar to the discovery approach advocated by Bruner (1966). These two treatments may also be considered to vary on a dimension of degree of structure from low (example-first) to high structure (rule-first).

Three treatment variations thought to vary in degree of structure were devised: (1) low structure in which the examples were presented first and the rule or principle was presented some time later; (2) intermediate structure in which the examples were presented first followed almost immediately by the rule or principle; and (3) high structure in which the rule, or principle, was presented before the examples in the material.²

Hunt determined that the relationship between CL and structure of the intervention,

. . . would be a teacher (or intervention) who is slightly more abstract than the student rather than an extremely abstract teacher. The rationale here is that the latter teacher might be too far removed from and too incomprehensible to the student, and therefore less effective in advancing his development toward greater abstractness than would a teacher who was closer to the student's present level and therefore perhaps more comprehensible to him.³

¹Tomlinson and Hunt, "Differential Effects of Rule-Example Order as a Function of Learner Conceptual Level," pp. 237-245.

²Ibid, pp. 237-239.

³Brophy and Good, Teacher-Student Relationships, p. 266.

Joyce and Hodges found that the teacher who can exhibit a wide variety of teaching styles is potentially able to accomplish more than a teacher whose repertoire is relatively limited.¹

Since it is known (Hughes, 1963; Travers, and others, 1961) that the most infrequent teaching pattern is what we will call reflective, or one which utilizes the learners frame of reference to encourage questioning, hypothesizing; and further, since providing this reflective environment is also theoretically relevant (Hunt, 1964), we focus on the reflective teaching style.²

Hunt and Joyce identified a "reflective" teaching style as, " . . . one which utilizes the learner's frame of reference to encourage questioning, hypothesizing." This "reflective teaching pattern" was assessed using Joyce's "Manual for Coding Teacher Communications Relevant to Conceptual Systems Theory," and the subject's CL was assessed using PCM. They hypothesized that, " . . . for new teacher trainees, the occurrence of reflective teaching pattern is

¹Bruce Joyce and Richard Hodges, "Instructional Flexibility Training," Journal of Teacher Education 17 (Winter 1966): 409-16.

²Marie M. Hughes, "Utah Study of the Assessment of Teaching," Theory and Research on Teaching, ed. A.A. Ballack (New York: Teachers College, 1963), pp. 25-36; U.S. Department of Health, Education and Welfare, Measured Needs of Teachers and Their Behavior in the Classroom, by Robert M. W. Travers, et. al., Final Report, Office of Education No. 444 (University of Utah, 1961); David E. Hunt, "A Conceptual Systems Change Model and its Application to Education," paper presented at Office of Naval Research Symposium, Boulder, Colorado, 1964, all cited by Hunt and Joyce, "Teacher Trainee Personality and Initial Teaching Style," p. 254.

directly related to the trainee's conceptual level; i.e., the higher the CL the greater the occurrence of the reflective pattern."¹ Results indicated that "the correlation between trainee CL and reflective index were found to be .578 (df = 12, $p < .05$) which supports the hypothesis. . . . scores for these subjects on the National Teacher Examination were correlated with both CL and reflective index. In both cases the relation was exactly zero indicating that intelligence probably does not account for the reported relation."²

" . . . , if a teacher trainee can radiate a reflective environment, he is also likely to be capable of radiating a structured environment since this latter is by far the most frequently occurring teaching pattern."³

The problem of how to induce the capacity to radiate a reflective environment in low CL teacher trainees is a formidable one, but one which it is hoped can be attacked more systematically in light of the present results. We have tentatively assumed that a high reflective index indicates a capacity to radiate a wider variety of environments, but this assumption needs to be verified.

.
 . . . it seems reasonable to conclude . . . that the relation between teacher trainee CL and the capacity to radiate a reflective environment is established, at least in the initial phase of learning to teach. Rather than view this rela-

¹Hunt and Joyce, "Teacher Trainee Personality and Initial Teaching Style," pp. 257, 255.

²Ibid, p. 256.

³Ibid, p. 254.

tion as setting limits upon potential effectiveness after teacher training . . . these results would help focus on procedures which might be differentially effective in inducing the capacity to radiate a wide variety of educational environments in trainees in varying conceptual levels.¹

Joyce and Weil identify a "skills component" in the development of instructional systems.

At present three skills form the bulk of the component, but more will doubtless be added as our study continues. These skills are called structuring, modulating cognitive level, and focusing.

The skill of structuring is concerned with varying the distribution of control in the relationship between teacher and students. Goals and procedures can be negotiated (when teacher and student share most decisions and responsibilities) or directed (when they are determined primarily by the teacher) or student-constructed (when students make the decisions and maintain the activity). Skill in structuring is defined as the ability to bring about these conditions.²

"If one views teaching patterns; e.g., a highly structured lesson plan, as differentially effective depending upon the characteristics of the learner and the desired educational objective (Hunt, 1964), then one skill important for the effective teacher is the capacity to utilize a variety of teaching patterns under appropriate circumstances."³

From these studies it seems appropriate to apply the

¹Ibid, p. 257.

²Bruce B. Joyce and Marsha Weil, "The Teacher-Innovator: Models of Teaching as the Core of Teacher Education," Interchange 4 (1973): 49.

³Hunt and Joyce, "Teacher Trainee Personality and Initial Teaching Style," p. 253.

CL Matching Model and structure to teacher education. "The structure of the presentation should be modulated to the trainee's conceptual complexity, or CL: the higher the trainee's CL, the more likely he is to be accessible through a more complex presentation or one which is interdependent; conversely, low CL trainees are likely to be more accessible through a more structured, less complex presentation."¹

Hunt implies that if the trainee's CL is low, then the intervention should be simple and concrete, with use of transcripts and demonstrations which he can model. If the trainee's CL is high, the intervention should be abstract or theoretical with rationale for the procedure.

Therefore, structure is important to teacher education, but, "What matters most is who controls . . .," the organizational elements of goals, content, activities and procedures.²

Accessibility Channels

"In education practice, the term learning style is used to describe the student's CL and is defined in terms of how much structure a student needs in order to learn best."³

¹Hunt, Matching Models in Education, p. 75.

²Joyce, Weil, and Wald, Basic Teaching Skills, p. 28.

³Hunt, "Person-Environment Interaction," p. 220.

The match that an educational intervention should strive for is between learning style (CL) and the structure of the intervention. If curriculums are designed (CBTE) to account for individual differences in learning style, then Hunt's model implies that students will be more efficient and effective in their learning.

To make the CL Matching Model more useful in teacher education, an extended version is more appropriate. "The model has therefore been extended (Hunt, 1968) to include other possible person-environment combinations, and in this extended model the student is viewed in terms of 'accessibility channels.'"¹

The ". . . 'accessibility characteristics' are directly translatable into specific forms of educational environments likely to be effective for the person's learning or development."² The accessibility channels are presented as a means of reaching the trainee, and described as follows:

¹Hunt, "A Conceptual Matching Model for Coordinating Learner Characteristics with Educational Approaches," p. 78.

²Hunt, "Person-Environment Interaction," p. 219.

1. Cognitive orientation - how a trainee will organize and interpret his experience (learning style).
2. Motivational orientation - affects preference for and reaction to different forms of feedback and reward.
3. Value orientation - whether the trainees will be likely to learn skills designed as intervention procedures which will achieve objectives they do not believe in, or that they disagree with.
4. Sensory orientation - which form of intervention is preferred, visual, auditory, or both, to accomplish desired results.¹

Taking account of "accessibility channels" is almost unavoidable when working with a physically handicapped student. Though less apparent, it seems equally important to consider any student in terms of channels of accessibility so that the form of educational approach can be most appropriately "tuned in" to the student. The CL Matching Model gives an example of how the accessibility channel, learner's cognitive orientation can be used to "tune in" by modulating the structure of the presentation. The model . . . (see Table 7) extends this rationale to other orientations. . . . deals only with the coordination between the form of educational approach and the "accessibility channel," and is not concerned with the relation between learner's skill level and content of the presentation.²

¹Hunt, Matching Models in Education, pp. 71-72.

²Hunt, "A Conceptual Level Matching Model for Coordinating Learner Characteristics with Educational Approaches," pp. 78-79.

Table 7. Model for Coordinating Learner Characteristics with Educational Approaches

Accessibility Channels	Form of Presentation
1. Cognitive orientation	1. Structure of presentation
2. Motivational orientation	2. Form of feedback and reward
3. Value orientation	3. Value context of presentation
4. Sensory orientation	4. Modality of presentation

SOURCE: Hunt, "A Conceptual Level Matching Model for Coordinating Learner Characteristics with Educational Approaches," p. 79.

In order to be useful for designing investigations or contributing to educational decisions, these general relations must be translated into more specific forms comparable to the low CL - high structure prescription in the CL matching model. When matching motivational orientations with form of feedback and reward, the hypothesis would be that learners with self-directed orientations are more likely to profit from intrinsic reward and self-anchored feedback while learners with more socially based (affiliative) orientation are more likely to profit from extrinsic reward and normative feedback.

When matching value orientation with value content of the presentation, the central hypothesis, would be that learners are more likely to profit from a presentation that is within the "latitude of acceptance" of their current value orientation, and less likely to profit from a presentation either identical to their present stand, or outside their "latitude of acceptance." Finally, when matching sensory orientation and modality of presentation, the quite obvious hypothesis is that when learners have a preferred modality, e.g., visual or auditory, they will profit more from a presentation in that modality.¹

¹Ibid, p. 79.

From the development of the CL Matching Model and its accessibility channels, one can identify some specific implications for teacher education.

Accessibility channels are the characteristics of the student that will be utilized in the Matching Model. These characteristics allow the intervention to prescribe how the content should be presented. This knowledge is important if it is to impact the student so the skills can be learned. It simply is how we "reach" the student.

Cognitive Orientation

According to Joyce and Weil, information-processing models of teaching,

. . . share an orientation toward the information-processing capability of the student and toward the systems that can be taught him so as to improve his information-processing capacity. Information processing refers to the ways people handle stimuli from the environment, organize the data, sense problems, generate concepts and solutions to problems, and employ verbal and nonverbal symbols.¹

Once we know his CL and/or cognitive orientation, we can design the educational intervention with appropriate degree of structure, thereby utilizing his accessibility channels to reach the student. The intervention structure can range from unstructured (flexible) to structured (concrete) in order to match the student's CL. High CL students will be accessible by complex intervention or interdepen-

¹Joyce and Weil, "The Teacher-Innovator: Models of Teaching as the Core of Teacher Education," p. 48.

dent, whereas low CL students can best be reached by structured, well defined, less complex intervention (as discussed earlier in this chapter). This has been verified in two studies, Bundy, 1968, and Heck, 1968.¹

Noy and Hunt show that persons high in CL are superior to those low in CL when the behavior is at a more complex level. Noy and Hunt also show that "high CL students are, however, superior to low CL students at all levels, thus emphasizing the need to consider both the characteristics of the learner and the level of behavioral objective in evaluating instructional approaches."²

Gardiner and Schroder report that, " . . . Ss (students) trained in multiple-concept thinking were scored significantly higher by trained raters using test referents than protocols written by Ss trained in single-concept thinking."³

In support of the validity of the Paragraph Completion Test to measure Conceptual Complexity, Gardiner and

¹Bundy, "An Investigation into the use of a Programmed Guide on the Effectiveness of Problem Analysis Behavior in Public School Administrators," and Heck, "A Study Concerning the Differential Effectiveness of Two Approaches to Human Relationship Training in Facilitating Change in Interpersonal Communication Skill and Style of Interpersonal Perception," both cited by Hunt, Matching Models in Education, p. 71.

²Noy and Hunt, "Student-Directed Learning from Biographical Information Systems," pp. 54.

³Gareth S. Gardiner and Harold M. Schroder, "Reliability and Validity of the Paragraph Completion Test: Theoretical and Empirical Notes," Psychological Reports 31 (1972): 961.

Schroder cite studies by " . . . Schroder, et. al. (1967) and Schroder (1971), where . . . , groups of students having high scores showed less tendency to engage in bifurcated thinking, greater independence of judgment, greater tolerance of ambiguity and conflict, greater ability to inter-relate (integrate) perspectives and less rigidity of judgments than groups of students having low scores," and a study by Schneider and Giambra (1971), where " . . . students high in complexity on the Paragraph Completion Test used a significantly greater variety of conceptual rules in identifying concepts than did students low in complexity."¹

The reliability of the PCT is such that the structural scoring referents for the test are sufficiently specific that inter-rater reliabilities ranging from .80 to .95 can be established with approximately three days of training.²

With a sample of 100 students, Bottenberg obtained an inter-rater reliability of .91 and a Spearman-Brown correlation of .75 between two approximately equal test

¹Schroder, Driver and Streufert, Human Information Processing; Harold M. Schroder, "Conceptual Complexity and Personality Organization," in Personality Theory and Information Processing, ed. Harold M. Schroder and P. Suedfeld (New York: Ronald Press Co., 1971), pp. 240-273; and G.A. Schneider and L.M. Giambra, "Performance in Concept Identification as a Function of Cognitive Complexity," Journal of Personality and Social Psychology 19 (1971): 261-273, cited by Gardiner and Schroder, "Reliability and Validity of the Paragraph Completion Test," pp. 960-961.

²Schroder, Driver and Streufert, Human Information Processing, p. 190.

halves.¹

Pohl and Pervin defined cognitive styles in terms of performance on the Schroder Paragraph Completion Test. In this evaluation scores fall along a continuum, with low scores representing persons who are cognitively concrete and high scores persons who are cognitively abstract.²

Motivational Orientation

Hunt cites studies that motivational orientation affects preference for and reaction to varying forms of feedback. Praise is more effective for "extroverts," while criticism is effective for "under-achievers." Also, persons in high affiliation motivation solve problems effectively and better with feeling-oriented feedback, whereas, persons in achievement orientation are more effective with task-oriented feedback. Persons that are other-directed work harder with experimenter-defined feedback, whereas inner-directed work better with self-defined feedback.³

Feedback can be received in several forms, such as self-viewing of video tape, or as reported by the trainer or other trainees. The most effective approach will then

¹E.H. Bottenberg, "Instrumental Characteristics and Validity of the Paragraph Completion Test (PCT) as a Measure of Integrative Complexity," Psychological Reports 24 (1969): 437-438.

²R.L. Pohl and L.A. Pervin, "Academic Performance as a Function of Task Requirements and Cognitive Style," Psychological Reports 22 (1968): 1017-1020.

³Hunt, Matching Models in Education, p. 71.

depend on self-esteem as Salomon and McDonald (1970) report.¹ Harvey reports that persons high in affiliation were more accessible through peer feedback, while authoritarian were most affected by authority-based feedback.²

Stuempfig and Maehr report a study to determine how high school students of varying conceptual structure would respond to personal and impersonal feedback on a performance task. Students with abstract conceptual structures showed no difference in motivation under two feedback conditions: concrete students showed increased motivation when administered personal feedback.

Among abstract students, the type of feedback appeared to have little effect on persistence. Furthermore, inspection of the data revealed that the strongest differential effects occurred in the case of the most concrete students, ". . . it appears then that conceptual development, as viewed from the conceptual systems theory, does affect responses to feedback."³

¹G. Salomon and F.J. McDonald, "Pretest and Post-test Reactions to Self-viewing One's Teaching Performance on Video Tape," Journal of Educational Psychology 61 (1970): 280-286.

²O.J. Harvey, "Some Cognitive Determinants of Influencibility," Sociometry 27 (1964): 208-221.

³Daniel W. Stuempfig and Martin L. Maehr, "Persistence as a Function of Conceptual Structure and Quality of Feedback," Child Development 41 (1970): 1189.

Value Orientation

Whether a student learns the prescribed skills will depend on his value orientation. If he values what is being taught he will more than likely learn the material. What is important in teacher education is that he has the characteristic of being open to information. The education will have to fall within his "latitude of acceptance," but yet there should be a minimal disparity between his position and the learned position. This is necessary because if the learned position falls outside of his latitude he will not value it because it is threatening to his feelings of adequacy.

Therefore, education must present a "gradual" movement as the training deviates from the student's position as reported by Harvey, and supported by Harvey and Rutherford, and McClintock.¹

In the gradual approach the one attempting influence strives to show the proximity of his stand to that of the person he is trying to persuade; then in small steps his evaluations are made to diverge from those of the recipient toward some desired end. In the absolute approach, one from the outset argues for the desired end point without

¹O.J. Harvey, "Some Cognitive Determinants of Influencibility," pp. 208-221; O.J. Harvey and Jeanne Rutherford, "Gradual and Absolute Approaches to Attitude Change," Sociometry 21 (1958): 61-68; and C.G. McClintock, "Personality Syndromes and Attitude Change," Journal of Personality 26 (1958): 479-493.

regard for the disparity between his stand and that of the person he would modify. Harvey and Rutherford confirmed the following hypotheses:

A greater change will be effected in the weaker than in the stronger concept . . .

