

Individualized Approach To Improving Instruction

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Abstract

The primary purpose of this consultation is to assist faculty members to become better able to adapt their instruction to the developmental and learning characteristics of their students. This complex task requires working with faculty members over a long period of time and involves starting with their unique "theories" of teaching rather than those of the consultant (Hunt, 1975; Hunt, 1978; Argyris & Schon, 1974). Consultation allows us the flexibility that we need to "adapt" to each faculty member. Thus we have found both small group and individual work to be effective consultation modes. This presentation uses vignettes to highlight the common problems and issues of concern to college faculty and to demonstrate how this model was used in particular situations.

A primary goal of higher education is to promote and encourage the intellectual development of students. While there is evidence that students do make progress toward higher forms of intellectual development, the evidence suggest that they do not make as much progress as is expected by most faculty (King, 1977; Kitchener, 1977; Blake, 1976). This has three consequences for most faculty: (a) they are disappointed in the performance of their students, (b) they teach in ways that are not suited to the abilities of their students, and (c) thus, they are often frustrated in their attempts to teach students (Froberg and Parker, 1976).

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These findings were the basis for the initiation of our efforts to consult with faculty members in the College of Agriculture. The primary goal of our approach to the improvement of instruction under such circumstances is to help faculty **adapt** to the developmental and learning characteristics of their students. By beginning with a focus on student characteristics, we are able to relate teaching approaches used by professors to both the goals to be achieved in a course and to the students in that course. Since these three variables (student characteristics, course goals, and teaching approaches) interact in unique ways, we have found that a consultation model allows us to take that uniqueness into account.

Faculty Consultation

In past attempts to help college faculty improve instruction we (Parker and Lawson, 1978) developed and implemented a model in which the consultant assisted faculty in restructuring course material as a means of assisting them to better adapt their teaching to student needs.

For the past three¹ years we have worked in the College of Agriculture, our purpose being to assist faculty to be more effective. The first year we gathered data about students and faculty in the College to acquaint us with characteristics of the College. The second year, there were two main thrusts: 1) to develop and pilot a model of consultation to use with faculty to help them improve their teaching and 2) to develop and test a methodology for assessing intellectual development of college students (Kitchener, 1977; King, 1977). This third year we have continued to work with faculty in a consultative capacity and further tested a model. To begin gathering data on the effectiveness of this model we have included an evaluation component.

During these three years our thinking has undergone significant changes. The first year we assumed there were general models of student development which could be used to develop general models of teaching. We proposed (Parker, 1976) developing "packages" that could be used by teachers to increase their effectiveness with students at different developmental levels. By the second year we realized that the interactions were too complex and unique to be approached that way. This led to a model which focused on each professor, his subject matter, goals, and students as a unit (Parker and Lawson, 1978).

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Intended Outcomes

As a general goal we intend for faculty to become more effective teachers. We expect that effectiveness to develop over time. Our approach to increasing the effectiveness is to focus on the interrelations between student characteristics, instructional goals, and teaching approaches. Briefly, the process is to assist faculty to become aware of how they think about these variables and the ways their thinking affects the practice of teaching. Specifically, then, we expect faculty to:

- a) become aware of their personal "theories" of teaching as manifested through their constructs of students, teaching procedures, and objectives;
- b) understand the developmental needs of their students;
- c) broaden their constructs about students and the teaching-learning process.

Over time we expect the faculty to:

- a) become more adaptive and personally oriented to individual students in their classes, including students whose backgrounds, cultural differences, and developmental levels differ from the norm;
- b) expand and develop alternative teaching approaches;
- c) become aware of the need for help in maintaining the capacity to adapt student characteristics;
- d) experience greater satisfaction in teaching.

Because consultation is an indirect means of achieving ultimate goals, the most immediate observable changes have been in the faculty. However, we have had some success, thus far, in demonstrating that students do observe changes in the faculty's teaching. Thus, there are two types of changes that we expect over time. First, increasing numbers of students would experience teaching better suited to their particular characteristics and needs and express a greater degree of satisfaction. Second, a longer range outcome, as a result of the faculty's increased ability to teach toward higher level developmental goals, students will be advancing in abilities such as Reflective Judgment, Critical Thinking, and Problem Solving.

Theoretical Framework

Our work grows directly out of William Perry's (1970) theory of intellectual and ethical development in the college years; David Hunt's (1970) work on the interaction of student characteristics with instructional variables; and concepts of psychological consultation (Schein, 1969; Parker, 1975). Our earlier work (Parker, 1976) described above, was approached from a more traditional Attribute-Treatment-Interaction (ATI) framework. In three pilot years of the program we have found that the process of teaching is much more dependent upon the interaction of persons, subject matter content, and teaching goals than we had supposed. We will

briefly describe the transition from our early work to our current model so that it may be better understood.

Perry (1970) has described the normative developmental progress of students through college. His original studies, at Harvard, are the only longitudinal studies yet published, but the scheme has precipitated other research activity. King (1977) has reviewed the growing body of Perry research and critically evaluated eleven studies. In addition, Heffernan (1975) has described a variety of educational projects which have stemmed from Perry's seminal work.

Perry formulated a scheme of nine positions to describe the intellectual and ethical development of college students. His work suggested a steady progression from one position to the next in the hierarchy. Our continued interest in the scheme has led us to regroup those nine positions into a more manageable four positions. These four positions are described as:

I. Dualism: Assumptions of a dualistic structure of the world are taken for granted, unexamined. Knowledge is considered to be true or false, right or wrong. As one student put it, "In biology, there's really not two ways you can look at it. A bird has two feet. That's pretty conclusive" (Froberg and Parker, 1976). Professors are authorities who have or should have the answers to questions and problems. The student's role is to learn the correct answers and give them, on demand, to anyone who asks. "I have a fear of tests. I don't know what I'm suppose to know . . . Teachers should teach what they know . . . A dedicated teacher would tell students what he knew" (Froberg and Parker, 1976). The self is defined primarily by membership in the right group or in reference to authorities.

II. Multiplicity: A plurality of points of view or evaluations for a topic or problem is acknowledged. This plurality is perceived as an aggregate of factors without internal structure or external relations. Thus, anyone has a right to his own opinion. No criteria has yet been established to evaluate the merits of one opinion against another. The following examples of students' responses illustrate this way of thinking: "Things can be a hundred different ways. Both sides can bring in a ton of evidence to support their views. Both are equally right. Everybody is right. That's disillusioning." "Sometimes one professor will give an opinion and you've studied it differently. You see he's a little bit wrong. But I just write down how he wants it remembered" (Froberg and Parker, 1976).

III. Relativism: A plurality of points of view, interpretations, and frames of reference is perceived. The ability to take into consideration the properties of contexts allows for various sorts of analysis, comparison, and evaluation. "It all depends" is a common expression of a relativist. As several students expressed: "There are so many ways of looking at it. It depends upon many factors . . . I try to keep

flexibility in my conclusions and remain a free thinker." "It depends upon how deep your facts are. There are different levels. Microscopic examination reveals different things than the naked eye" (Froberg and Parker, 1976)

IV. Commitment: An affirmation of personal choice in Relativism. A conscious realization of the need to take responsibility in a *relative* world. Commitment refers to the integrative, affirmative function of choosing among alternatives on the basis of prechosen criteria and values which are the essence of one's identity. One student talked this way about commitment: "My opinions reflect what fits me — how I perceive society to function and how I would see it functioning better. I can't do anything outside of my own perception. I have a model of my own. My opinions fit that model. So many things depend upon other things. Everything is interdependent. I view certain things as acceptable given that society follows a certain track. But if society takes choice B, then I have to reformulate my opinions" (Froberg and Parker, 1976).

Educational Implications

The work on cognitive developmental levels has two implications for instruction in higher education. The first is a goal of education, that is, the need to encourage students to function at higher levels. The second is as a guide for adapting instruction to their ability to learn. We have been interested in both. Thus, our first task was to gather data to ascertain the present level of students and the relation of that to the faculty's expectations.

In our first year of work in the College of Agriculture we interviewed eighty students and six professors (Blake, 1976). We found a steady progression from lower levels of thinking to higher levels in our freshman to senior samples; however, the change was small and few students showed evidence of thinking beyond Multiplicity. No students showed substantial evidence of cognitive functioning at the Commitment level.

By contrast, faculty seemed to be operating at relatively high levels and expressed their goals for students in terms that could best be characterized as Committed. Their phraseology was often in more common terms such as "think critically," "Take a stand after weighing the facts," "be effective problem solvers." One faculty member put it this way:

"One criticism I've had is that I ask questions that don't have absolute answers. Some students have never been in a course that hasn't been just essentially a vocabulary course. I give them these kinds of questions because that is what life is. There aren't nice clean answers. They must come up with alternatives, weigh things, and make a decision. It tests for underlying principles" (Froberg and Parker, 1976).