For the weaker concepts, greater change will be effected by the larger absolute discrepancy . . .

Greatest change will be effected in the weak concept by the large and absolute discrepancy . . .

A greater frequency of contrast will occur under the larger discrepancies among individuals with stronger concepts who have previously experienced smaller discrepancies.¹

Sensory Orientation

The mode of presentation or sensory orientation depends on the student's preference. The option should be available to receive the presentation in the preferred sensory mode. This is supported by Snow, Tiffin, and Seibert,² and by Koran, McDonald, and Snow.³

As a consequence of matching the student's accessibility channels with the intervention, it would follow that

¹Harvey and Rutherford, "Gradual and Absolute Approaches to Attitude Change," pp. 67-68.

²Richard E. Snow, Joseph Tiffin, and Warren F. Seibert, "Individual Differences and Instructional Film Effects," Journal of Educational Psychology 56 (1965): 315-326.

³M.L. Koran, F.J. McDonald, and R.E. Snow, "The Effects of Individual Differences on Observational Learning in the Acquisition of a Teaching Skill," paper presented at American Educational Research Association, Los Angeles, California, 1969, cited by Hunt, Matching Models in Education, p. 77.

a more efficient and effective teacher education program could be developed. By use of the Matching Model in teacher education we can maximize any learning intervention. Thereby the program can be accountable, as well as allowing the student to meet his individual needs and skill deficiencies.

Matching

The value of using the CL Matching Model in providing matched interventions with student's CL can be documented. However, most of the research reported has been directed toward K-12 students rather than college students; therefore, the application to teacher education is by inference.

Brophy and Good suggest that, " . . . information and skill training will be relatively ineffective until students are ready to learn the material."¹ This can be influenced by their satisfaction with the intervention. From this material it seems appropriate to suggest the use of matching CL and intervention in order that the interventions will be effective, produce satisfaction and promote growth and progression from a low CL to a higher one.

Tuckman's findings indicate that high CL students when matched with highly structured teachers rated

¹Brophy and Good, Teacher-Student Relationships, p. 326.

these teachers low and were less satisfied then when CL and structure were inversely matched.¹

Joyce and Weil observe that teacher trainees were more easily able to master the models of teaching if they possessed certain types of skills with students and subject matter. Of these skills, the skill of modulating cognitive level is relevant.

The skill of modulating is concerned with the way in which data or content is handled in the classroom. Three levels of cognitive activity - factual, conceptual, theoretical - are described as being along a continuum beginning with the identification of data and extending to the building of concepts and to the theoretical processing of data.²

In a second study on sophomore students enrolled in a methods of teaching course, Hunt and Joyce report that, " . . . the results seem to provide fairly good evidence in support of the hypothesized relation between personality and teaching pattern. (However) . . . it should be emphasized . . . that they should not be considered to imply that these teaching patterns cannot be changed through training."³

¹B.W. Tuckman, "A Study of the Effectiveness of Directive vs. Nondirective Vocational Teachers as a Function of Student Characteristics and Course Format," U.S. Office of Education Final Report 1968, cited in Hunt and Sullivan, Between Psychology and Education, p. 219.

²Joyce and Weil, "The Teacher-Innovator: Models of Teaching as the Core of Teacher Education," p. 49.

³Hunt and Joyce, "Teacher Trainee Personality and Initial Teaching Style," p. 257.

This is also supported by Fuller,¹ and Katz,² who report that teachers develop from immature survival skills to more mature teaching concerns, which shows growth from low CL to higher CL.

This growth is important for teachers, as shown by Harvey, White, Prather, Alter, and Hoffmeister. They classified teachers as abstract (high CL) and concrete (low CL) and found that abstract teachers were warmer; more perceptive to wishes and needs, flexible in meeting interests and needs; more encouraging of responsibility, free expression of feelings, and creativity; showed greater ingenuity and improvisation; invoked unexplained rules less frequently; were less rule oriented; less need of structure; less punitive; less anxious about being observed.³ If these characteristics can be enhanced by matching CL and appropriate intervention, then it seems that teacher education should try to promote this growth.

¹F. Fuller, "Concerns of Teachers: A Developmental Conceptualization," American Educational Research Journal 6 (1969): 207-266.

²L. Katz, "Developmental Stages of Preschool Teachers," Elementary School Journal 73 (1972): 50-54.

³O. Harvey, et. al., "Teachers' Belief Systems and Preschool Atmospheres," Journal of Educational Psychology 57 (1966): 373-381.

Summary

This review of literature indicates that it is possible to improve a student teacher's satisfaction with the student teaching education when the learning environment provides the individual with an optimal learning intervention. This optimal learning intervention can access a student through the identified accessibility channels (i.e., cognitive orientation, value orientation, motivational orientation, and sensory orientation).

The literature suggests that when a student's accessibility channels and learning environment are matched the student teacher's satisfaction will be higher than when the learning intervention does not match the accessibility channels. This higher level performance is the goal of any pre-service teacher education program, as well as supporting the purpose of this study.

CHAPTER III

METHODOLOGY

Introduction

The purpose of the present study is to determine the effect of the match/mismatch of the accessibility channels and the degree of structure of the CBTE intervention on the satisfaction of student teachers with the CBTE lab and with their student teaching experiences. Chapter III will deal with the dependent and independent variables, the hypotheses, selection of the population, selection and development of the questionnaires, and collection and analysis of the data.

Hypotheses to be Tested

The original purpose proposed for this study was to measure the effect of the match/mismatch of the accessibility channels and the degree of structure of the learning intervention on the performance of learned competencies. However, no statistical analysis could be done because student teacher performance was measured with pass/fail criteria. It seems important to evaluate how well students demonstrate a teaching competency (not only that they "pass"); since pass/fail would not give any data on the degree of excellence in demonstrating a given competency,

performance was not an acceptable dependent variable. As a consequence, satisfaction was chosen as the dependent variable, because the degree of satisfaction could be measured. Other dependent variables are pre-student teacher value orientation and motivational orientation.

The independent variable is the pre-student teacher Conceptual Level (CL).

From reviewing the literature and the above discussion the following hypotheses were formulated.

Hypotheses

1. There is a positive correlation between the pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a match between the CL and the structure of the CBTE instructional intervention.

2. There is a negative correlation between the pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a mismatch between the CL and the structure of the CTBE instructional intervention.

3. There is a positive correlation between the pre-service student teacher motivational orientation and the post CBTE lab satisfaction when there is a match between the CL and the structure of the CBTE instructional intervention.

4. There is a negative correlation between the pre-service student teacher motivational orientation and the post CBTE lab satisfaction when there is a mismatch between

CL and the structure of the CBTE instructional intervention.

5. There is a positive correlation between the student's post CBTE lab satisfaction and the post student teaching satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

Selection of the Population

Michigan State University offers many different programs which any education major may choose in order to complete degree requirements for teacher certification. It was not possible to select a random sample of students because the number in any given term would not be large enough for statistical analysis. Therefore, the students chosen for this study were the population of pre-service teachers who chose the Competency Based Teacher Education option in a given term.

Questionnaires were given to the CBTE option population in winter and spring terms 1976. However, the small number of students (58) in this population who completed all of the questionnaires did not provide enough data for adequate analysis of the hypotheses. Therefore, a second population was evaluated in fall and winter terms 1978-79. These two populations are designated as Population I and Population II respectively.

Selection and Development of the Questionnaires

Selection of instruments for this study was difficult because strict psychometric measures are not generally

available or adequate. Questionnaires were selected to measure the Conceptual Level and the value orientation of the students. Questionnaires were developed to measure the student motivational orientation, the post CBTE lab satisfaction and post student teaching satisfaction.

The Pilot Study for the Questionnaires

During the selection and the development of the questionnaires for this study, a small trial of instruments was conducted with 25 students in CBTE lab in fall term 1975. The selection of instruments was determined using results of the pilot study in consultation with a research statistician.

Measurement of Conceptual Level: Paragraph Completion Method

Conceptual Level Theory suggests that persons at a higher CL are expected to be more flexible, more capable of using alternative solutions, and more stress tolerant. Considerable evidence on construct validity supports this expectation.¹

The students' Conceptual Levels were determined in order to assign them as a match or mismatch with the structure of Michigan State University's CBTE Program. Michigan State University's CBTE Program has been previously desig-

¹Schroder, Driver and Streufert, Human Information Processing, and David E. Hunt, "Adaptability of Interpersonal Communication Among Training Agents," Merrill Palmer Quarterly 16 (1970): 325-344.

nated as a moderately-high structure program because it prescribes the learning activities, states the goal, content, procedures, performance criteria, provides a reward/feedback system, and provides two options for students. These options are: (1) that a student can use his past experience and education to meet the performance criteria, and thus avoid taking a module, and (2) that a student can choose among several learning activities to learn the prescribed competency.

The Generic Competency Based Teacher Education Program at MSU is representative of the thrust of CBTE in Pre-Service Teacher Education. It also purports to,

. . . allow for differences among student learning styles and provide for the individualization of learning activities to accomodate [sic] these differences with a focus by all teacher candidates on the attainment of mastery for the designated competencies.¹

One of the foci of MSU's CBTE program is on learning style and individualization. This emphasis is central to this study; if a student's learning style (accessibility channels) and appropriate structure of the intervention are taken into consideration then the student's satisfaction and the utilization of the learned competencies will be actualized. This notion is supported by the MSU definition

¹School of Teacher Education, Michigan State University and Lansing School District, "Development of a Competency Based Teacher Education Program Focusing on the Directed Teaching Experience," Final Report, Competency Based Teacher Education Grant, (Michigan Department of Education, 1976) p. 2.

of CBTE.

In general the instructional system referred to as "Competency Based Teacher Education" should provide several key elements. These include: explicitly stated objectives, evaluation criteria for each objective, allowance for differences among student learning styles, opportunities for individualization of learning activities and independent study, and the feedback and field experience opportunities necessary for students to attain mastery of the competencies at the desired level of performance in actual classroom situations.

Further dimensions of such an instructional system are: deriving the competencies from a realistic base, the cooperative process of decision making, and the manner in which program revisions are carried out. These practices are possible through complete cooperation among the program faculty who represent both the university and the public school and through in-service training workshops which provide faculty members with the expertise to carry out their functions.¹

The CL Matching Model as previously presented is also supported by the program's definition of a competency.

A competency represents a statement of an objective that is a major skill or task used by a teacher in carrying out his/her responsibilities. Normally a competency represents several specific skills, attitudes, and/or basic knowledge related to the necessary performance of the competency. These more specific skills, attitudes, etc. are called enabling objectives and serve as the focus for instruction while the more general or broader competency statement serves as the basis for evaluating a candidate's performance.²

These statements from the MSU program speak directly to the concerns of this study, i.e., learning style = Conceptual Level; the feedback . . . experience opportunities = motivational orientation; attitudes = value orienta-

¹Ibid, p. 3.

²Ibid.

tion; and explicitly stated objectives and evaluation criteria = structure of the intervention. Therefore, the MSU CBTE program is an appropriate source for applying the CL Matching Model for research purposes.

The measure of Conceptual Level (CL) that was selected is the "Paragraph Completion Method."

The PCM is a semi-projective test which requires scoring by a trained rater. A person's response is considered to be a sample of how he thinks, and the scoring procedure is aimed to index his thinking on the CL dimension. The six topics were selected in order to obtain a sample of how he handles conflict or uncertainty ("Criticism", "Not Sure", or "Don't Agree") and how he thinks about rule structure and authority relations ("Rules", "Parents", "Told"). It would be more convenient if it were possible to assess CL through an objective test which could be easily scored. Although numerous attempts have been made to devise objective measures, none of them have proven satisfactory, partly because they are susceptible to faking and partly because they deal with content, not how a person thinks.¹

Gardiner and Schroder did extensive work on the reliability and validity of the Paragraph Completion Test (PCT) which is similar in design and intent to the Paragraph Completion Method. Their studies show that "The validity of this test has been established in a variety of experimental contexts . . . the test has consistently predicted behavioral performances congruent with theoretical expectations. Most of these studies, it must be noted,

¹David E. Hunt, et. al., "Assessment of Conceptual Level: Paragraph Completion Method (PCM)," The Ontario Institute for Studies in Education, 1973 (Mimeographed), pp. 1-2. (see Appendix F)

have used experimental task settings containing an interpersonal component."¹

The Paragraph Completion Test is designed to measure complex integrative thinking. It has been used in over 100 studies in the past 10 yr., but relatively little has been published about its psychometric characteristics. . . . The test was designed to provide a "content free" measure of integrative complexity primarily in the general area of interpersonal affairs.²

Gardiner and Schroder also state that, " . . . Ss (subjects) trained in multiple-concept thinking were scored significantly higher by trained raters using test referents than protocols written by Ss trained in single-concept thinking." Students showing high complexity on the PCT were found to use significantly more conceptual rules in identifying concepts than students with low complexity. " . . . groups of Ss having high scores showed less tendency to engage in bifurcated thinking, greater independence of judgment, greater tolerance of ambiguity and conflict, greater ability to interrelate (integrate) perspectives and less rigidity of judgment than groups of Ss having low scores."³

Gardiner and Schroder support the reliability of the PCT. "The structural scoring referents for the test are sufficiently specific that inter-rater reliabilities

¹Gardiner and Schroder, "Reliability and Validity of the Paragraph Completion Test, p. 960.

²Ibid, p. 959.

³Ibid, p. 960-61.

ranging from .80 to .95 can be established with approximately three days of training."¹ Bottenberg obtained an inter-rater reliability of .91 and a Spearman-Brown correlation of .75 between two approximately equal test halves with a sample of 100 students.²

Scores for this study were obtained for the Conceptual Level by means of a trained rater scoring the protocols according to the manual provided by Hunt, et. al.³ (see Appendix F). The rater's reliability was determined by a Pearson product-moment correlation between the training manual's scored practice protocols and how the rater scored the same questions. The Pearson product-moment correlation for the rater was .86. The PCM test is presented in Appendix A.

Measurement of Value Orientation:
Teacher Practices Inventory

In order to arrive at a value orientation (VO) that represents a student's "latitude of acceptance" a decision was made as to what educational value system was represented by the MSU CBTE Program. If a value or belief system that the program projects can be determined, one

¹Ibid, p. 961.

²Bottenberg, "Instrumental Characteristics and Validity of the Paragraph Completion Test (PCT) as a Measure of Integrative Complexity," pp. 437-438.

³Hunt, et. al., "Assessment of Conceptual Level: Paragraph Completion Method (PCM).

can compare how a student reacts to the program and/or what belief system the program stands for. A program, in this case MSU CBTE, cannot have a value or belief system, but through its approach, methods and consideration for the individual and material, the program can represent a belief system of the developers or the adoption of an educational belief system.

A Board of Experts was selected from faculty members in the Student Teaching and Professional Development Department, College of Education, Michigan State University. The Board of Experts agreed that the characteristics of the MSU CBTE Program are based on generic competencies which reflect "good teaching practices."

Brown provides a documented resource to measure " . . . what people believe is good teaching,"¹ based on Dewey's experimentalism. Therefore, if the MSU CBTE Program represents "good teaching practices," and if we can determine what the student believes is good teaching, a match can be defined.

In the measure of the tenets of good teaching Brown collects responses based on Dewey's seven main features of experimentalism. Many of the questions represent the seven main features of what Dewey advocates as an educational experience which requires good teaching. The

¹Bob Burton Brown, The Experimental Mind in Education (New York: Harper & Row, 1968), p. 88.

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remaining questions reflect the direct opposite, or "evils in education."¹

What is important here is the relationship of these seven main features and CBTE. The features are defined by Brown, and their relation to CBTE is identified.

1. Situations of Experience - "A process which is begun by giving pupils something to do which calls for the noting of connections between their doing and its consequence."² This is readily seen in CBTE programs when learned competencies are tried out in the field and with students.

2. Development of Challenging Problems - " . . . deliberately confront pupils with problematic situations which require them to make choices, ask questions . . . concerned that the problem be what the pupil sees as a genuine problem rather than the teacher's or textbook's problem."³ In CBTE this is seen in the use of generic competencies to isolate problems which are threatening to student teachers in the actual classroom.

3. Generation of Ideas - " . . . creative stage of thinking, . . . encouraged to catch hold of ideas and 'run with them' . . ."⁴ In a CBTE program trying out the learn-

¹Ibid.

²Ibid.

³Ibid, p. 89.

⁴Ibid, p. 90.

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ed competencies and the way each student teacher applies them to the classroom shows compatibility with the generation of ideas.

4. Observation and Collection of Data - " . . . pupil should look for detailed facts and information needed to deal with the problem he faces, or that the best kind of subject matter is that which the student has to adapt and apply to the question for himself."¹ In CBTE the feedback and evaluation of the performance of a competency generates an attitude of looking for the best answer.

5. Development of Reasoned Hypotheses - " . . . Dewey's recommendations to the effect that teachers, if they accept pupils' guesses at possible answers, should insist that they follow up their guesses by checking them against all available evidence."² In CBTE certain competencies have to be modified in order to be effective for the whole class; the student teacher is encouraged to try out competencies in order to become more effective.