Thus we found a critical discrepancy between students and professors' expectations about the learning process.

From our work in several other related projects (Knefelkamp, 1974; Widick, 1975; Stephenson and

Hunt, 1975; Meyer, 1975) we began to conclude that for most students the undergraduate experience was one that helped them to move from Dualism to Multiplicity and in some cases to Relativism, but there was little evidence that students were operating within the higher forms of intellectual development. Yet it was clear in our formal and informal conversations with faculty that they expected or wanted students to be able to function at those higher levels. These faculty expectations are supported in the body of literature describing the goals of higher education. Woodrow Wilson (1909) expressed it this way:

"What we should seek to impart in our colleges, therefore, is not so much learning itself as the spirit of learning. It consists in the power to distinguish good reasoning from bad, in the power to digest and interpret evidence, in the habit of catholic observation and a preference for a non-partisan point of view, in an addition to clear and logical processes of thought and yet an instinctive desire to interpret rather than stick to the letter of reasoning."

In presenting the rationale for his particular model of the maturing effects of higher education, Douglas Heath (1978) observed the following:

"... A content analysis of the ideas of twenty-five of the principal educational theorists since Socrates revealed. . . None of the educational theorists surveyed claimed that education should nurture only the mastery of cognitive information and a limited set of academic skills."

As we analyzed the data of both students and faculty, we found that faculty members in the college of Agriculture shared these values (Froberg and Parker, 1976). What puzzled them and us was why the evidence was so slim that students were functioning at these higher levels. This dilemma led us during the first year, to two related, but separate projects.

The first was to investigate further the evidence that few students learned to function at higher levels of intellectual development, with the complementary higher levels of personal and interpersonal functioning. This project consisted of the construction and testing of a new instrument to assess intellectual development. Kitchener (1977) and King (1977) formulated an instrument to assess "Reflective Judgment", a construct parallel to Perry's Forms of Intellectual and Ethical Development but differing in that the stages of Commitment were replaced by upper stages of Reflective Judgment of Probabilistic Thinking. The instrument and its rating proved to be highly reliable. They drew matched samples from high school juniors, college juniors, and second year graduate students.

The results showed clear evidence that high school juniors rarely function beyond the dualistic level. This is especially important to note because the students in the sample were selected because of their high scores (three fourths of the sample above the 87th percentile) on a traditional test of academic ability or achievement (Minnesota Scholastic Aptitude Test). The matched sample of college juniors were almost evenly spread between Dualism and Relativism (60 percent and 40 percent respec-

tively). No college juniors responded in ways judged as Probabilistic. By contrast, the graduate students responses fell in the positions of Probabilism and higher forms of Relativism. None were functioning as Dualists. The importance of this study is that it lends support to two basic assumptions of our work. The first is that there is a progressive development in forms of intellectual development; the second is that, contrary to popular belief, few college students learn to function at the higher forms of intellectual development that college faculty expect. This discrepancy between the expectations of faculty and the development of students became the basis for the second project.

This discrepancy often leads to a mismatch of teaching approaches and student styles. Thus, our second task has been to find ways to use this mismatch constructively in instruction. A basic assumption of our work is that a student's view of the nature of knowledge and the role of the professor will lead that student to interpret the content and procedures of instruction consistent with that view. Perry (1970) describes it this way:

"Let us suppose that a lecturer announces that today he will consider three theories explanatory of - (whatever his topic may be). Student A has always taken it for granted that knowledge consists of correct answers, that there is one right answer per problem, and that teachers explain these answers for students to learn. He therefore listens for the lecturer to state which theory he is to learn.

"Student B makes the same general assumptions but with an elaboration to the effect that teachers sometimes present problems and procedures, rather than answers, 'so that we can learn to find the right answer on our own.' He therefore perceives the lecture as a kind of guessing game in which he is to 'figure out' which theory is correct, a game that is fair enough if the lecturer does not carry it so far as to hid things too obscurely.

"Student C assumes that an answer can be called 'right' only in the light of its context, and the contexts or 'frames of reference' differ. He assumes that several interpretations of a poem, explanations of a historical development, or even theories of a class of events in physics may be legitimate 'depending on how you look at it.' Though he feels a little uneasy in such a kaleidoscopic world, he nonetheless supposes that the lecturer may be about to present three legitimate theories which can be examined for their internal coherence, their scope, their fit with various data, their predictive power, etc.

"Whatever the lecturer then proceeds to do (in terms of his own assumptions and intent) these three students will make meaning of the experience in different ways which will involve different assessments of their own choices and responsibilities.

Bankruptcy of Traditional Model

Some of our early attempts to construct differential instructional approaches that would facilitate the learning dualists and relativist were encouraging though not fully satisfying (Knefelkamp, 1974; Widdick, 1975; Stephenson and Hunt, 1975). The evidence that we could assist students to develop toward higher levels of intellectual functioning was quite convincing. There was less evidence, however, the students who were in different instructional modes learned more or less efficiently. Because the logic of the Attribute-Treatment-Interaction model (Sperry, 1972) was so compelling, we continued to

pursue some way of using our growing knowledge of student characteristics to aid the faculty in the College of Agriculture in improving instruction. This was the second of the two related projects, but it required some major reconstruction of our view of ATI.

Widick's (1975) review of the ATI literature supports the need for such a reconstruction.

"Despite the logic of the ATI concept, the research has not opened the doors to instructional improvement. Based on an extensive review of the Attribute-Teaching-Interaction research, Cronbach and Snow observed that few studies have obtained significant interaction effects. Moreover, they noted that even the statistically significant results have not been educationally significant; the field has produced no core understanding of the role of individual differences in learning . . . Bracht analyzed ninety ATI studies and noted that few of the significant interactions reported held up under rigorous scrutiny. He concurred with the Cronbach-Snow conclusion expressing skepticism about the utility of the ATI framework."

While such a conclusion was disheartening, there was continued interest in the ATI model because of the "common knowledge" that student differences affect both the amount and the rate of learning. Researchers had attempted to attack the problem by selection of different characteristics, by more rigorous experimental designs, but without significant results. Widick (1975) identifies what we believe to be the critical problem in the research to date.

"Clearly, models of the student, subject matter, learning processes and instruction exist; however, overlap between them rarely occurs. The paradigms used for viewing the learner, learning, and instruction are for the most part noncomparable; they include different core variables, different observational foci, and levels of analysis."

This lack of overlap of research models and results makes it nearly impossible to construct a design which would properly relate the variables of interest. The general findings regarding instructional modes are rarely applicable given specific student characteristics and vice versa. The same may be said with regard to the goals of instruction or the characteristics of the instructor. That is, while a lecture, in general, may accomplish certain things better than a discussion, the same might not be true of lectures given by particular instructors or lectures to students of a different intellectual level. Widick (1975) goes on to note,

"No interactive model exists which prescribes or at least provides a set of plausible hypotheses about the functional relationships which connect learner, knowledge acquisition processes, instructional procedures and maybe even subject matter. The task facing those who cling to the ATI concept is the development of interactive models which can generate convergent research . . ."

Our effort in the second of the two projects mentioned above has been to develop such an interactive model of instructional variables. We have discovered that the interaction between the critical instructional variables is so idiosyncratic that the process of instructional development must be approached from a holistic and individualistic perspective rather than applying "general laws" from the body of knowledge existing in

each of the several disciplines related to instruction (Jenkins, 1977; Hunt, 1978).

David Hunt's earlier work was concerned with a more traditional ATI model (Hunt, 1966; Hunt, 1970). His formulation of a model of intellectual development (Conceptual Level) in some ways paralleled Perry's work and that of other cognitive developmentalists. The object of his work in the public schools was to find the relation between students' Conceptual Level and teaching approaches that would lead to optimal learning and development. These objectives with public school teachers were the same as those we wished to pursue with college faculty. After nearly fifteen years of pursuing those objectives Hunt (1975a, 1975b) has shifted to a new paradigm. There are two important major constructs in the paradigm. The first is the more traditional ATI model which he contrues in the Lewinian tradition, Behavior is the function of the Person and Environment, $B=f(P,E)$. In this case B refers to the learning outcomes; P refers to the student characteristics; and E to the learning environment created by the teacher. Thus, in the more traditional model one should be able to specify the desired outcomes, make relevant assessments of student characteristics and adjust learning modalities accordingly. The problem with the old model is that it is static and based upon the assumption that general laws of behavior can be applied to specific individual persons. The ATI literature referred to above is ample demonstration of the sterility of this model by itself.

The second, more critical, element in Hunt's paradigm is the recognition that **teachers and students are persons too!** (Hunt, 1975a; Hunt, 1978). What is essential to the model is the recognition that neither teachers, students, nor the consultant are static unchanging objects, but rather their essence is their **thinking, interacting, and changing** character. Not only are they interacting with each other and the learning situation, but they are interacting as total persons in ways that do not allow abstraction from their holistic, systemic nature. Thus, generalizations about attribute-treatment-interactions are not possible — only specific instances of those interactions can be described. At first acquaintance, this unwillingness to reduce persons to meaningful abstractions, may seem to so complicate the process of helping faculty improve instruction as to leave it unmanageable. Rather, what is called for is a new way to consider the problem of helping professors adapt their instruction to the learning characteristics of the students.