6. Experimental Application and Testing - " . . . take a stand upon one hypothesis or proposal and carry through with it to see what happens."³ CBTE stresses that a student should become competent with a given generic competency; therefore, failure results in persistence until

¹Ibid.

²Ibid, p. 91.

³Ibid.

competency is attained. The student takes a stand and works at being competent.

7. Evaluation and Judgment - " . . . encouraged to view the results of their experiments dispassionately, to accept failure as one of the calculated risks of trying."¹ Again, in the process of becoming competent, failure is expected; the student must continually pursue and practice the generic competencies in order to be judged competent.

Brown's measure of the tenets of good teaching, the Teacher Practices Inventory (TPI), was selected in order to determine the students' value orientations. The Teacher Practices Inventory (TPI) measures the predisposition towards classroom activity that is in agreement or disagreement with good teaching. Since CBTE represents some of the competencies that make up good teaching, the TPI should be applicable to CBTE.

As a result of using the TPI and through item analysis, Brown developed two forms of the TPI. When either form of the TPI is administered, the positive responses are in agreement with Brown's definition of good teaching, and the negative responses are in conflict with Brown's definition of good teaching. Each form of the TPI contains an equal number of positive and negative responses.

In the TPI (see Appendix B), questions 8, 9, 21, 32, 35 are, " . . . items involving situations of experi-

¹Ibid, p. 92.

ence." Questions 23, 25, 29 measure, " . . . the development of challenging problems"; questions 13, 18, 31, " . . . generation of ideas"; question 1 measures, " . . . the observation and collection of data"; questions 11 and 26 measure, " . . . development of reasoned hypotheses"; questions 7, 14, 30 measure " . . . experimental applications and testing"; and question 38, " . . . evaluation and judgment of results."¹

The Teacher Practices Inventory (TPI) gives a perspective on how student teachers react to a test that may or may not represent their own values on teaching. It is through this approach that one can make a guess as to what the student value position is. The big problem is whether a student reacts to it positively because of previous training or whether the student reacts because of the student's value orientation.

Brown reports that the TPI produced a reliability of .69. "A reliability of .80 or higher may be demanded for tests of mental ability or achievement, but considerably more latitude is granted measures of attitudes, personality, and values."² During the pilot for the questionnaires a coefficient α of .66 was achieved for the TPI.

Therefore, when a student scores low on the TPI he can be designated as in agreement with good teaching;

¹Ibid, pp. 89-92.

²Ibid, p. 100.

because CBTE exhibits the characteristics of good teaching, it is concluded that CBTE, as presented in this study, is within his latitude of acceptance, or a "match." When a student scores high on the TPI he would be in disagreement with some tenets of good teaching and therefore with CBTE. The concepts presented in CBTE would be outside of his latitude of acceptance, or a "mismatch" with the CBTE program.

Measurement of Motivational Orientation

An instrument was developed for this study to determine the student's motivational orientation (MO). Because this instrument had not previously been used in a study, no pertinent supportive data is available. This shortcoming was overcome by having the instrument reviewed for validity by the Board of Experts. The instrument was piloted during fall term 1975 to determine its reliability.

The review by the Board of Experts agreed that the instrument did have face validity. They were instructed that a subject's motivational orientation (MO) was determined by the type of feedback the subject received and the feedback which was effective when he was evaluated. A subject with a low CL would prefer source evaluation, whereas high CL subjects prefer self evaluation. The CBTE program essentially uses two forms of evaluation feedback:

- (1) by other pre-student teachers through discussion, and
- (2) by the source of instructional authority. According to

CL theory these would form a match for medium CL students but a mismatch for students with a low or a high CL.

In developing a motivation questionnaire, a decision was made to look at motivation from two perspectives. These will be designated as Motivation I and Motivation II. Motivation I was developed to determine which source of feedback (authority, peer, self) is effective with an individual; Motivation II was to determine how the individual relates to the feedback techniques or the form of feedback of the program. The respondents were asked to indicate the degree of importance to them of a number of forms of potential feedback as a motivation. A low score indicated that the item was important to the student, and a high score that it was not important to the student.

The reliability of the motivational orientation (MO) instrument was determined by administering the MO questionnaire to the pilot group of 25 students and calculating coefficient α . A minimum coefficient α of .60 was first determined through consultation by the author with a research consultant. An analysis of the data showed that the instrument exceeded the .60 cutoff, since the instrument's coefficient alpha was $\alpha = .66$. (see Appendix C). As a result of the pilot and the review by the Board of Experts it was determined that the instrument was adequate for this study.

Measurements of Satisfaction

Two satisfaction questionnaires were also developed for this study to measure the student's Post CBTE Lab Satisfaction and Post Student Teaching Satisfaction. (see Appendices D, E).

The face validity was determined by the Board of Experts, and their review indicated that the two questionnaires did in fact measure a subject's satisfaction.

No pilot was run on the satisfaction questionnaires because satisfaction involves a student's preference. Therefore, internal consistency is not statistically valid.

Collection and Analysis of Data

At the first organizational meeting for students entering the CBTE Program, the Paragraph Completion Method (PCM), Teacher Practices Inventory (TPI) and Motivational Orientation (MO) instruments were administered for Population I. For Population II the PCM was given to students in the lab time during the first week of class. The VO (TPI) and MO questionnaires were given over the following two weeks during the lab time. This deviation in the collection of data occurred because of an instructor request to accommodate a time schedule problem. For both Population I and Population II, however, the questionnaires were given early in the term, before the students intensively studied the required competencies, so that their responses should not have been unduly influenced by the intervention.

During the final week of the CBTE lab, the Post CBTE Lab Satisfaction questionnaire was administered for both Population I and Population II. The PCM and the questionnaires were administered by the MSU Student Teaching Coordinators, following specific sets of instructions which were provided for each instrument. (see Appendices A, B, C, D, E).

At the last CBTE in-service meeting during student teaching, the student teachers were given the Post Student Teaching Satisfaction questionnaire. These questionnaires were administered and collected by the cluster consultants.

The reliability and validity of the measures were determined as follows. A scorer who had experience in projective psychological measurement techniques, was hired to individually score the PCM paragraphs for both populations. Therefore, the data should be consistent and it was reliable with the scoring trials as prescribed by Hunt. (see Appendix F) Validity of the PCT has been established by many researchers, i.e., Gardiner and Schroder, Bottenberg, Hunt, et. al., as previously cited. (see p. 59-60) The reliability of the TPI was achieved through testing by Brown, as previously cited. (see p. 66)

For the questionnaires developed for this study, the face validity of the MO questionnaire was established by the Board of Experts. The reliability of the MO questionnaire has been established to exceed .6 by coefficient of internal consistency (α). The face validity of the

satisfaction scales was established by the Board of Experts. Reliability did not need to be determined because there is no basis to determine reliability for attitudinal measures.

The analysis remains the same for Population I and for Population II. With the addition of a second set of scores, the range of scores for VO (TPI), MO, Post CBTE Lab Satisfaction, and Post Student Teaching Satisfaction was determined to help describe both populations.

In the treatment of the data, all Conceptual Levels were grouped by stage, using a system proposed by Hunt for identifying the Conceptual Levels of adults.¹

Table 8. Parameters for Determining Conceptual Level

	Average of Top Three Scores on PCT	Degree of Structure
Stage I	.5 - 1.0	Much
Stage II	1.2 - 1.4	Some
Stage III	1.5 - 1.9	Less
Stage IV	2.0+	Little

SOURCE: David E. Hunt, "Norms for Learning Style - Adult Sample," Table enclosed in David E. Hunt to David L. Amundsen, 23 September 1975 (see Appendix G).

With subjects grouped into their respective stages, each hypothesis was investigated using Pearson product-moment correlations. Correlations were chosen for the

¹David E. Hunt to David L. Amundsen, 23 September 1975.

statistical analysis of the data because they can best demonstrate the relationship between a student's accessibility channels and the student's satisfaction. This is important because absolutes cannot be determined for students and for the educational environment. Significance was calculated for each hypothesis using the Pearson product-moment correlation coefficient.

The level of significance was chosen to be $\alpha = .10$. Level of significance of α less than .10 was chosen because this study is exploring new territory, without a strict experimental design, therefore, it is important to keep the analysis flexible. This is a new study in a non-psychometric domain, therefore, value measurement and projective measurement techniques are not precise enough to establish a greater level of significance with a design of this type.

Summary

Established measures used in this study, PCM and TPI, have had their reliability and validity established. Measures developed for this study, MO and satisfaction questionnaires, had their face validity established by review of a Board of Experts. In consultation with a statistician, it was determined that coefficient α , a measure of internal consistency, would be appropriate to determine the reliability of the developed measures. Coefficient α was also used because it could be integrated into the design instead of having separate procedures to deter-

mine reliability. The value of coefficient α was required to be equal to and/or greater than $\alpha \geq .6$ for each of the developed measures.

CHAPTER IV

PRESENTATION OF FINDINGS

Introduction

It is important to understand that the matches of Conceptual Level and structure, value orientation and the belief system represented by the intervention, and motivational orientation and the source and form of feedback, will affect the satisfaction of pre-service student teachers with their pre-student teaching CBTE lab experience and with their student teaching experience. These matches are what is of value to an educator, not the program which is being used in the study, i.e. MSU CBTE. The program is the vehicle for analysis of the effects of a Matching Model. Any educational program that has a constant structure, belief system, and feedback could have been used.

Chapter Organization

Chapter IV includes the introduction to the presentation of the findings, a description of the students in Population I and in Population II, and analysis of data for Population I and Population II. For each analysis of the student populations, and for the analysis of data, Population I will be presented followed by Population II.

Instruments

Instruments were selected to assess the Conceptual Level (CL) and the value orientation (VO) of the students in Population I and Population II. These instruments were the Paragraph Completion Method and the Teacher Practices Inventory. The instruments are described in Chapter III. A copy of each instrument is given in Appendix A and Appendix B respectively.

Instruments were developed for this study to assess the motivational orientation (MO) of the student, the pre-service student teacher satisfaction with the CBTE lab experience, and the post student teacher satisfaction with the student teaching experience. The instruments are described in Chapter III. A copy of each instrument is presented in Appendices C, D, and E respectively.

Determination of Conceptual Level

Paragraph Completion Method

The Paragraph Completion Method uses six open-ended statements which are each scored on a scale of 1-7. (see Appendix F) The average of the three highest scores is used to determine the Conceptual Level. Hunt defines Conceptual Level using the average score from the PCM as follows:
CL-1 = .5-1.0; CL-2 = 1.2-1.4; CL-3 = 1.5-1.9; CL-4 = 2.0+.
(see Appendix G)

Match/Mismatch Criteria

Value Orientation: Teacher Practices Inventory

The Teacher Practices Inventory uses a 40 item questionnaire with a six point response scale. (see Appendix B) The possible range of scores is 40-240. The lower the score on the 40 item TPI, the more the agreement with Brown's tenets of good teaching. The lower half of the scores (40-140) are considered a match with Brown's characteristics of good teaching as previously defined. Scores of 140-240 indicate a mismatch.

Motivational Orientation I

The first portion of the Motivation Orientation questionnaire (MO-I) consists of 12 items with a three point response scale. The possible range of scores is from 12-36. In the analysis a low score (12-24) is considered a match with authority (teacher) feedback, and a high score (24-36) a match with self feedback. Low scores are considered a match with the program, and high scores are a mismatch.

Motivational Orientation II

The second portion of the Motivation Orientation questionnaire (MO-II) uses 13 items and a five point response scale. The range of possible scores is 13-65. The upper half of possible scores (39-65) is considered a mismatch with the program with respect to preferred forms of feedback. Lower scores (13-39) indicate a match because

the respondents found importance in the forms of feedback.

Description of the Populations

Independent Variable

Population I

Population I respondents initially totalled 80, however some of the students did not complete enough instruments to be included in the analysis. A total of 58 respondents were included in the analysis. Table 9 describes Population I in terms of the independent variable of CL.

Table 9. Population I Students Grouped
by Conceptual Level

CL	Total Respondents
1	16
2	20
3	17
4	5
Sample Total 58	

Population II

Initially for Population II there were 58 respondents. A total of 38 students completed enough instruments to be included in the analysis. Table 10 describes Population II in terms of the independent variable.

Table 10. Population II Students Grouped by Conceptual Level

CL	Total Respondents
1	6
2	21
3	6
4	5
Sample Total	38

Dependent Variables

The dependent variables of value orientation (VO) and motivational orientation (MO) provide an additional basis for understanding the populations for Population I and Population II. This section presents data for these accessibility channels by Conceptual Level for Population I and Population II. Descriptive statistics include the mean, standard deviation and the range of scores for the first standard deviation $\pm$ from the mean. The decision to define only the first standard deviation for the range of scores is because this range contains 67% of the sample; since the N for each CL cell for each population is so small, any further consideration would be meaningless.

Descriptive statistics for post CBTE lab satisfaction and post student teaching satisfaction dependent variables will be presented under the Analysis of Data.

Tables 11 and 12 illustrate the number of respondents and the ranges of responses for the dependent variables for Population I and Population II respectively.

Table 11. Population I N and Range of Scores for Each Instrument

Instrument	N	Range of Scores
Teacher Practices Inventory (VO)	58	127-211
Motivational Orientation I	58	18-36
Motivational Orientation II	58	16-41
Post CBTE Lab Satisfaction	58	44-80
Post Student Teaching Satisfaction	35	29-60

Table 12. Population II N and Range of Scores for Each Instrument

Instrument	N	Range of Scores
Teacher Practices Inventory (VO)	38	93-143
Motivational Orientation I	38	18-30
Motivational Orientation II	38	20-38
Post CBTE Lab Satisfaction	38	34-82
Post Student Teaching Satisfaction	25	31-59

Value Orientation

Population I

Table 13 summarizes the descriptive statistics for the 58 respondents when grouped by CL with respect to VO.

Table 13. Population I Means, Standard Deviations and Ranges of Scores for First Standard Deviation $\pm$ from the Mean for Value Orientation

CL	N	Mean	Standard Deviation	Range of Scores
1	16	169.44	16.84	142.60-186.28
2	20	171.20	16.75	154.45-187.95
3	17	171.18	16.71	154.47-187.89
4	5	152.25	16.15	136.10-168.40

Means

1. Scores of 40-140 on the Teacher Practices Inventory are considered a match with Brown's characteristics of good teaching and with the CBTE program. All four CL groups of mean scores are above 140 and therefore show a mismatch with Brown's characteristics and with the program.

2. It is of interest that CL-4 students have the lowest mean of the four CL groups. Although these students are still a mismatch, they are the least mismatched of the CL groups.

3. The CL-2 students have the highest mean. Therefore CL-2 students show the highest mismatch with the

program.

Standard Deviations

1. Although Brown reported TPI reliability to be .69, and the pilot for this study resulted in a coefficient α of .66, a relatively large variance is shown in student selection of responses. For all of the CL groups the standard deviation is high and consistent.

2. The highest standard deviation is reported for CL-1, and the lowest standard deviation is reported for CL-4.

Range of Scores

1. As previously noted, the scores for the 58 students range from 127-211.

2. Scores in the first standard deviation $\pm$ from the mean fall into a range of 136.10-187.95. This represents a fairly strong disagreement with the values that are represented by CBTE, and therefore a mismatch.

Summary

All CL groups of Sample I are mismatched for value orientation. One can place little confidence in the VO means because their standard deviations are high. The range of VO mean scores for the first standard deviation $\pm$ from the mean is large and tends to show disagreement with the values measured by the Teacher Practices Inventory.

Observations

1. All CL groups are mismatched with the values

represented by the program. These results were expected for several reasons: (1) relatively low reliability of the test, (2) small number of respondents in each CL group, (3) many students of different educational backgrounds, experience and expectations, (4) variety of subject matter areas.

2. CL-4 has the lowest mean and the lowest standard deviation for VO. This would be expected from Hunt's CL Matching Model and Rutherford's latitude of acceptance. High CL students, according to Hunt and Rutherford, should be more accepting of new and divergent beliefs than lower CL groups.

Population II

Table 14 summarizes the descriptive statistics for the 38 students of Population II for VO.

Table 14. Population II Means, Standard Deviations and Ranges of Scores for First Standard Deviation $\pm$ from the Mean for Value Orientation

CL	N	Mean	Standard Deviation	Range of Scores
1	6	115.0	6.10	108.9-121.1
2	21	117.2	9.10	108.1-126.3
3	6	121.7	14.2	107.5-135.9
4	5	111.8	14.8	97.0-126.6

Means

1. All groups of students are matched with the program in their value orientation.
2. CL-3 has the highest mean score. These students show somewhat less agreement with Brown's characteristics of "good teaching" than the other three CL levels.
3. CL-4 students have the lowest VO mean, which also shows the highest match.