Tiberius (1977) who, independently from us, has been working on the same problem presents it this way,

"A commonly held conception of ID (Instructional Development), which I will refer to as the horticultural model, is based on several assumptions, all of which are more appropriate to the relationships involved in the raising of plants than to those involved in the education of persons. In other words, the horticultural model is seriously inadequate in handling interactions between persons . . . The basic assumptions of this model are being challenged by an almost completely contradictory set of assumptions, which form the basis of a new model of ID, one which is appropriate to the education of persons. The alternative model I

will refer to as the **reciprocal-interactive model.**"

The essence of the reciprocal-interactive model is the recognition of the perceiving-thinking-responding nature of persons rather than thinking of them as "plants" or other objects which are acted upon. That is, a given act of instruction by a professor may not be received by the student in the same way as it was intended by the professor (see the Perry example cited above) and those differences in reception must alter the professor's response if it is to be effective. Thus, a professor, if he wishes a student to "get" a particular message, must be cognizant of the ways in which a student thinks about and thus interprets the matter to be learned. The student's way of perceiving the knowledge to be learned will alter the material. An alert faculty member will "read" those differences and adapt to them.

We believe that the reciprocal-interactive component of Hunt's model is the key to dealing with those differences. Understanding and helping the professor requires understanding the way he **thinks** about his students, his goals, and the approaches he uses to accomplish those goals with any particular subset of students. **But, we must also understand how the student affects the professor and this requires an understanding of how the student thinks about these same things.**

How can such a complex task be managed? Our approach has been through an adaptation of the basic principles of psychological consultation (Parker, 1975; Schein, 1969).

Coordinate Status Consultation

Why is consultation the most appropriate method to work with faculty? Professors are experts in their discipline. They are chosen because of their research capabilities and their knowledge of the subject matter of the discipline. Typically they have had little formal training in teaching or knowledge of the students they are to teach. They rely most heavily on what they have experienced as students or what they have observed other teachers do. As consultants, by contrast, we have had training in teaching, consulting, and in the psycho-social development of students. This division of expertise, the professor with his discipline, us with our knowledge of student development and behavior change has allowed us to work in a coordinate status with the faculty so there is no hierarchical relationship, rather there is one of shared knowledge. To be effective we have had to learn enough about their subject matter to ask relevant questions and suggest reasonable teaching alternatives to them.

Using consultation to understand persons-in-interaction. An important goal of our work with faculty has been to help them become more aware of how they think about their goals of teaching, the students they teach, the methods they use to accomplish those goals and the interaction of those three variables. We agree with Hunt (1978) that the constructs that the faculty have of each of these variables is a key contributor to what they do in the classroom. We also believe that the key to our helping faculty change what they do is to assist them

to find alternative ways to think about each of the variables and their interrelationships when they experience less than optimal teaching.

While we assume that their behavior in the classroom is related to how they construe those elements, we are also persuaded by Argyris' work (Argyris, 1976) which demonstrates the lack of one to one correspondence between **espoused theories** and **theories-in-use**. Espoused theories are defined as what the professor tells you about the relation between each of those variables. **Theories-in-use**, by contrast, are what observers might infer that the professor thinks is the relation between those variables by observing his teachings. That is, while a teacher may have a micro-theory about students, teaching goals, and teaching method and their interrelations, **what he does in the classroom might be quite different from what he thinks he does**. For example, we have frequently been told by professors that their goals are to have the students become independent problem solvers, that the students are not now able to do that, and that the way to help them become independent problem solvers is to give them assistance in solving problems. What we found in observing classes is that frequently professors will either (a) deliver subject matter content as isolated facts or (b) they will provide relatively complex problems with no help in the analysis of the problems or **the steps** in problem solutions. The inferred **theories-in-use** are that students will learn to become independent problem solvers by (a) memorizing seemingly unrelated facts, or (b) being left on their own much as a non-swimmer thrown into a deep pool of water. The result in either case is that students do not learn how to become independent problem solvers.

Our consultation task was to organize our contact with the faculty so that we could assist them to (a) become more aware of their espoused theories, their theories-in-use, and the discrepancies between them; (b) assist the faculty to identify alternative ways to construe their task; (c) identify alternative and more effective teaching approaches and (d) thus increase the ability of the faculty to adapt to the varying learning needs and characteristics of their students. The faculty have been eager to have our observations and suggestions. While we anticipated that we could be helpful, we had to find a way of structuring our work to make it possible. Through careful planning and some trial and error we have developed a model which incorporates each of the three structures that Schein (1969) suggests as ways to accomplish the goals of consulting. We described the model in a recent paper (Parker and Lawson, 1978).

The model includes three structures, the small group, a dyadic relationship, and observation of classroom activities. Since the objective of this consultation was to help faculty adapt their teaching approaches to the needs of the students in their classes, it seemed essential to observe the classrooms which faculty taught. The flexibility in teaching that we were seeking seemed to

come as the faculty shared their thinking and experiences with others in a group setting. Certain ideas, feelings, and experiences could be shared only in individual interviews with the faculty. Thus we found all three structures essential to our work.

Methods Used in Consultation

The Seminar.

The seminar provided a regular time for getting together and sharing "theories" of students, teaching approaches, and goals. The primary purpose was to assist the professors to increase their understanding of their **espoused theories**. This was accomplished by having the professors examine their own and each others' constructs and compare and contrast them. As the professors discussed their unique theories of students they realized that, for the most part, their constructs described only a limited number of students in their classes and that to respond to the needs of a greater number of students, they needed to expand their repertoire and develop alternative ways of viewing students. As one professor wrote, "Seeing how other people view students helped me expand my thinking. Comparing constructs showed me the benchmark I consider when evaluating students."

A secondary purpose was to help faculty discover the discrepancies between **espoused theories** and **theories-in-use**. Examples drawn from classroom observation were used to heighten the professors' awareness of how their ideas about students influenced the way they responded to particular students in their class. For example, one professor thought he was modeling problem solving for his students. What the consultant observed was that the professor was furnishing answers to problems rather than using data and reasoning to find the solutions. He had "jumped over" the process to the solution. Since this was a common experience, it became a frequent topic for seminar discussion.

Classroom Observation.

We found, as did Argyris and Schon (1974), that people are seldom aware of their **theories-in-use**; theories have to be inferred from what people do. That fact made classroom observation a very important part of our consultation. Data from our observations were crucial for identifying the professors' **theories-in-use**. The consultant prepared for entry into a classroom in the same way she had initiated the entire consultative effort; she spent time talking with each professor about what he wanted to learn about his teaching and students. Then in her observations, she focused her attention on how the students were responding and interacting and on the teaching approaches of the professor, with special attention to which students responded and how they dealt with certain kinds of questions posed by the professor. Relevant parts of the information she gained were fed back to the professor to help her discover his **theory-in-use**. One professor thought of herself as well organized because she had outlines, visual aids, and plans for how to present material to her classes. The consultant observed that

in class she often hesitated and then was distracted by questions into irrelevant issues. She was unaware of this until the consultant was able to show her how her actual behavior in class deviated from what she had planned. When appropriate, these data were discussed in the seminar. This feedback was a key item in the discovery and alteration of both the professors' espoused theories and her theories-in-use.

Dyadic Interactions.

Behavior change is often personally threatening. We attempted to deal with threat by creating an atmosphere of trust in the groups with the usual norms of confidentiality and respect among the group members. A chief means, however, was the individual interview with faculty members. Time was spent meeting with each professor after the classroom observations. During this time the consultant shared her feedback. This was vital, as observation without feedback can leave the professor feeling anxious and fearful that the consultant has been evaluating his performance. On the contrary, when feedback is shared, the professor tends to perceive the consultant's presence in the classroom as helpful and supportive of his attempts to improve his teaching. At other times, individual interviews were held to discuss an issue of particular concern to a professor. For example, one professor tended to ignore quiet and unresponsive students. In the seminar this problem had been discussed in general, but it was too threatening to deal with in particular. In one individual session the consultant asked the professor if he knew anyone like a particular student who was failing his class. At first the professor said no. The consultant recognized some similarities between the student and another faculty member in the seminar. She was able to draw the professor's attention to these similarities and others with the professor's children whom he recognized needed additional attention and support. With this recognition the professor was able to change his relationship with the student and the student finished the quarter successfully.

Three Vignettes

To illustrate the process of consultation we have chosen three vignettes which show how we use the seminar, classroom observation, and personal interviews to facilitate change. Sometimes the focus is on goals, sometimes on student characteristics and sometimes on teaching methods. Always, however, the concern is with the interrelation of these with the individuality of the professor.