Standard Deviations

1. The high variance in acceptable results for the TPI influences the results for Population II as it does for Population I.
2. CL-4 students show the highest standard deviation, with both CL-3 and CL-4 students considerably higher than CL-1 or CL-2.
3. CL-1 students are the most consistent, showing the lowest standard deviation.

Range of Scores

1. Scores for the population range from 93-143.
2. The scores in the first deviation fall into a range of 97.0-135.9. Therefore, there is a match with the value of the program, because all CL groups fall in the lower half of the possible scores. This is the opposite of Population I where almost all students are a mismatch with the program.

Summary

The VO means for Sample II are a match for each CL group. Little confidence can be placed in Population II VO means because the standard deviations are high; however, they are not as high as in Population I.

Observations

1. The fact that the means for Population II are lower than for Population I should be expected; during the interval between Population I and Population II students would have been exposed to more Competency Based Education in their educational experiences, and therefore they would be likely to be more in agreement with the values exhibited by such a program.

2. One important piece of evidence is that CL-4 has the lowest mean, as might be expected, and the highest standard deviation. This supports the notion that CL-4 students are more adaptable, but at the same time they are more questioning. This was predicted because they can deal with more stimuli in their decision making.

3. All CL group means fall in the lower half of the possible scores (40-140), therefore they are a match with the program. This is the opposite of Population I where all students are a mismatch with the program.

4. CL-4 has the lowest VO mean of the CL groups and can be viewed as support for the notion that high CL respondents have a greater latitude of acceptance.

Motivational Orientation

As discussed in Chapter III, the MO questionnaire was designed to measure both the student preference for the source of evaluation and for the form of evaluation. The data is presented and analyzed separately for the source and the form of evaluation; these are designated as MO-I and MO-II respectively.

Motivational Orientation I

Population I

Descriptive statistics for MO-I are presented in Table 15 for Population I.

Table 15. Population I Means, Standard Deviations and Ranges of Scores for First Standard Deviation $\pm$ from the Mean for Motivational Orientation I

CL	N	Mean	Standard Deviation	Range of Scores
1	16	22.44	6.43	15.97-28.83
2	20	24.00	3.63	20.37-27.63
3	17	23.35	2.06	20.29-25.41
4	5	23.75	2.50	21.25-26.25

Means

1. The data shows that CL-1, CL-2 and CL-3 groups are matched with the authority feedback source.

2. CL-2 students show no match; the mean score of 24 falls at the midpoint of possible scores and does not

show a match for either self or authority feedback.

3. CL-1 students have the lowest mean. Therefore this group has the best match with authority as the preferred source of feedback.

Standard Deviations

1. The CL group with the smallest variance is CL-3. This group tended to be more consistent in their choices for the source of feedback than other CL groups.

2. CL-1 has the largest variance of the four CL groups. As a group the students tended to disagree among themselves on their preferences.

Range of Scores

1. CL-1 students show a greater range of scores, therefore as a group they represent more variance. The scores also appear to be somewhat lower than the scores for the other CL groups because of the variance toward the lower values of the range of scores.

2. CL-4 scores appear to be most consistent. The fact that CL-1 has the highest score does not appear to balance the fact that the lowest score of CL-1 is over five points lower than the lowest score of CL-4.

Summary

The MO-I means show that CL-1 is a match. CL-3 and CL-4 groups are borderline matches and the CL-2 group is neither a match nor mismatch. A match means that there

is agreement with the source of feedback used in the program. The standard deviations, especially CL-1, are not small enough to remove doubt about the predictability of results for each CL group.

Observations

1. People sometimes prefer that which is not best for them. CL-4 mean scores tend to support this idea. The CL-4 respondent results indicate that this group prefers authority feedback, however self feedback is more appropriate for the CL-4 group.

2. CL-4 students tend to prefer authority feedback, however they need self feedback. The CL-4 as a group can adapt to more varied stimuli, therefore feedback which is determined for them (authority) is also effective.

Population II

Table 16 shows the mean, standard deviation and range of scores for MO-I.

Table 16. Population II Means, Standard Deviations and Ranges of Scores for First Standard Deviation +
from the Mean for Motivational Orientation I

CL	N	Mean	Standard Deviation	Range of Scores
1	6	25.2	2.7	22.5-27.9
2	21	22.4	2.5	19.9-24.9
3	6	23.8	3.1	20.7-26.9
4	5	23.4	1.1	22.3-24.5

Means

1. The mean for CL-1 students is the highest, or a mismatch with the program source of feedback. The CL-1 group mean shows a preference for self evaluation.
2. The CL-2 group has the lowest mean score of the CL groups. This shows the most agreement with the authority source of feedback, as represented by the program.
3. CL-2, CL-3, and CL-4 groups are all matches with the source of feedback of the program.

Standard Deviations

1. Students in CL-4 tended to agree on their choice for responses, which is shown by the low standard deviation of CL-4. The results for MO-I for this group should be quite accurate.
2. The second lowest standard deviation is for the CL-2 group. CL-1 and CL-3 also have relatively low standard deviations, although CL-3 has the highest standard deviation of the four CL groups. The results show enough consistency of response to allow little doubt about the agreement of each CL group of students.

Range of Scores

1. CL-1 students show a greater range of scores. The range of scores tends toward the top half of the possible scores, and therefore shows a mismatch, however the scores include both match and mismatch data.

2. CL-4 has a lower mean, and lower standard deviation, therefore, a smaller range of scores, which indicates some tendency towards source evaluation. This group also is more consistent as a group as shown by their smaller standard deviation.

Summary

With the exception of CL-1, all CL groups are matched with the source of feedback used in CBTE. More confidence can be placed in these results than the Population I MO-I results because the standard deviations are lower.

Observations

1. CL-1 tends to prefer self feedback which is not supported as promoting growth or progression for this CL level.
2. CL-4 group tends to prefer authority feedback; they need self feedback for growth and progression.
3. Population II evidence is more conclusive than Population I because of lower standard deviations.

Motivational Orientation II

Population I

The descriptive statistics for MO-II for each Conceptual Level are given in Table 17.

Table 17. Population I Means, Standard Deviations and Ranges of Scores for First Standard Deviation + From the Mean for Motivational Orientation II⁻

CL	N	Mean	Standard Deviation	Range of Scores
1	16	28.38	8.76	19.62-37.14
2	20	28.40	5.79	22.61-34.19
3	17	28.35	6.73	21.62-35.08
4	5	27.75	4.79	22.96-32.54

Means

1. All four means fall in the lower half of possible scores, therefore all four CL groups are matched with the program in their preferred forms of feedback.

2. There is so little deviation among the scores for all four groups that high and low scores have little relevance, although the CL-2 group mean is slightly higher, and CL-4 is slightly lower.

Standard Deviations

1. The CL group with the smallest variance is CL-4. This group tends to be most consistent in their chosen form of feedback.

2. CL-1 has the largest variance of the four CL groups in their choice of preferred feedback. The group did not tend to agree on the form of feedback which they chose.

Range of Scores

1. All scores are matched for MO-II.
2. CL-4 students have the lowest mean, the lowest standard deviation, and the smallest range of data, therefore the responses are quite consistent for this group.
3. CL-1 has the second highest mean, the highest standard deviation, and the largest range of responses, therefore there is not as much agreement among the students.

Summary

All CL groups are matched with the importance of the form of feedback used in the CBTE program. The standard deviations tend to be high; therefore the agreement among the students was not very high.

Observations

1. MO-II is consistent with MO-I when considering means and standard deviations.
2. The CL-4 group has the smallest MO-II mean and standard deviation which shows again that high CL respondents are more adaptive because they find more importance in the form of feedback.

Population II

The descriptive statistics in Table 18 define the mean, standard deviation and range of scores for MO-II for Population II.

Table 18. Population II Means, Standard Deviations and Ranges of Scores for First Standard Deviation + from the Mean for Motivational Orientation II⁻

CL	N	Mean	Standard Deviation	Range of Scores
1	6	31.7	5.1	26.6-36.8
2	21	27.4	4.1	23.3-31.5
3	6	27.0	2.7	24.3-29.7
4	5	28.0	2.7	25.3-30.7

Means

1. All scores indicate a match with the form of feedback of the program.

2. The higher score of CL-1 indicates the least agreement with the feedback of the program.

3. The CL-3 group mean is the lowest among the CL groups. This indicates the best match with the form of feedback.

Standard Deviations

1. All CL groups have relatively low standard deviations, which indicates consistency among responses for each CL group.

2. CL-1 has the highest standard deviation, and therefore the least agreement among students.

3. CL-3 and CL-4 have the lowest standard deviation which indicates the most agreement within each group.

Range of Scores

1. CL-3 and CL-4 exhibit the most consistency as shown both by the standard deviation and by the smaller range of scores.

2. The lower consistency of CL-1 data is also evident in the range of scores.

Summary

All CL groups for MO-II match in their agreement with the importance of the form of feedback used in the program. More confidence can be placed in MO-II Population II evidence than MO-II Population I, because the standard deviations are lower.

Observations

1. MO-II Population I and Population II are consistent with MO-I Population I and Population II. The MO data matches with the program for all CL groups except CL-1 Population II for MO-I.

2. Population I and Population II are consistent for MO-II. MO-I data shows consistency for CL-3 and CL-4, with a trend toward consistency for CL-2.

Analysis of the Data

Dependent Variables

The dependent variables of post CBTE lab satisfaction and post student teaching satisfaction were determined to assess the effects of the match/mismatch of the student accessibility channels with the CBTE program on the student's satisfaction with the program and the effects of the application of the learned competencies (student teaching) on the student satisfaction with the program after the student teaching experience.

Descriptive statistics for post CBTE lab satisfaction and post student teaching satisfaction are presented before we consider the analysis of this content in relation to the hypotheses.

Post CBTE Lab Satisfaction

The Post CBTE Satisfaction Questionnaire has 17 items using a five point scale. The range of possible points is 17-85, with a low score indicating dissatisfaction and a high score indicating satisfaction. The range of scores for dissatisfaction is 17-51, and the range for satisfaction is 51-85.

Population I

Table 19 shows the descriptive statistics for Population I for the post CBTE lab satisfaction.

Table 19. Population I Means, Standard Deviations and Ranges of Scores for First Standard Deviation + from the Mean for Post CBTE Lab Satisfaction

CL	N	Mean	Standard Deviation	Range of Scores
1	16	57.81	17.70	40.11-75.51
2	20	55.50	25.67	29.83-81.17
3	17	55.94	23.18	32.76-79.12
4	5	64.00	9.35	54.65-73.35

Means

1. The means for all CL groups show satisfaction with the CBTE lab program.

2. CL-4 has the highest mean, which indicates the most satisfaction.

Standard Deviations

1. All CL groups exhibit high standard deviations, although the difference in the standard deviations is quite large with CL-2 and CL-3 showing the highest variance and CL-4 the least variance.

2. The standard deviations for all CL groups show very little agreement in response among students.

Range of Scores

1. CL-2 has the largest variance in student satisfaction, however this range includes the lowest score in the range of scores.

2. The CL-4 scores for the first deviation are not as high as the other CL groups, however there is much more consistency as shown by the lower standard deviation. Therefore, we can put more faith in CL-4 results than in the other CL group results because of the smaller standard deviation.

Summary

Although the means tend to show the respondents to be satisfied, this is in question because the standard deviations are so high.

Observations

1. In general the respondents exhibit relatively high satisfaction with the CBTE program.

2. These results are subject to question because of the relatively high values for the standard deviations. If a larger sample had been analyzed the standard deviations should have been lower.

3. High satisfaction could have been enhanced. Because most of the students were a match with MO and a mismatch with VO, it is interesting to question whether the satisfaction mean would have been higher if both variables were a match.

Population II

Table 20 shows the means, standard deviations and the first deviation for post CBTE lab satisfaction for Population II.

Table 20. Population II Means, Standard Deviations and Ranges of Scores for First Standard Deviation +
from the Mean for Post CBTE Lab Satisfaction

CL	N	Mean	Standard Deviation	Range of Scores
1	6	61.5	8.8	52.7-70.3
2	21	68.5	8.4	60.1-76.9
3	6	66.3	5.0	61.3-71.3
4	5	66.6	11.8	54.8-78.4

Means

1. All CL groups show satisfaction with the CBTE lab experience.

2. CL-1 shows the lowest satisfaction, and CL-2 the highest among the four CL groups.

Standard Deviations

1. All standard deviations are high.

2. CL-4 has the highest standard deviation; CL-3 has the lowest standard deviation.

Range of Scores

1. CL-4 has the largest range of scores, as also shown by the standard deviation.

2. The variance and the range is lowest for CL-3.

Summary

Population II Post CBTE Lab Satisfaction means are higher than Population I. All CL groups are satisfied with

the program with some doubt because of the high standard deviations.

Observations

1. All CL groups can be defined as being satisfied because they are in the top half of possible satisfaction scores, along with the fact that they also have relatively high standard deviations. Not much faith can be placed in these results because of the high standard deviations.

2. The higher satisfaction scores for Population II CL-1 than Population I CL-1 might be explained by the fact that Population II was matched with the VO, matched for MO-II and mismatched with MO-I. Population I was mismatched with VO and matched with MO-I and MO-II. This would suggest that a match in value orientation may carry more weight than the motivation orientation matches.

3. CL-4 has the second highest mean and the highest standard deviation which again points up the fact that they are, as a group, more adaptable (satisfied) but also questioning as shown by the standard deviation.

Post Student Teaching Satisfaction

The Post Student Teaching Satisfaction Questionnaire has 12 items using a 5 point scale. The range of scores is 12-60. A low score of 12-36 indicates dissatisfaction, and a high score of 36-60 shows satisfaction.

Only those subjects that completed the Post Student Teaching Satisfaction Questionnaire for each population are

considered for this data, therefore different N's are used for each of the CL groups than those reported in other data for Population I and Population II.

Population I

Table 21 gives the descriptive statistics for the Post Student Teaching Satisfaction Questionnaire for Population I.

Table 21. Population I Means, Standard Deviations and Ranges of Scores for First Standard Deviation + from the Mean for Post Student Teaching Satisfaction

CL	N	Mean	Standard Deviation	Range of Scores
1	11	48.27	5.37	42.90-53.64
2	11	47.00	9.36	37.64-56.36
3	11	48.54	5.26	43.28-53.80
4	2	--	--	--

Means

1. No means were calculated for the CL-4 group because N was so small.
2. Means are very consistent for CL-1, CL-2 and CL-3 groups.
3. All means that were calculated tend to be high.

Standard Deviations

1. CL-2 reports the highest mean and the highest standard deviation.

2. CL-1 and CL-3 are more consistent than CL-2.

Range

1. CL-2 has the largest range of scores.

Summary

1. All three of the CL groups reported here are satisfied, however there is doubt in that conclusion because of the size of the standard deviation.

2. All three groups have approximately the same level of satisfaction.

Observations

1. The post student teaching satisfaction means are lower than the post CBTE lab satisfaction means for all CL groups. This indicates dissatisfaction with the transition from lab to actual teaching.

2. CL-2 is the most dissatisfied because the evidence shows that it has the lowest mean and the highest standard deviation.

Population II

Table 22 gives the Post Student Teaching Satisfaction Questionnaire data by CL for Population II.

Table 22. Population II Means, Standard Deviations and Ranges of Scores for First Standard Deviation $\pm$ from the Mean for Post Student Teaching Satisfaction

CL	N	Mean	Standard Deviation	Range of Scores
1	4	43.5	8.8	34.7-52.3
2	13	51.3	10.9	40.4-62.2
3	5	46.8	6.7	40.1-53.5
4	3	43.0	10.8	32.2-53.8

Means

1. CL-2, the matched CL group, is the most satisfied; the evidence reveals that it has the highest mean.

2. The mismatched CL groups (CL-1, CL-3, CL-4) have means which tend to be nearly equal, and show satisfaction.

3. CL-2 has the highest mean; CL-4 has the lowest mean.

Standard Deviations

1. CL-2, the matched CL group, has the highest standard deviation with CL-4 only .1 behind.

Range of Scores

1. The low score of the range of scores for both CL-1 and CL-4 falls below the satisfaction cut-off. Therefore, although the mean for each of these CL groups shows satisfaction, this is not conclusive evidence because the N

is so low for each cell.

Summary

All CL group satisfaction means fall in the satisfied range, however the standard deviations are high, so there is doubt about the evidence.

Observations

1. For all CL groups the means are lower than the post CBTE lab satisfaction means.
2. All CL group satisfaction means fall in the satisfied range.
3. CL-2 and CL-4 groups have different means, with CL-2 the highest and CL-4 the lowest, however their standard deviations are the largest and nearly equal. The respondents in each group showed about the same amount of variance.

Hypotheses as Tested

Presentation of Hypotheses

Hypotheses 1 and 2 were used to determine the effect of a match/mismatch between the subject's value orientation (VO) and the belief system represented by the intervention, and the subject's satisfaction with the CBTE lab experience. Hypotheses 1 and 2 are as restated below:

1. There is a positive correlation between the pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a match between the CL and

the structure of the CBTE instructional intervention.

2. There is a negative correlation between the pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

Hypotheses 3 and 4 were used to determine the effects of a match/mismatch between the subject's motivational orientation (MO) and the form of feedback, and the subject's satisfaction with the CBTE lab experience. Hypotheses 3 and 4 are as restated below:

3. There is a positive correlation between the pre-student teacher motivational orientation and the post CBTE lab satisfaction when there is a match between the CL and the structure of the CBTE instructional intervention.

4. There is a negative correlation between the pre-student teacher motivational orientation and the post CBTE lab satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

One hypothesis was used to determine the match/mismatch of CL of the students and the structure of the training phase, i.e. whether their MO and/or VO "fit the intervention". During the practice phase (student teaching) the students used what they were taught in the training phase (CBTE lab); therefore, as the students used the CBTE lab information they were expected to see value in what they

had been taught, even though the CBTE lab may or may not have matched their CL. This expected gain in satisfaction from the post CBTE lab experience to the post student teaching experience is predicted in Hypothesis 5 as restated below:

5. There is a positive correlation between the student's post CBTE lab satisfaction and the post student teaching satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

Analysis of Hypotheses 1 and 2

To consider the hypotheses the pre-student teachers who belong to group CL-2 were considered matched with the CBTE structure. Pre-student teachers who belong to groups CL-1, CL-3 and CL-4 were considered mismatched with the CBTE structure.

The level of significance for the correlation coefficients was established at $\alpha = 0.1$ through consultation with a research consultant. This level of α was chosen because this study is in new areas of research and because of the subjective nature of the instruments. Hypotheses 1 and 2 were analyzed together.

1. There is a positive correlation between the pre-student teacher value orientation and the post CBTE lab satisfaction when there is a match between the CL and the structure of the CBTE instructional intervention.

2. There is a negative correlation between the

pre-service student teacher value orientation and the post CBTE lab satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

Population I

Table 23 summarizes the correlation coefficients relating post CBTE lab satisfaction with VO for the four CL groups.

Table 23. Population I Correlation Coefficients Relating Post CBTE Lab Satisfaction with Value Orientation

CL	N	r	$\alpha \leq .1$
1	16	-.4152	.055
2	20	.3847	.047
3	17	-.2049	.215
4	5	-.1215	.439

Observations

1. There is a significant positive correlation at $\alpha = .047$ between the pre-student teacher VO and the post CBTE lab satisfaction only for the students who belong to CL-2 group (when the student CL matches the program structure.)

2. The evidence for a negative correlation for the three mismatched CL groups is not very clear, therefore we have to look at the three groups separately. There is an

obvious significant negative correlation at $\alpha = .055$ between the pre-student teacher VO and the post CBTE lab satisfaction only for the students who belong to the CL-1 mismatched group. For those students who belong to CL-3 and CL-4 mismatched groups the correlation is negative, but not high enough to be considered statistically significant.

3. The evidence, although not all statistically significant, supports Rutherford's notion that respondents at the low end of the CL continuum (CL-1) are less adaptable to different values as presented by the material. This numerical value of $-.4152$ is the highest correlation coefficient and is significant.

4. Rutherford's prediction that those respondents whose CL is high (CL-4) are more adaptable, tends to be supported by the very small negative correlation coefficient ($-.1215$). However, this is not statistically significant, probably because of the small number of CL-4 students.

Population II

Table 24 designates the correlation coefficients which relate post CBTE satisfaction with VO for the four CL groups.

Table 24. Population II Correlation Coefficients Relating Post CBTE Lab Satisfaction with Value Orientation

CL	N	r	$\alpha \leq .1$
1	6	-.53	.1
2	21	.40	.05
3	6	-.16	.1
4	5	-.25	--

Observations

1. Results for Population II show significant positive correlation for CL-2, and significant negative correlation at $\alpha = .1$ for CL-1 and CL-3.
2. Population I and Population II evidence support Hypothesis I for students of the matched group (CL-2).
3. Population I and Population II evidence support Hypothesis II only for CL-1 and for CL-3 of Population II. Hypothesis II is supported by inference by CL-3 Population I, and by Population I and Population II CL-4 because of the negative correlation coefficients, although they are not significant.

Conclusion

1. Hypothesis 1 is accepted for Population I and Population II.
2. Hypothesis 2 is rejected because no statistical significance is reported for CL-3, and CL-4 of Population I, and CL-4 of Population II.

Analysis of Hypotheses 3 and 4

Hypotheses 3 and 4 were tested together.

3. There is a positive correlation between the pre-student teacher motivational orientation and the post CBTE lab satisfaction when there is a match between the CL and the structure of the CBTE instructional intervention.

4. There is a negative correlation between the pre-student teacher motivational orientation and the post CBTE lab satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

Population I

Tables 25 and 26 summarize the correlation coefficients relating post CBTE lab satisfaction with MO based upon two independent test scores. MO-I was determined using the first 12 items on the questionnaire; MO-II was determined using the next 13 items.

Table 25. Population Correlation Coefficients
Relating Post CBTE Lab Satisfaction
with Motivational Orientation I

CL	N	r	$\alpha \leq .1$
1	16	-.1515	.288
2	20	.4551	.022
3	17	.1104	.337
4	5	-.7562	.122

Table 26. Population I Correlation Coefficients
Relating Post CBTE Lab Satisfaction
with Motivational Orientation II

CL	N	r	$\alpha \leq .1$
1	16	-.3178	.115
2	20	.2953	.10
3	17	-.2404	.176
4	5	.3651	.317

Observations

1. There is a significant positive correlation between the pre-student teacher MO and the post CBTE lab satisfaction for the students whose CL is matched with the structure (CL-2). This correlation is more pronounced when the MO-I scores are used than when the MO-II scores are used.

2. There is no clear cut evidence for a significant negative correlation for the three mismatched CL groups. For CL-1 the correlation of Post CBTE satisfaction with both MO-I and MO-II is clearly negative, although not high enough to demonstrate statistical significance. For CL-3 and CL-4 the correlations are not consistently negative.

Population II

Tables 27 and 28 present the information for MO-I and MO-II and post CBTE lab satisfaction for Population II.

Table 27. Population II Correlation Coefficients
Relating Post CBTE Lab Satisfaction
with Motivational Orientation I

CL	N	r	$\alpha \leq .1$
1	6	-.59	.1
2	21	.33	--
3	6	-.008	--
4	5	-.99	.01

Table 28. Population II Correlation Coefficients
Relating Post CBTE Lab Satisfaction
with Motivational Orientation II

CL	N	r	$\alpha \leq .1$
1	6	-.036	--
2	21	.16	--
3	6	-.28	--
4	5	.26	--

Observations

1. CL-1 and CL-4 show significance for MO-I.
2. No consistent pattern of correlations can be seen, thus no consistent relationship is possible to determine. This data is because of the low value of r and the low N which did not allow a determination of α .

Conclusion

1. Hypothesis 3 is rejected. Statistical significance was achieved for Population I, however for Popula-

tion II no statistical significance was achieved.

2. Hypothesis 4 is rejected. The evidence lacks significance for both populations.

Analysis of Hypothesis 5

5. There is a positive correlation between the student's post CBTE lab satisfaction and the post student teaching satisfaction when there is a mismatch between the CL and the structure of the CBTE instructional intervention.

To analyze Hypothesis 5, the post CBTE satisfaction and the post student teaching satisfaction were analyzed using the means, the standard deviations and the correlation coefficients.

Population I

Table 29 shows post CBTE satisfaction and post student teaching satisfaction means for Population I.

Table 29. Population I Satisfaction Means for Post CBTE and Post Student Teaching

CL	N	Post CBTE Satisfaction	Post Student Teaching Satisfaction	Satisfaction Score Difference
1	11	61.27	48.27	13.00
2	11	62.82	47.00	15.82
3	11	59.18	48.54	10.64
4	2	--	--	--

Observations

1. With only two CL-4 respondents, calculating the mean for CL-4 was meaningless.
2. CL-2 students have the highest post CBTE satisfaction mean and the lowest post student teaching mean; therefore, these students show the largest difference in their satisfaction from the end of the CBTE lab to the end of the student teaching experience.
3. All means were lower after student teaching than they were after the CBTE lab.

Population II

Table 30 summarizes the post CBTE satisfaction and the post student teaching satisfaction means for Population II.

Table 30. Population II Satisfaction Means for Post CBTE and Post Student Teaching

CL	N	Post CBTE Satisfaction	Post Student Teaching Satisfaction	Satisfaction Score Difference
1	4	62.2	43.5	18.7
2	13	70.3	51.3	19.0
3	5	67.6	46.8	20.8
4	3	60.3	43.0	17.3

Observations

1. The differences are greater for Population II than for Population I for all CL groups. This supports the

notion that the transition from theory (CBTE lab) to practice (student teaching) is too big a change for students to fully realize and utilize the materials and competencies learned during the lab.

2. All satisfaction means were lower after student teaching than they were after the CBTE lab.

Population I

The post CBTE satisfaction and the post student teaching satisfaction as indicated by the standard deviations are summarized by Table 31.

Table 31. Population I Standard Deviations for Post CBTE and Post Student Teaching Satisfaction

CL	N	Post CBTE Satisfaction	Post Student Teaching Satisfaction
1	11	7.86	5.37
2	11	22.39	9.36
3	11	21.25	5.26
4	2	--	--

Observations

1. It is interesting that the standard deviations for all CL groups went down from their post CBTE evaluation to their post student teaching evaluation. This shows that the respondents have less variance in their post student teaching satisfaction which means that they have solidified

their positions with respect to satisfaction after student teaching.

2. CL-1 standard deviations remain relatively constant with a difference in the post CBTE standard deviation and the post student teaching standard deviation of only 2.49. This is in contrast with CL-2 (matched with the program) and CL-3 (mismatched with the program); these standard deviations went down dramatically, with a difference of 13.03 for CL-2 and 15.99 for CL-3. This indicates that these students became less satisfied with CBTE after student teaching; the smaller standard deviations indicate that there was a trend toward group agreement with respect to post student teacher satisfaction.

Population II

Standard deviations for post CBTE and post student teaching satisfaction are presented in Table 32 for Population II.

Table 32. Population II Standard Deviations for Post CBTE and Post Student Teaching Satisfaction

CL	N	Post CBTE Satisfaction	Post Student. Teaching Satisfaction
1	4	7.8	8.8
2	13	7.0	10.9
3	5	4.4	6.7
4	3	9.7	10.8

Observations

1. It is interesting that all standard deviations increased from the post CBTE lab to the post student teaching. This could be expected since all satisfaction means went down for these groups, reflecting the notion that the respondents were more disorganized during their student teaching; the increase in variance tends to show more dissatisfaction and confusion of the respondents.

Population I

Table 33 summarizes the correlation coefficients relating post CBTE lab satisfaction with post student teaching satisfaction for the four CL groups for Population I.

Table 33. Population I Correlation Coefficients for Post CBTE Lab Satisfaction and Post Student Teaching Satisfaction

CL	N	r	$\alpha \leq .1$
1	11	.2961	.188
2	11	.3135	.182
3	11	.2173	.26
4	2	--	--

Observations

1. The correlation coefficient was not computed for CL-4 because only two individuals belonged to that group.

2. There is no evidence of significant positive correlation for any of the groups. None of the correlation coefficients is statistically significant, although all three of them are positive. The correlation pattern for the mismatched groups does not appear to be different from the matched group (CL-2).

Population II

The relationships between correlation coefficients for post CBTE lab satisfaction and post student teaching satisfaction for all CL groups are presented in Table 34.

Table 34. Population II Correlation Coefficients for Post CBTE Lab Satisfaction and Post Student Teaching Satisfaction

CL	N	r	$\alpha \leq .1$
1	4	.48	--
2	13	.76	.001
3	5	.51	--
4	3	--	--

Observations

1. There is a significant positive correlation between the student post CBTE lab satisfaction and the post student teaching satisfaction only for CL-2. The correlation could not be calculated because the N was too small for CL-4.

2. There is a similarity with Population I because all values of r are positive in Population II also. The one exception is that there is significance for CL-2.

Conclusion

1. Hypothesis 5 is rejected. Population I and Population II evidence lacks statistical significance.

Summary

The evidence presented in this chapter gives inferential support for application of the Matching Model to teacher education. The evidence includes:

1. Value orientation evidence was established for a match in Population II for the value system modeled in the CBTE program, and for a mismatch for Population I.

2. Motivational orientation I results show that for Population I three CL groups are matched with the source of feedback, and for Population II all groups except CL-1 are matched.

3. Motivational orientation II exhibits evidence for a match with the form of feedback for all CL groups of Population I and Population II.

4. Post CBTE lab satisfaction results show a high level of satisfaction reported for all CL groups in both populations.

5. Post student teaching satisfaction level is high, but not as high as the post CBTE lab satisfaction

means for all CL groups in both populations.

6. Hypothesis I correlation is significant for CL-2 groups for both populations. CL-2 groups were considered matched with the CBTE program structure, thus this correlation was predicted. Hypothesis I was accepted at $\alpha = 0.1$.

7. Hypotheses 2, 3, 4, and 5 correlation coefficients tended to be as predicted; however significance is lacking for both Population I and Population II for each of these hypotheses. Therefore, these hypotheses were rejected.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Education should utilize the findings of psychology in program development and implementation. If program developers could take into consideration the variables that would provide a match with student accessibility channels, a more effective and efficient learning program could be prescribed for individuals.

CBTE has moved toward individualization by using a modular approach to the teaching of competencies, which is one approach to individualization. If CBTE would utilize the student accessibility channels, a student could be placed in a more appropriate instructional stream to reach the desired level of competence. This could be accomplished by modulating the belief system which a program represents, the form and source of feedback, and the structure of the intervention to fit the accessibility channels of the individual. A more effective and efficient educational program then could and should be implemented, using the Matching Model.

In this study the student accessibility channels were measured and grouped by CL; the CBTE program was

analyzed to determine its structure, the value system represented by the program's competencies, and the source and form of feedback; and the effect of the match or mismatch of the student accessibility channels and the characteristics of the CBTE program on the student's post CBTE lab satisfaction and post student teaching satisfaction was determined. Chapter V concludes this study by presenting the author's findings, conclusions, recommendations for action and recommendations for further study.

Findings

For the purpose of this study the MSU CBTE program was established by the author to be a match with CL-2.

Two sets of data were collected, Population I and Population II, respectively. To determine the match/mismatch with the CL groups of each Population, the matching range of scores was identified for each instrument.

For the value orientation (VO) measure (Teacher Practices Inventory), the lower half of the scores were considered a match with the CBTE program; the upper half were considered a mismatch. The VO means for all CL groups of Population I were in the upper range of scores, and therefore a mismatch with the CBTE program. All VO means for Population II fell in the lower half of the scores; this provided a match with the CBTE program.

Motivational orientation (MO) was determined using a questionnaire with two sections: (1) MO-1 was used to

determine the student's perception of the most appropriate source of feedback to motivate the student (teacher, peer, self), (2) MO-II was used to determine the student's perception of the most appropriate forms of feedback for motivation.

The lower half of the range of scores for MO-I was considered a match with the program; the upper half was considered a mismatch. Population I evidence shows that CL-1, CL-3, and CL-4 were matches with the program, but CL-2 was neither a match nor a mismatch. Population II was matched with the program for CL-2, CL-3, and CL-4 and mismatched with CL-1 for MO-I.

MO-II scores in the lower half of the range of data were considered a match with the program; scores in the upper half of the range were considered a mismatch. Both Population I and Population II data were matched with the program for all CL groups for MO-II.

Satisfaction with the CBTE program was determined after the CBTE lab experience and after the student teaching experience. Scores in the upper half of the range for each instrument were considered satisfied; scores in the lower half of the range were dissatisfied. The means for all CL groups for both post CBTE lab satisfaction and for post student teaching satisfaction indicated that the students were satisfied. Means for Population II were higher than for Population I.

Hypotheses 1 and 2 were tested together. Statis-

tical support for Hypothesis 1 was achieved at $\alpha = .1$ for both Population I and Population II. Therefore, Hypothesis 1 was accepted.

Hypothesis 2 was rejected for Population I; although the evidence was in the predicted direction, the hypothesis could only be supported by inference because the results were not statistically significant for two of the CL groups. Population II results also supported rejection of Hypothesis 2 because they lacked statistical significance for CL-4. Again, the results were in the predicted direction. Hypothesis 2 was rejected.

Hypotheses 3 and 4 were tested together. Population I evidence supported Hypothesis 3, however statistical significance was lacking and the hypothesis was rejected. Hypothesis 4 was also rejected for Population I because of lack of statistical significance. Population II evidence revealed no consistent pattern of responses and lacked statistical significance for both Hypothesis 3 and Hypothesis 4. Therefore, both Hypothesis 3 and Hypothesis 4 were rejected.