Professor Evergreen: Using seminar discussion to restructure course goals.

Professor Evergreen's decision to participate in the Project was based on his desire to improve the teaching of his course, "Plant Materials: Trees, Shrubs, and House Plants," which is a two quarter sequence. He was currently teaching the course in tree identification. From the beginning, he described the purpose of the course as teaching students to identify (memorize the names, both

Latin and English) of about three hundred trees that the students could use then in designing landscapes.

In explaining the goals of the course, Professor Evergreen used the comparison of learning the components of a language: the vocabulary and the grammar. Each course has its own vocabulary; its terms and specific information. The grammar, in this case, refers to the ability to take the information and select the kinds of trees that will grow in a particular site and function according to the designer's expectations. He was convinced that his primary job was to teach vocabulary, that is, to teach tree identification. It seemed clear to the consultant, however, that Professor Evergreen expected more from students; he expected them to learn the grammar, that is how to "use" the information about trees in designing landscapes. It was the discrepancy between the way Professor Evergreen explicitly described his goals and the inferences the consultant made about the "real" goals of the course that gave focus to our work with him.

Experience has taught us that one reason professors seem dissatisfied with teaching is that students aren't really learning what the faculty expect them to learn. A main purpose of the seminar, therefore, was to help faculty members to identify and make explicit their teaching goals. This was accomplished by talking about the professors' goals and helping them reflect on how their courses were structured to accomplish those goals. As they recognized inconsistencies, time was spent helping them find alternative approaches so that the intended goals could be accomplished. Finding alternatives involved examining the ways that students were responding and the possible implications for learning represented in such behavior.

When Professor Evergreen began to see the diversity of goals that the other professors had he was stimulated to reexamine his own goals. One of the things that he found especially helpful about the seminar was "to see other people's definitions and examples of words. I thought everybody would define the same—namely they would use my definition and my example." He was not alone in this assumption. One of the professors also said that he had expected that all the professors in engineering would think the same way as he did about students.

As these discussions about course goals continued, Professor Evergreen began to question whether or not the primary objective of his course was merely to identify the plants. The comments of the students on the mid-quarter evaluations also contributed to changing his way of defining the course objectives. These students expressed a desire for more discussions about how the plants could be used in designing landscapes or environmental spaces; many asked that the identification be taught by keeping in mind the care and use of plants. And in one class session, which the consultant observed, three fourths of the students expressed a willingness to do a project that involved designing and using environmental space.

In discussing this feedback from the students, Professor Evergreen began to recognize that his primary

objective was actually to teach students those particular characteristics of trees essential for both identifying them and using them to design environments. He also began to realize that teaching toward these goals required a different focus, a restructuring of course content in order to help the students think about all the variables in the environmental setting that would affect choices of trees.

The real breakthrough occurred when Professor Evergreen invited one of his graduate students to teach a class on environmental design, which he considered to be "an ideal class." As this experience was discussed in the seminar, it was evident to Professor Evergreen that the graduate student had been able to integrate both the vocabulary and grammar of the course. From this observation, Professor Evergreen realized just how he might restructure his course and recognized that the graduate student had provided him with a model of how to teach plant materials in the context of designing environmental settings.

Ms. Taylor: Using interviews and a working relationship to improve teaching style.

Ms. Taylor has been teaching in the College of Home Economics for several years. She was hired to develop a course in Fabric Design and Texture: Analysis. She taught this course during spring quarter, and the reaction of the students was unfavorable. They complained that the tests were unfair, argued about the number of points they received, and were upset about their grades. Several expressed their dissatisfaction to the department Chairperson, complaining that Ms. Taylor's classes were unorganized, and students didn't know what they were supposed to learn. Moreover, Ms. Taylor herself had confrontations with several students. By the end of the quarter the situation had come to the attention of the Dean, and he called Ms. Taylor in to discuss her problem with teaching. At this time she expressed her interest in teaching and her desire to improve.

During the following fall quarter, Ms. Taylor was again teaching the Fabric Design class and was experiencing some of the same difficulties. At this time, the Director of Instructional Development, Dr. Brown, was observing her class weekly and meeting with Ms. Taylor. However, he was frustrated in his attempts to help her, and asked for our help, suggesting that Ms. Taylor might profit from our approach to improving instruction.