For both Population I and Population II there was inferential support for Hypothesis 5. For Population II the difference in means was greater than for Population I, which showed stronger support for Hypothesis 5. The results lacked statistical significance; therefore Hypothesis 5 was rejected.

Conclusions

Analysis of the data allows several conclusions to be formulated. The conclusions for Population I and Population II will be presented together for each dependent variable in this section.

Value Orientation

Conclusion 1

Value orientation (VO) has a strong influence on satisfaction.

It is of some interest that the VO for all CL groups for Population I were mismatched with the CBTE, whereas all CL groups for Population II were matched. The analysis revealed that for Population I VO was the only dependent variable which was mismatched with the program; in Population II VO was matched. This evidence supports the value of matching. Population I, where VO was mismatched, had post CBTE satisfaction means which were lower for all CL groups than Population II where VO was matched.

Conclusion 2

High CL respondents are more accepting of divergent values than other CL groups.

For both populations the CL-4 group had the lowest VO mean. The standard deviation for CL-4 was the lowest of all CL groups in both Population I and Population II. The

small standard deviation supported the accuracy of the results and the agreement among the students.

Motivational Orientation I

Conclusion 3

Low CL students prefer self evaluation, which according to the Matching Model is not best for them.

All respondents for Motivational Orientation I (MO-I) Population I were matched with the authority (teacher) source of feedback, whereas in Population II, CL-2, CL-3, and CL-4 were also matched but CL-1 was a mismatch. In Population II, where CL-1 was a mismatch, the CL-1 group had the lowest post CBTE satisfaction mean of the four CL groups. The evidence for CL-1 respondents of Population II supports the idea that low CL students prefer self evaluation.

Conclusion 4

High CL respondents prefer high structure, or authority, as a form of feedback.

The CL-4 groups in both Population I and Population II indicated a match with authority as the student perceived source of feedback. Again, this form of feedback does not support growth and progression for the CL-4 respondents because they require self evaluation for growth and progression.

Conclusion 5

Sources of feedback used in the CBTE program are consistent with student experience.

The evidence for the standard deviation for MO-I for Population I and Population II tended to be low. Therefore we can accept the evidence without much doubt. This is expected because most educational experiences predominately use the teacher as the main source of feedback.

Motivational Orientation II

Conclusion 6

Respondents were familiar with the forms of feedback cited in this study, thus the students felt that the forms were important.

For both Population I and Population II, all CL groups were matched. The data was approximately the same for both populations. The form of feedback used in CBTE is similar to that used throughout education in general.

Conclusion 7

The form of feedback provides motivation for all CL levels because the students see value in this.

Population II evidence was more consistent than Population I as shown by the smaller standard deviations. Therefore, more confidence can be placed in the means reported for Population II.

Post CBTE Lab Satisfaction

Conclusion 8

Students were satisfied with the CBTE lab.

The post CBTE lab satisfaction means for both Population I and Population II tended to be high. With the exception of CL-1 Population II, the post CBTE lab satisfaction means were higher for Population II than the highest post CBTE lab satisfaction mean for Population I CL-4.

One factor which accounts for this is that Population I was taken in winter and spring terms, 1976, and Population II was taken in fall and winter terms, 1977-78. Population I was taken during the first year of the program; Population II was taken during the third year of the program. During the interim there were revisions, more students became aware of the program, instructors became more knowledgeable and efficient. These factors would increase the level of satisfaction.

Over the last few years students were exposed to CBE in their classes in general. Being more aware of the method would raise satisfaction scores.

Conclusion 9

Students didn't agree on their satisfaction with the CBTE lab experience.

Little confidence can be placed in the post CBTE lab satisfaction means for Population I and Population II

because of the high standard deviations. The very nature of the satisfaction questionnaire, with $\alpha = .60$ allows for chance.

Conclusion 10

The first term of the "new" CBTE program may have influenced student reaction to the program.

The interest in the post CBTE lab satisfaction means for Population I is that all respondents were mismatched with VO and matched with MO-I and MO-II. The match for MO-1 was not strong because the scores fell at or just below the cut off score. However, the satisfaction means were still high. The "Hawthorne" effect is suspected because it was the first year of the CBTE program. No statistical evidence exists for this conclusion.

Post CBTE Lab Satisfaction and Post Student Teaching Satisfaction

Conclusion 11

The transition from theory into practice is difficult for student teachers.

The differences between the post CBTE lab satisfaction and the post student teaching satisfaction showed that all Population II mean differences were greater than Population I mean differences. Student teachers are expected to plan, implement, and practice the techniques which they have learned when they also have to cope with the actual day to day teaching.

Conclusion 12

The matched group of students became the most dissatisfied during the student teaching experience.

The largest difference in satisfaction means was for the matched group, CL-2 of Population I. This group was matched with the program, so they felt success at the end of the CBTE lab experience, as shown by the fact that the group had the highest satisfaction mean. When some of what they had learned could not be implemented effectively, they would have been more frustrated because of their previous success; therefore their post student teaching satisfaction mean went down.

Conclusion 13

High CL students are more adaptable in their decision making.

It is interesting that in Population II the CL-4 group had the smallest satisfaction mean difference, although the N was only three. This supports the Matching Model in that those high in CL could deal with the complexities they had learned.

Hypotheses

Conclusion 14

With a higher N the hypotheses which were rejected would have been accepted.

With the exception of Hypothesis 1, the hypotheses

were rejected. Significant results could be achieved if a larger N of respondents could be analyzed, because the evidence indicates that the results tended to be as predicted.

Recommendations

Recommendations for Action

1. Developers, implementers, and researchers of CBTE programs should take steps to modulate CBTE program characteristics to match the accessibility channels of the pre-service student teacher.

Even though the evidence presented in this study is inferential, the global concept of matching is supported. Modulating program characteristics to match the accessibility channels of the student would be a step toward individualizing to enhance and enrich the learning of the competencies.

2. Planners, developers, and implementers should increase the application of the learned competencies in classrooms by extending the field experience portion of the lab. This approach would help to reduce the dilemma of the transition from theory into practice, provide for continuity between the learning phase and implementation phase, help the student teacher cope during student teaching, reduce anxiety and frustration, and give meaning to the competencies from a personal experience base.

3. Planners, developers, and implementers should

see that Competency Based Education is utilized in the general education program. This approach would give the competencies and the process personal meaning, thereby improving the transition from learning theory to practice for the student teacher. The student exposure to and experience with the CBE process is important because it is the model that the student is to implement in student teaching.

Recommendations for Future Study

Several suggestions for further study have evolved out of the present research and data collection activities. These ideas follow:

1. Replicate this study utilizing a larger N of respondents. This was attempted in the present study by using two populations of students, however neither term population has resolved questions raised by this study. The evidence for the hypotheses are not conclusive; statistical significance was not achieved because of the small size of the CL groups. With a larger N more statistical significance could be achieved, thereby giving more conclusive results.

2. The effect of being placed in a CBE classroom as opposed to being placed in a non-CBE classroom during student teaching. One reason for dissatisfaction, or for a reduction in satisfaction, could be the attempt to utilize teaching techniques taught in one kind of setting in a more traditional classroom. If CBTE students could be placed

in CBE managed classrooms, these would be reinforcement for the way the students were taught, thus reducing the transition from lab to student teaching.

3. Replicate this study measuring the effects of match/mismatch on the performance of the student in the lab and then during student teaching. This is critical because it is the successful utilization of the competencies that the training program is designed to teach. The evaluation of performances during student teaching with respect to whether the students were matched or mismatched in the lab should provide considerable insight into the effectiveness of the Matching Model.

4. Follow up this study to see whether matched students are more persistent in using the competencies than the mismatched students. When student accessibility channels are matched with the CBTE program, what students learn will have meaning, utilization of the competencies will be greater, and they will tend to be successful, thereby giving reinforcement to the competencies and the process. If this is true, then utilization of the competencies should exist over time, which is that part of good teaching which could be identified and evaluated against time.

5. Develop, validate and establish reliability for an objective assessment of Conceptual Level. The single most frustrating part of this study was analysis of the projective Paragraph Completion Method. The analysis is very

time consuming, and because of that the Matching Model is difficult to evaluate.

6. Compare matched and mismatched CBTE students and non-CBTE students by Conceptual Level Group, with respect to whether matched CBTE student teachers are rated higher in their student teaching than mismatched and non-CBTE student teachers. This approach would validate the use of the Matching Model in teacher education and would be a method to look at the effectiveness of CBTE.

Summary

In broad terms, if teacher education programs are modulated to match the accessibility channels of the student, students will process the information more effectively, and meaningfully, thus affecting their use of the learned competencies.

The learned competencies are an integral part of the teaching act. This study infers that by matching Conceptual Level, value orientation and motivational orientation, the education of student teachers can be improved. Then a more effective, efficient and satisfying teacher education program could and should be implemented utilizing the Conceptual Level Matching Model.

APPENDIX A

ASSESSMENT OF CONCEPTUAL LEVEL:

PARAGRAPH COMPLETION METHOD

APPENDIX A

Assessment of Conceptual Level: Paragraph Completion Method

Directions:

On the following pages you will be asked to give your ideas about several topics. Try to write at least three sentences on each topic.

There are no right or wrong answers, so give your own ideas and opinions about each topic. Indicate the way you really feel about each topic, not the way others feel or the way you think you should feel.

Please include in the space provided your student number, sex, and whether you are an elementary or secondary education major. These responses will be used for comparative purposes only. Your responses and identity will be kept strictly confidential.

Thank you for filling out this questionnaire.

David L. Amundsen

Male

Female

Secondary

Elementary

Student Number _____

You will have about 2 minutes for each page.

Please wait for the signal to go to a new page.

Please do not turn back to answer a previous question.

1. What I think about rules . . .

Try to write at least three sentences on this topic.

WAIT FOR SIGNAL TO TURN PAGE

2. When I am criticized . . .

Try to write at least three sentences on this topic.

WAIT FOR SIGNAL TO TURN PAGE

3. What I think about parents . . .

Try to write at least three sentences on this topic.

WAIT FOR SIGNAL TO TURN PAGE

4. When someone does not agree with me . . .

Try to write at least three sentences on this topic

WAIT FOR SIGNAL TO TURN PAGE

5. When I am not sure . . .

Try to write at least three sentences on this topic.

WAIT FOR SIGNAL TO TURN PAGE

6. When I am told what to do . . .

Try to write at least three sentences on this topic.

APPENDIX B

VALUE ORIENTATION QUESTIONNAIRE:
TEACHER PRACTICES INVENTORY

APPENDIX B

Value Orientation Questionnaire Teacher Practices Inventory¹

Directions:

Each of the following statements describes teacher practice -- something a teacher might do in a classroom. Many different and opposing kinds of teacher practices are presented here. As you read these statements, you will find yourself agreeing with some, disagreeing with some, and uncertain about others. The best answer to each statement is your personal belief or opinion.

Please include in the space provided your student number, sex, and whether you are an elementary or secondary education major. These responses will be used for comparison purposes only. Your responses and identity will be kept strictly confidential.

Thank you for filling out this questionnaire.

David L. Amundsen

Male

Female

Secondary

Elementary

Student Number _____

Now, turn the page and complete the questionnaire.

¹Brown, The Experimental Mind in Education, pp. 88-96.

TEACHER PRACTICES INVENTORY

Mark each statement in the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

- | | |
|-------------------------|----------------------------|
| 1. I AGREE VERY MUCH | 4. I DISAGREE A LITTLE |
| 2. I AGREE ON THE WHOLE | 5. I DISAGREE ON THE WHOLE |
| 3. I AGREE A LITTLE | 6. I DISAGREE VERY MUCH |

- ___ 1. Gives students opportunity to select facts and information which they consider appropriate to the question.
- ___ 2. Usually has all students working on the same page of the same book at the same time.
- ___ 3. Makes students emphatically aware that they are here to study and learn.
- ___ 4. Once work has begun, insists that students remain in their places and concentrate on the task at hand.
- ___ 5. Asks the kind of questions that students should be able to answer if they have studied the lesson.
- ___ 6. Makes a direct presentation of the subject matter to be covered.
- ___ 7. Permits students to go ahead with plans based on foresight, observation, and consideration of several alternatives -- even when sure their judgment is mistaken.
- ___ 8. Makes "doing something" with a thing, rather than the thing itself, the center of students' attention.
- ___ 9. Focuses attention on what the students do or say, rather than on what the teacher does or says.
- ___ 10. Makes the acquisition of knowledge and skills the center of students' attention and effort.
- ___ 11. Has students compare the value of alternative courses of action and pass judgment on their relative desirability.
- ___ 12. When one student fails to answer a question, asks another student to supply the correct answer.

Mark each statement in the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

- | | |
|-------------------------|----------------------------|
| 1. I AGREE VERY MUCH | 4. I DISAGREE A LITTLE |
| 2. I AGREE ON THE WHOLE | 5. I DISAGREE ON THE WHOLE |
| 3. I AGREE A LITTLE | 6. I DISAGREE VERY MUCH |

- ___ 13. Encourages students to suggest what might be done
-- to make "hypothetical leaps" into the unknown or untested.
- ___ 14. Encourages students to put their suggestions to a test with such remarks as "You'll never know unless you try it."
- ___ 15. Tells students where to start and what to do to accomplish the task at hand.
- ___ 16. Organizes learning around questions posed by the teacher or the textbook.
- ___ 17. Faithfully follows a planned schedule in order to get in the number of minutes each week allotted to each subject in the curriculum.
- ___ 18. Gives students a wide choice in how they answer questions.
- ___ 19. Provides a model to show students exactly what their work should be like when it is finished.
- ___ 20. Gives students a free rein in devising and inventing proposals for what might be done to clear up troublesome situations.
- ___ 21. Engages students in dramatizations, music, art, and other creative activities.
- ___ 22. Uses a set standard to judge the work of all students in the class.
- ___ 23. Insists that students face up to the realities of unpleasant predicaments and plights they get themselves into.
- ___ 24. Accepts material in the approved textbook as a reliable measure for the appropriateness of information brought in by students from other sources.
- ___ 25. Lets students become involved in ugly or distressing aspects of subjects.

Mark each statement on the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

- | | |
|-------------------------|----------------------------|
| 1. I AGREE VERY MUCH | 4. I DISAGREE A LITTLE |
| 2. I AGREE ON THE WHOLE | 5. I DISAGREE ON THE WHOLE |
| 3. I AGREE A LITTLE | 6. I DISAGREE VERY MUCH |

- ___ 26. Frequently asks students to choose among several alternatives.
- ___ 27. Sticks to questions which can be answered by looking in the textbook or other references readily available in the school.
- ___ 28. Limits physical activities to the gym or the playground.
- ___ 29. Asks students to work on their own problems, rather than something made a problem only for the purpose of conveying instruction in some school subject.
- ___ 30. Gives students a chance to discover by experiencing actual effects whether their choice of this rather than that idea was a judicious one.
- ___ 31. Urges students to put everyday things to uses which have not occurred to others.
- ___ 32. Gives students a number of starting places and a number of different ways of getting at what is to be done.
- ___ 33. Provides approximately the same materials for each student in the class.
- ___ 34. Shows students the most economical and efficient way to get a job done, and expects them to do it pretty much that way.
- ___ 35. Allows students to move freely about the room while engaged in purposeful activity.
- ___ 36. Quickly tells students whether their answers are "right" or "wrong."
- ___ 37. Calls for the undivided attention of the group and scolds those who do not respond.
- ___ 38. Asks the students to help decide when questions have been satisfactorily answered.

Mark each statement in the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

- | | |
|-------------------------|----------------------------|
| 1. I AGREE VERY MUCH | 4. I DISAGREE A LITTLE |
| 2. I AGREE ON THE WHOLE | 5. I DISAGREE ON THE WHOLE |
| 3. I AGREE A LITTLE | 6. I DISAGREE VERY MUCH |

— 39. Encourages students to adventure into "deep water," to tackle problems that appear to be "over their heads."

— 40. Motivates students to greater intellectual effort by rewarding them with grades, marks, prizes, or privileges.

APPENDIX C

MOTIVATIONAL ORIENTATION QUESTIONNAIRE

APPENDIX C

Motivational Orientation Questionnaire

Directions:

You have enrolled in the CBTE option, and for research purposes we would like you to complete the following questionnaire.

Please include in the space provided your student number, sex and whether you are an elementary or secondary education major. These responses will be used for comparison purposes only. Your responses will be kept strictly confidential.

Thank you for filling out this questionnaire.

David L. Amundsen

Male

Female

Secondary

Elementary

Student Number _____

Now, turn the page and complete the questionnaire.

ASSESSMENT OF EVALUATION FEEDBACK

In determining your evaluation feedback preference two words should be defined:

MEANINGFUL - is feedback that you value as an individual.

ACCEPTABLE - is feedback that is effective but not your preference.

Mark each statement in the left margin by writing 1, 2, or 3, depending on how you feel in each case.