The consultant agreed to meet with her and to observe a class to determine whether or how they might work together. In that first meeting it became apparent that Ms. Taylor had lost confidence in herself as a teacher (in spite of previous success teaching courses that were focused on specific skills). From the observation, it seemed that Ms. Taylor was afraid of the students and antagonistic toward them. Although she seemed well prepared (she had slides, samples of fabric, and handouts), when discussing a topic she often stopped in the middle of a sentence and brought in more information that was irrelevant to the topic. The students reacted to her behavior by exchanging glances with each other, and the con-

sultant inferred that she had lost the respect of the students.

Given these problems, the consultant's goal was to increase Ms. Taylor's sense of self confidence and to improve her style of presentation. This involved meeting with her weekly to provide support and encouragement and to assist with the organization of the material to be presented. The payoffs of this personal contact were almost immediate as evidenced by the way that Ms. Taylor felt about herself as she volunteered, "I've become more confident in myself." As she became more confident, she asked the consultant for feedback about her classroom behavior. The consultant was able to demonstrate how her posture conveyed a feeling of a lack of self confidence. Ms. Taylor "saw" immediately what she needed to change and also grasped what effect this behavior had on the students. Assisting with the presentation of material involved helping Ms. Taylor to clearly define her goals and helping her design classroom activities that would stimulate the interest of the students and get them actively involved in learning.

The effects of this kind of help were evident in how Ms. Taylor began to think about and prepare for her teaching. "I thought a great deal about what I want my students to be able to do on the completion of a given course and the best methods I can use to help students learn to do that." The effects were also seen in how the students evaluated Ms. Taylor's performance at mid-quarter and end of the quarter. They observed that her teaching style had changed.

The payoffs have also been long term. Ms. Taylor is currently teaching the Fabric Design course, and one of the new professors in the department is sitting in to learn how to teach. He commented, "This is one of best classes I've seen; all textile classes should be taught in this way. The students are relaxed and seem to enjoy learning."

Professor John Deere: Changing teaching style by modeling in the classroom.

Professor John Deere teaches a course in Mechanism: Farm Machinery. His primary objective is to prepare students to function as agricultural engineers. The initial interview between Professor Deere and the consultant provided some insight into his "theories" of teaching. He expressed concern about his interacting with both the students and the professor, and from time to time assuming roles of a student or a professor. The consultant attempted to model for the professor how he might interact with the students by adopting the role of teacher. She asked the students questions designed to help them think through the steps involved in the problem solving process and assisted them in diagnosing and assessing the cause of their difficulties. As a result of these interactions the students began to come to her for help although she knew nothing about the subject matter. Her interactions with the students did not go unnoticed by Professor Deere. He commented, "You ask different kinds of questions than I do." At other times, the

consultant modeled the role of a student by interacting. She hoped to demonstrate to the students how they might interact with Professor Deere in order to get assistance that they needed to solve the problems. She herself attempted to solve some of the problems, offered suggestions of possible ways of solving problems, asked questions when she did not understand what Professor Deere was explaining, etc. The students themselves began to approach Professor Deere for help with the problems. In feedback sessions, the consultant suggested that Professor Deere try new ways of interacting with the students, and through these discussions began to see that he could help the students learn the process of problem solving without having to tell them the answer.

By the end of the quarter, Professor Deere began to take a more active "teaching" role. Rather than having the students work independently on the problems in the lab, he was assisting them by using the blackboard to explain the equations needed to solve the problems. Moreover, when the students had difficulty understanding the abstract diagrams of mechanisms, he would use the actual machine to demonstrate how a particular mechanism functioned. He began to see the relationship between his teaching style and the students' learning. As he wrote, "I had the objective of improving my facilitation of student learning. I definitely learned that things I do have influence on how the students react and learn. I now know a bit about the potential to be gained if I would know and adjust instructional procedures."

The essence of these three examples and of the work with the other faculty is that assistance with improvement of their instruction required assessment of the unique interaction of their personal style with their goals, course content, and the characteristics of their students. Consultation was focused on that interaction as a unit rather on any subset of the interaction. We believe that what success we and they have experienced is due in large part to our willingness to be concerned with complexity rather than to attempt to reduce teaching to one of the variables at a time.

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Discussion of Parker

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In the hierarchy of intellectual and ethical development, Parker and Lawson elected Perry's concept of "commitment" as the designation of the highest (and thus most appropriate) form. However, I shall remain in the realm of "reflective judgment" (in Kitchener/King's nomenclature) when discussing methods of effective teaching because I prefer the sphere of "positivism" and shy away from "probabilistic thinking." To my rather simple mind even "probabilistic" is too close to the normative.

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