- 1: INSTRUCTOR, i.e. THE AUTHORITY
- 2: PEER
- 3: SELF

- ___ 1. Evaluation feedback that is meaningful and encourages you to seek out additional activities about what you are learning comes from . . .
- ___ 2. Evaluation feedback that is acceptable and encourages you to seek out additional activities about what you are learning comes from . . .
- ___ 3. Evaluation feedback that is meaningful and encourages you to use what you are learning comes from . . .
- ___ 4. Evaluation feedback that is acceptable and encourages you to use what you are learning comes from . . .
- ___ 5. Evaluation feedback that is meaningful and encourages you to do well what you are learning comes from . . .
- ___ 6. Evaluation feedback that is acceptable and encourages you to do well what you are learning comes from . . .
- ___ 7. Evaluation feedback that is meaningful and encourages you to learn more about what you are learning comes from . . .
- ___ 8. Evaluation feedback that is acceptable and encourages you to learn more about what you are learning comes from . . .
- ___ 9. Evaluation feedback that is meaningful and encourages you to persist in learning comes from . . .

Mark each statement in the left margin by writing 1, 2, or 3, depending on how you feel in each case.

- 1: INSTRUCTOR, i.e. THE AUTHORITY
 2: PEER
 3: SELF

- ___ 10. Evaluation feedback that is acceptable and encourages you to persist in learning comes from . . .
- ___ 11. Evaluation feedback that is meaningful and makes you more curious about what you are learning comes from . . .
- ___ 12. Evaluation feedback that is acceptable and makes you more curious about what you are learning comes from . . .

Mark each statement in the left margin by writing 1, 2, 3, 4, or 5, depending on how important or unimportant it is to you.

- 1: IT IS VERY IMPORTANT 4: IT IS UNIMPORTANT
 2: IT IS IMPORTANT 5: IT IS VERY UNIMPORTANT
 3: IT IS SOMEWHAT IMPORTANT

- ___ 13. How important is self evaluation to you as a stimulus to succeed?
- ___ 14. How important is authority approval to you as a stimulus to succeed?
- ___ 15. How important is peer or group approval to you as a stimulus to succeed?
- ___ 16. How important are grades, money, awards, etc. to you as a stimulus to succeed?
- ___ 17. How important are imposed time requirements to you as a stimulus to succeed?
- ___ 18. How important is knowing that you will gain prestige to you as a stimulus to succeed?
- ___ 19. How important is knowing that you can do something well to you as a stimulus to succeed?
- ___ 20. How important is conquering a challenge to you as a stimulus to succeed?
- ___ 21. How important is having a choice of options to you as a stimulus to succeed?

Mark each statement in the left margin by writing 1, 2, 3, 4, or 5, depending on how important or unimportant it is to you.

- | | |
|-----------------------------|---------------------------|
| 1: IT IS VERY IMPORTANT | 4: IT IS UNIMPORTANT |
| 2: IT IS IMPORTANT | 5. IT IS VERY UNIMPORTANT |
| 3: IT IS SOMEWHAT IMPORTANT | |

- ___ 22. How important are specified results to you as a stimulus to succeed?
- ___ 23. How important is not succeeding to you as a stimulus to succeed?
- ___ 24. How important is authority (teacher) disapproval to you as a stimulus to succeed?
- ___ 25. How important are self imposed standards to you as a stimulus to succeed?

APPENDIX D

POST CBTE LAB SATISFACTION QUESTIONNAIRE

APPENDIX D

Post CBTE Lab Satisfaction Questionnaire

Directions:

Now that you have completed the CBTE lab, please help us determine your satisfaction with it.

For each of the 17 items please circle the letter of the response which you determine as most appropriate.

Please include in the space provided your student number, sex, and whether you are an elementary or secondary education major. These responses will be used for comparative purposes only. Your responses and identity will be kept strictly confidential.

Thank you for filling out this questionnaire.

David L. Amundsen

Male Female
Secondary Elementary
Student Number _____

Now, turn the page and complete the questionnaire.

POST CBTE SATISFACTION

1. How well do you feel you are meeting the objectives and requirements for CBTE?

very unsatisfactory	unsatisfactory	somewhat	satisfactory	very satisfactory
a.	b.	c.	d.	e.

2. How valuable do you think your CBTE training will be to you?

no value at all	not very valuable	at times	valuable	very valuable
a.	b.	c.	d.	e.

3. Are the competencies you are learning a part of teaching as you see it?

not very much	slightly	sometimes	often	very much so
a.	b.	c.	d.	e.

4. Was the form of feedback effective in encouraging you to become competent in the designated area?

not at all	slightly	sometimes	usually	very much so
a.	b.	c.	d.	e.

5. Do you feel prepared for your full time teaching experience?

not at all	slightly	sometimes	usually	very much so
a.	b.	c.	d.	e.

6. Has your CBTE training made you feel more confident to enter full time teaching experience?

not at all	slightly	sometimes	usually	very much so
a.	b.	c.	d.	e.

7. Did you feel free to discuss your CBTE work with the lab instructors?

almost never	seldom	sometimes	usually	always
a.	b.	c.	d.	e.

8. Would you encourage any of your peers to take the CBTE program?

never	seldom	some	most all	all
a.	b.	c.	d.	e.

9. Did the competencies strengthen any of your self-perceived teaching weaknesses?

none	a few	some	quite a few	many
a.	b.	c.	d.	e.

10. Were you able to discover any areas of weakness in your teacher preparation through your study of the competencies?

none	a few	some	quite a few	many
a.	b.	c.	d.	e.

11. Were the objectives, requirements and responsibilities of CBTE made clear to you by the second week of the term?

not at all	slightly	vaguely	mostly	quite clear
a.	b.	c.	d.	e.

12. How valuable was the CBTE as a learning experience for you?

of no value	little value	some	adequate	of much value
a.	b.	c.	d.	e.

13. Do you feel that the assistance by the lab personnel was sufficient for you to understand the teaching situation and give you any needed assistance?

not at all	slightly	some	much	very much
a.	so b.	c.	so d.	so e.

14. In your judgment, did the lab personnel provide sufficient instruction in developing your teaching competencies?

not enough	a little	too much "help"	little too much	about right
a.	b.	c.	d.	e.

15. Do you think the instruction provided by the lab personnel was beneficial?

not very beneficial	a little	some benefit	helpful	very beneficial
a.	b.	c.	d.	e.

16. What was the attitude of the lab personnel towards your questions and problems?

very unresponsive	unresponsive	neutral	concerned	clearly concerned
a.	b.	c.	d.	e.

17. Throughout the term did the feedback indicate that you were being assessed fairly, reasonably and consistently?

no	seldom	more or less	sometimes	yes
a.	b.	c.	d.	e.

APPENDIX E

POST STUDENT TEACHING SATISFACTION QUESTIONNAIRE

APPENDIX E

Post Student Teaching Satisfaction Questionnaire

Directions:

Now that you have completed your student teaching, please help us determine your satisfaction with CBTE.

For each of the 12 items please mark on the answer sheet the response which you determine as most appropriate.

Please include in the space provided your student number, sex, and whether you are an elementary or secondary education major. These responses will be used for comparison purposes only. Your responses will be kept strictly confidential.

Thank you for filling out this questionnaire.

David L. Amundsen

Male	Female
Secondary	Elementary
Student Number	_____

Now, turn the page and complete the questionnaire.

POST STUDENT TEACHING CBTE SATISFACTION

1. How valuable was your first term to you during the full time experience?

of no value a.	little value b.	some value c.	of value d.	of much value e.
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2. Were the CBTE skills an integral part of your teaching?

never a.	seldom b.	sometimes c.	usually d.	very much so e.
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3. Did your first term experiences contribute significantly to your success in your full time experience?

not at all a.	a little b.	some c.	valuable d.	very valuable e.
---------------------	----------------	------------	----------------	------------------------

4. Did CBTE contribute significantly toward your feeling of being competent to take a teaching job?

not at all a.	a little b.	some c.	valuable d.	very valuable e.
---------------------	----------------	------------	----------------	------------------------

5. Did your clinical instructor understand your use of the learned competencies?

not at all a.	a little b.	some c.	usually d.	very much so e.
---------------------	----------------	------------	---------------	-----------------------

6. Did you feel free to talk freely with your clinical instructor?

not at all a.	a little b.	sometimes c.	usually d.	very much so e.
---------------------	----------------	-----------------	---------------	-----------------------

7. Did your clinical instructor provide adequate feedback when you demonstrated a learned competency?

none a.	a little b.	too much c.	adequate d.	about right e.
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8. Did you understand the concerns and problems as pointed out by your clinical instructor?

not at all a.	a little b.	sometimes c.	usually d.	always e.
---------------------	----------------	-----------------	---------------	--------------

9. Did your clinical instructor understand you and your teaching goals well enough to provide you with meaningful assistance?

not at all a.	a little b.	too much "help" c.	usually d.	about right e.
---------------------	----------------	--------------------------	---------------	----------------------

10. Did your clinical instructor understand your self perceived problems well enough to provide any valuable assistance?

not at all a.	a little b.	sometimes c.	usually d.	right amount of assistance e.
---------------------	----------------	-----------------	---------------	-------------------------------------

11. Were the competencies you learned a part of your teaching?

not at all a.	seldom b.	some c.	usually d.	very much so e.
---------------------	--------------	------------	---------------	-----------------------

12. After completing the program would you encourage any peer to take part in CBTE?

no a.	seldom b.	some c.	usually d.	everybody e.
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APPENDIX F

HUNT, D.E., et. al.

"ASSESSMENT OF CONCEPTUAL LEVEL:
PARAGRAPH COMPLETION METHOD (PCM)"

APPENDIX F

Hunt, D.E., Greenwood, J., Noy, J.E., & Watson, N.

Assessment of Conceptual Level: Paragraph Completion Method (PCM)

OISE, June 1973

Description of Method

The PCM consists of six topics introduced by the following instructions:

"On the following pages you will be asked to give your ideas about several topics. Try to write at least three sentences on each topic.

There are no right or wrong answers, so give your own ideas and opinions about each topic. Indicate the way you really feel about each topic, not the way others feel or the way you think you should feel. You will have about three minutes for each page."

The topics, each on a separate page, are:

1. What I think about rules . . .
2. When I am criticized . . .
3. What I think about parents . . .
4. When someone does not agree with me . . .
5. When I am not sure . . .
6. When I am told what to do . . ."

Persons responding are urged to write at least three sentences on each topic, and are asked to start and stop each topic when instructed to do so. Therefore, a

completed protocol consists of six paragraphs to be scored.

Rationale of Method

The PCM is a semi-projective test which requires scoring by a trained rater. A person's response is considered to be a sample of how he thinks, and the scoring procedure is aimed to index his thinking on the CL dimension. The six topics were selected in order to obtain a sample of how he handles conflict or uncertainty ("Criticism", "Not sure", or "Don't agree") and how he thinks about rule structure and authority relations ("Rules", "Parents", "Told"). It would be more convenient if it were possible to assess CL through an objective test which could be easily scored. Although numerous attempts have been made to devise objective measures, none of them have proven satisfactory, partly because they are susceptible to faking and partly because they deal with content, not how a person thinks.

When learning style is the major emphasis, it should be possible to use behavioral observation under controlled environmental circumstances. However, at this time, such behavioral assessment is still in the exploratory stage, and should be regarded as supplementary to PCM.

Synopsis of Scoring

The purpose of scoring is to obtain a score which places the person on the CL dimension. In learning to score the judge should continually consider the CL dimension and the stage characteristics described in various papers distributed earlier. These may be summarized:

<u>CL Score</u>	<u>Stage</u>	<u>Characteristics</u>
3	C	Self-responsible Multiple alternatives
2		
1	B	Categorized thinking Authority-oriented
0	A	Self-protective No alternatives available

Therefore, the scoring procedure consists of two or three steps: (1) assigning a score from 0 to 3 to each of the six responses, (2) aggregating these separate scores into a CL score by averaging the highest three responses, and if necessary, (3) using this CL score to classify the student into a learning style group. Most of this manual will be concerned with the first step of scoring individual responses.

General Scoring Procedure

In scoring responses, the judge should continually bear in mind the question, "How does this person think?" or "What level of conceptual thought is determining this response?" Accurate scoring requires looking beyond the content of the response. The most difficult part in learning to score is to pay attention to the structure underlying the response rather than to its content -- to how he thinks, not what he thinks. Of course, one must use the content of the response since this is the basis for scoring, but, for present purposes, one does not consider the content as such. For example, a person may respond to "Rules" in a positive

or negative way (content), but what is important is how he thinks about rules.

In learning to score one needs a clear idea of the characteristics of thinking at different levels of conceptual development. Therefore, we begin by describing general characteristics and then consider how these characteristics might be manifest on each of the six topics or stems. In all of the following sections, classification consists of assigning a numerical score -- 0, 1, 2, or 3 -- on the CL dimension rather than classification by stages (A, B, or C).

General Characteristics

Score 0: The most central feature of this is concrete negativism. The person resists suggestions or information which he interprets as subjugation by attempting to exclude them entirely. Because of his defective socialization the person with a score of 0 seeks immediate gratification, and views interpersonal relations in a very egocentric, self-centered personal fashion. His immature self-centeredness ("What's in it for me?") coupled with his sensitivity to control ("Stop buggin' me!") precludes any very satisfactory interpersonal relations. In preadolescence, this orientation is concrete and egocentric but not necessarily accompanied by hostility. In adolescence, however, the characteristics are more likely to be associated with hostility because of the person's unsuccessful efforts at being independent.

The selfish preoccupation at this level is to be distinguished from higher level self-definition (Score 2 or 3) in the primitive, undifferentiated nature of the former. At 0, the person is preoccupied with the immediate satisfaction of basic need.

Summary of 0 characteristics:

Perceptual characteristics

1. Sensitive to:
 - a. Control, authority, negative intention of others.
 - b. Self-gratification.
2. Insensitive to:
 - a. Needs and views of others.
 - b. Threatening or ambiguous events (which are denied).
3. No evaluation of situation.

Behavioral characteristics

1. Avoidance, leave the situation, denial.
2. No behavioral alternatives.
3. Uncontrolled emotional expression.

Score 1: The major focus here is on the generalized standard which defines right from wrong and one's conformity to this standard. Situations are experienced in categorical chunks (good-bad) which are based on absolute cultural prescriptions. At 1, the person adapts to changes in the environment only by turning to the "rule book" since for him the "rules of the game" are the game. Such inflex-

ible concreteness, of course, precludes effective adaptation to change. Interpersonal relations occur in a network of role prescriptions without any empathic understanding. He also experiences himself primarily through a filter of role prescriptions ("What should I be doing?") and evaluates his self-worth by his success in living up to the "oughts" dictated by the rules. He is highly sensitized to status and authority of other persons but not to their personal characteristics. Since standards and rules are so important, he is very upset when these guide lines are unclear or when he must perform without them.

Summary of 1 characteristics:

Perceptual characteristics

1. Sensitive to:
 - a. Authority, power, external standards.
 - b. Categorical judgments, "right-wrong", "good-bad".
2. Insensitive to:
 - a. Self-distinctiveness and personal qualities of others.

Behavioral characteristics

1. Culturally appropriate response, e.g., ought, should.
2. Recourse to authority, or if no authority, ignore.
3. "Social" feelings, e.g., embarrassment, indignation.

Score 2: This level shows beginning signs of self-delineation, beginning signs of alternatives, and some indication of sensitivity to one's own feelings. This level differs from the 1 Score primarily in the beginning detachment, differentiation of "out there" nature of the response. It differs from the 3 response primarily in the degree to which the responses have been clarified and integrated.

Summary of 2 characteristics:

Perceptual characteristics

1. Sensitive to:
 - a. Self-definition.
 - b. More than one alternative.
 - c. Beginning evaluation.

Behavioral characteristics

1. Initial expression of self-determined activity.
2. Expression of emotional concerns.

Score 3: Clear indications of self-delineation and relying on one's self. In contrast to the 0 response which is self-centered, the response here is self-distinctive, seeing the self in or in context with others. At this level the person has clearly differentiated view of others and of himself, and the relationship between them. The major difference between the 3 and the 2 responses is that at 3, behavioral alternatives are coordinated with the variations in interpretation. There is a beginning linkage of perception and response with both being differentiated. The person is more likely to see alternatives. He is quite

capable of expressing negative feelings and indeed is likely to use his own feelings as one base from which to determine differential response.

Summary of 3 characteristics:

Perceptual characteristics

1. Sensitive to:
 - a. Self-distinctiveness relative to others.
 - b. Multi-dimensional considerations.
 - c. Evaluation of alternatives.

Behavioral characteristics

1. Response coordinated with differential perceptions.
2. Response related clearly to self-delineation and individuality.

Specific Characteristics by Topic

Rules

Score 0. Rules are experienced in terms of one's personal relation to them rather than seeing them as "out there". Rules are undistinguishable from any other external frustration. Rules are seen as interfering with self-gratification, they are usually disliked because of such frustration.

Score 1. Rules are seen as an absolute necessity. There is little question of their differential appropriateness, and they are not evaluated in terms of their function. It is not just the unqualified acceptance of the rules but also the underlying view that person experiences

rules in relation with his own needs for order and structure. He may reject certain rules if they are not legitimate.

Score 2. Rules are experienced in terms of some functions, but the functions may not be completely distinguished and related to alternative possibilities.

Score 3. Rules are experienced as differentiated in relation to their function for people either going about their own individual lives or people working together more harmoniously. Rules are seen almost completely in relation to learning more about oneself, getting along better with others and meeting functional requirements.

EXAMPLES FOR SCORING CL SENTENCES

"What I think about rules . . ."

Score 0:

1. "Sometimes I hate rules because when you want to do something it is a rule to stop you."
2. "I don't like them. Rules are made to break. I feel they are also made to get you into trouble."

Score 1:

3. "I think rules are some of the way of life. They help us to learn right from wrong and they are the set pattern for our everyday life. Without rules and regulations there would be a cruel world."
4. "Rules are made for a purpose. They are made for the protection of you or something. Rules are needed to direct our life."

Score 2:

5. "Some rules are easily found out as to why they are rules. But rules that are given without basis or have no basis are senseless. I try to at least find out why they are in existence before I act."
6. "Rules are necessary, but they need to be flexible or people will get angry at them. Then they don't do any good."

Score 3:

7. "Rules are a necessity in a complex society such as ours. However, rules cannot be applied in the same manner for all circumstances. A change in circumstances could make much difference in how much or how strictly the rules should be adhered to."

Criticism

Score 0: Criticism is interpreted as a personal attack. The resulting reaction is either to ignore or reject it because it threatens the egocentric self. Self-protection is the primary response pattern, and if the criticism cannot be warded off through denial or avoidance, then direct action such as an over generalized emotionalized blast of aggression may occur.

Score 1. Criticism is interpreted in terms of variation from culturally expected behavior. If the criticism is legitimate (from an authority figure), then it indicates a flaw to be dealt with immediately. Emphasis is on "mistake", and rectifying what is criticized. Criticism is interpreted therefore as indicating a defect rather than as carrying potentially useful information. Put another way, if criticism is legitimate, it is accepted in

an unquestioning fashion.

Score 2. Indications of differentiation is criticism may take the form of different feelings aroused by the criticism, different kinds of criticism or distinguishing how one would react at different points in time of the criticism. At this level there is more likely to be an initial expression of negative feeling which is then modulated by something more adaptive; feelings are accepted and not bottled up.

Score 3. Criticism is interpreted as potential information. The distinction between this level and level 2 is that here the person not only makes distinctions between different kinds of criticism but attaches different responses to these differentiated experiences. There is an emphasis on seeing one's own point of view in relation to the criticism, and defending one's point of view if necessary. Thus the 3 score is not necessarily an unyielding acceptance of information for its own sake.

"When I am criticized . . ."

Score 0:

1. "I just look over it because when people are trying to hurt you they will go to that extent."
2. "I do not like it. I like to punch the first kid who does it."

Score 1:

3. "If I know the person is right who is criticizing me I don't mind, but if I think the person is wrong I don't, I won't take his criticism."
4. "I try to correct my mistakes and always listen so I won't make the same mistakes again."

Score 2:

5. "I try to do better if I know I'm not good at something or I disregard it if I feel like it or the person who criticizes me is jealous."
6. "I don't like to be criticized as are most people. But criticism is a good thing if it has a purpose. So I try to take into consideration what is said and try to learn from it."

Score 3:

7. "I use the criticism well, I do not become offended by any criticisms given me because I feel they are helpful in finding out who I am and my position in our society. I do not take everything just by its cover, though I weigh each criticism and decide what is best."
8. "I always try to listen to their point of view and then discuss my own. I never accept it unless I can use it wisely."

Parents

Score 0. Parents are experienced in a personal fashion in terms of whether or not they gratify or restrict one's own basic needs and impulses.

Score 1. If they play their role appropriately, parents are seen as desirable. The proper parental role is to be an authority figure. If this is not taken, then

parents may be "bad". In most cases where parents are "good" their views are accepted.

Score 2. Parents may be experienced as interfering with one's development. This reaction is different from the 0 Level in that the emphasis here is on parental interference with development and independence rather than restricting direct gratification.

Score 3. Parents are seen in different perspectives but most especially in relation to the respondent himself. He may perceive the necessity for their reacting differently to him as he grows up or he may observe that they are as dependent on him as he is upon them. Again negative feelings may be expressed but they are highly differentiated and more likely to be specific in relation to the parents' permitting independence.

"What I think about parents . . ."

Score 0:

1. "They are good as long as the expense checks keep coming in."
2. "Are too old fashioned. I'm not given enough liberties."

Score 1:

3. "I think parents are the best friends in the world. When they beat you, it's for your own good."
4. "You should respect them, obey them, and most of all show them your love which they deserve."

Score 2:

5. "Are most of the time right. They should let their children make up their own minds. Parents should also have an open mind to the thoughts of their children and listen to their arguments."
6. "I think parents are sometimes too bossy and they don't have enough confidence in their children. In other words they push too hard."

Score 3:

7. "Parents try to make their own children duplicates of themselves. Parents tend to become belligerent if their child wants to 'think for himself'. Also, parents tend to impose obsolete mores and opinions on their child."

Does not agree

Score 0. Disagreement, like criticism, is experienced not with any information but as a personal attack. Reactions are to deny it or see it as a confirmation of self-adequacy. Failing either, a hostile counterattack is likely.

Score 1. Disagreement is experienced as a collision of two views, one of which is right and one of which is wrong, an issue which must be settled as soon as possible usually by recourse to an authority. The person may experience "feeling bad" because of the social exposure of disagreement.

Score 2. Disagreement is experienced as possible information with some residual negative feeling. There is little more emphasis on pressing one's own point than

there would be at 3.

Score 3. Disagreement is similar to criticism in that it is seen as potential information a source of extending one's ideas through finding more about other people.

"When someone disagrees with me . . ."

Score 0:

1. "When someone disagrees with me is when I am right about something."
2. "I lose my temper and pick up first thing I see. I don't stop to think and I hit them as hard as they could hit me."

Score 1:

3. "When someone disagrees I go and ask a teacher to help me with the answer, or I forget it to keep from making an argument."
4. "It helps to releave what I have inside. I can tell this person what I think and if I'm wrong and it is proved to me I will say I'm sorry and say o.k. you're right."

Score 2:

5. "When this happens I like to find out why they disagree with me. If it unreasonable I like to argue and try to make my point a little better. If their disagreement is logical, I don't mind them disagreeing. Usually when someone disagrees, I want to know why."
6. "When someone disagrees with me I don't get mad. The other fellow has just as much right to his opinion as I have to mine. No two things are made alike."

Score 3:

7. "When someone disagrees with me, I usually listen to their side of the disagreement. Then I try to compare both sides. In the end, I usually can understand why they disagree."

8. "When someone disagrees with me I listen to their point of view because sometimes they could be right when I am wrong. Sometimes when you put two ideas together you come out with a better result in everyone's interest."

Not Sure

Score 0. Responses are characterized by complete lack of response alternatives. Either the person has no response or responds immediately by guessing to get out of the situation as quickly as possible.

Score 1. Uncertainty is experienced as a defect to be remedied as soon as possible. The person's intolerance of ambiguity is manifested by responses in which he attempts to relieve his uncertainty by seeking authority or forgetting about it.

Score 2. Not sure is experienced with some uneasiness as concerned about doing it in one's own way with some reference to authority. Major distinction from 3 is the relative absence of alternatives and some residual intolerance of ambiguity.

Score 3. Here the emphasis is on alternatives, detaching oneself from the situation before considering it. Frequently there is an emphasis on trying to do it on one's own initially and taking another information as necessary at a later point.

"When I am not sure . . ."

Score 0:

1. "I don't know what to do. I usually guess."

Score 2:

2. "When I am not sure I inquire about it. I either ask a friend or a person whom I think could give me an answer."
3. "When I am not sure about something it bothers me and I have to find out if I am right or I can't get through the day. It is very hard to know for sure but it makes me nervous not to know."

Score 2:

4. "When I am not sure of something I go to someone who I think can clear up the unsureness. If no one is around I come to the sensible conclusion I can, and I sometimes look to other concrete information that will help me."
5. "I feel I should ask someone who is qualified to help me solve the problem. If it is something small I feel I should work it out for myself. No one can tell you the answers, not even your parents. It is really up to you to decide what to do."

Score 3:

6. "I nearly always employ a reference source (book, person, etc.) when dealing with facts. In dealing with problems (social, etc.) I usually ask information of people who know something of the problem (parents, etc.) and consider all the possible consequences of my action before doing anything."
7. "I do not make snap judgments. I generally set up alternatives from which to choose what I consider correct. I will then weigh my alternatives until I come up with something that is the most correct."

Told

Score 0. Reacted to an undifferentiated fashion in which the instruction is experienced as personal interference.

Score 1. Requests are evaluated in terms of the legitimacy of the source. Assuming the source is legitimate the command must be obeyed without any questions or any consideration of its function.

Score 2. The distinction is primarily in relation to whether the request in relation to one's self is something which should be done, thus it differs from the 1 Score in taking account of one's own competence. It differs from the 3 Score in terms of having less emphasis on information and in a kind of provisional compliance.

Score 3. Here there may be some resentment but it is differentiated in relation to the circumstances and the relative competence of the person himself.

"When I am told what to do . . ."

Score 0:

1. "I don't like anybody to tell me what to do. When anyone tells me I won't do it."
2. "I don't like to do it because I think somebody is trying to boss me or push me around."

Score 1:

3. "I do it if I know what I'm doing is the right thing to do. If I think it is wrong then I don't do it."
4. "I do it. I do it without hesitating. I do it correctly."

Score 2:

5. "I like to be told what to do when I don't know what to do. I don't like to be told when I do know it."
6. "I usually do it unless there is something I really disagree with. Then a calm opposition does very much more in expressing yourself."

Score 3:

7. "I am often resentful. I sometimes feel too independent to be under the instruction of another. I think I should use my own judgment and be responsible without being told."
8. "I take it into consideration. Although I don't always go through with it, I feel that I will never be wise to be advised and not take it into consideration."

Other scoring procedures

Unscorable (-): In certain cases, the response may provide insufficient information to score. This is most likely in very short responses, but it may also occur when there are no relevant referents. It is important that the unscorable category (designated by a hyphen) be applied only when there is insufficient information to determine a score. It should not be used in cases of uncertainty, i.e. when the response seems to contain contradictory referents. In this latter case, a score should be given, perhaps a .5 or 1.5 if appropriate.

.5, 1.5, and 2.5: Since the assignment of a CL score is on a dimension, there may be responses which fall halfway between 0 and 1, between 1 and 2, or between 2 and 3. In these cases, the response is assigned a score of .5, 1.5, or 2.5. The "halfway" response should be used sparingly, and only when the referents are equal at two levels.

Aggregating item scores into CL score

When each of the six topics have been scored, the procedure for obtaining a total CL score for a person is to calculate the average of the highest three scores. The rationale for using only the top three scores rather than all six is that there may be a tendency to receive one or two scores of 1 through lack of interest which might artificially depress the score. Also, because it has been found that persons cannot artificially increase their scores through "fake good" instructions, this method seems

reasonable. It is a modified version of the "high jump" rationale which does not require continual clearing the bar at 6 feet to demonstrate the competence.

Following are some examples:

	Item Number Score						CL
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>Score</u>
A	1	2	1	2	1	2	2.0
B	2	2	2	2	2	2	2.0
C	2	1.5	1	1	1	1	1.5
D	1	1	1	1	1	1	1.0
E	2	1	2	1	1	1	1.67

There may be occasions when use of the "top three" score will need to be accompanied by the mean of all responses. This may occur when one is concerned with identifying persons with scores below 1. For example, using the "top three" in the following:

							CL
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>Score</u>
F	1	0	1	0	1	1	1.0
G	1	0	1	0	1	0	1.0

These scores may be amplified by placing the average of all six in parenthesis, thus:

F: 1.0 (.67)

G: 1.0 (.50)

If there are fewer than three scorable responses, then the protocol is considered unscorable.

Range in CL scores is usually from 0.5 to 2.5. For purposes of application to educational practice, it is necessary to translate this CL score into a learning style classification.

Classification by CL score into learning style

First, consider learning style in absolute terms (disregarding the age or grade of student). Four points on the learning style dimension may be identified.

<u>Need much</u>				<u>Need little</u>
<u>Structure</u>	<u>Some</u>	<u>Less</u>		<u>Structure</u>

The corresponding CL scores for these four groups would be as follows:

Learning style	<u>Much</u>	<u>Some</u>	<u>Less</u>	<u>Little</u>
CL score	0.5-1.0	1.2-1.4	1.5-1.9	2.0+

Some indication of the variation in CL, or learning style, by grade can be in the following norms. Some of these samples involve the same students in different years and some involve different students.

Insert Table 1 about here

Table 1 indicates (1) a general increase in CL with age, (2) considerable variation in learning style at all grades, even though the mean increases, and (3) considerable variation between schools at the same grade.

Table 35. Norms for Learning Style by Grade

Per cent of students requiring
differing degrees of structure:

<u>Grade</u>	<u>N</u>	<u>School</u>	<u>Year</u>	<u>Mean</u> <u>CL</u>	<u>Much</u> <u>(.5-1.0)</u>	<u>Some</u> <u>(1.2-1.4)</u>	<u>Less</u> <u>(1.5-1.9)</u>	<u>Little</u> <u>(2.0+)</u>
4	87	B	'71	1.22	53	23	19	5
5	52	A	'71	1.23	42	39	17	2
5	38	A	'71	1.11	63	24	13	0
5	74	B	'71	1.54	23	28	27	22
5	82	B		1.27	34	39	24	2
6	71	A	'71	1.24	41	36	20	3
6	73	A	'72	1.17	54	31	14	1
6	71	B	'72	1.47	10	36	44	10
6	252	C	'72	1.32	28	37	30	5
8	133	C	'71	1.37	28	31	32	9
8	93	C	'71	1.55	11	25	46	17
8	234	D	'70	1.62	8	22	43	27
8	265	E	'72	1.28	40	26	25	9
8	161	F	'72	1.39	29	24	34	13
8	329	E	'73	1.27	34	39	25	2
8	140	F	'73	1.40	18	37	39	6
9	133	C	'72	1.49	15	31	38	16
9	94	C	'72	1.51	18	28	38	16
9	182	D	'71	1.53	16	31	27	26
10	136	D	'72	1.82	5	14	25	56

A specific student's learning style can be determined absolutely by use of the earlier transformation, e.g. CL of 1, 2 = needs some structure. However since the distribution of learning style varies with grade and between schools, it may be necessary in practice to define learning style groups relative to the specific distribution. For example, in homogeneous classroom grouping where an equal number of students in each class are required, it will be necessary to use the school-specific distribution in defining the groups.

APPENDIX G

NORMS FOR LEARNING STYLE - ADULT SAMPLE

APPENDIX G

Table 36. Norms for Learning Style - Adult Sample

<u>Sample</u>	<u>Year</u>	<u>n</u>	<u>Mean</u> <u>CL₃</u>	<u>Percent of Students Requiring</u> <u>Differing Degrees of Structure</u>			
				<u>Much</u> <u>(.5-1.0)</u>	<u>Some</u> <u>(1.2-1.4)</u>	<u>Less</u> <u>(1.5-1.9)</u>	<u>Little</u> <u>(2.0+)</u>
Jr. College Students	1974	71	1.78	1	17	40	42
Community College Nursing Students	1975	50	2.03	0	12	34	54
Home Economics Students	1970	53	1.96	2	9	32	57
Home Economics Students	1973	73	1.65	6	16	56	22
University Students	1974	20	1.76	5	20	25	50
Teacher Trainees	1972	57	1.55	5	30	54	11
Teacher Trainees	1972	60	1.82	3	13	30	54
Teacher Trainees	1975	57	1.78	5	16	37	42
Pre Vocational Counsellors (Pre)	1972	15	1.49	7	40	47	7
Pre Vocational Counsellors (Post)	1972	15	1.59	0	27	60	13
Counselling Students (Grad)	1972	91	1.85	1	17	36	46
Adult Ed Students (Grad)	1974	43	1.93	0	14	30	56

Table 36. (cont'd)

<u>Sample</u>	<u>Year</u>	<u>n</u>	<u>Percent of Students Requiring Differing Degrees of Structure</u>				
			<u>Mean</u> <u>CL₃</u>	<u>Much</u> <u>(.5-1.0)</u>	<u>Some</u> <u>(1.2-1.4)</u>	<u>Less</u> <u>(1.5-1.9)</u>	<u>Little</u> <u>(2.0+)</u>
Adult Ed Students (Grad)	1975	60	1.82	3	18	32	47
Alcoholics in Treatments	1974	143	1.53	20	25	29	26

SOURCE: David E. Hunt, Table enclosed in David E. Hunt to David L. Amundsen, 23 September, 1975.

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