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ABSTRACT

This document contains papers and transcripts from a university faculty colloquium which shared views about teaching methods and information on successful approaches. Following a copy of the colloquium announcement and a brief introduction, the main section presents transcripts of the presentations. The first discusses the structure and role of reference services in libraries and the uses of the reference interview. The second talk considers the Socratic teaching method of questions and questioning and includes an analysis of a taxonomy of cognitive development. The third presentation looks at learning contracts and covers the best situations for using them, and how to write the contracts. The fourth presentation addresses the use of projects, particularly their use in student centered learning. This discussion details examples of individual projects, the effect on student motivation, and steps to assist in the development of the project. Appendixes contain a planning memo and copies of handouts and overheads used during the colloquium. Also included in the appendixes are a sample of the evaluation survey and results of that survey. (JB)

A Colloquium Concerning Instructional Methodologies

Sponsored
by
The University of Central Texas

Organized and Written by

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April 16, 1992

University of Central Texas Conference Center

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THE UNIVERSITY OF CENTRAL TEXAS
Presents

A COLLOQUIUM CONCERNING INSTRUCTIONAL METHODOLOGIES

2:30 P.M., April 16, 1992
Conference Room

Presenters:

Ms. Melinda Guthrie
University of Central Texas Librarian

Mr. Roy Bonnett
Chair, Division of Technological Studies

Mr. Steve Vitucci
Instructor, Division of Management and Business

Dr. Terry Dixon
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For Affiliate and Full-time Faculty

Introduction

The following documents and transcripts are the results of a University of Central Texas Colloquium Concerning Instructional Methodologies held April 16, 1992, at the University of Central Texas Conference Center. The purposes of the colloquium were:

1. To generate discussion concerning a variety instructional methods appropriate for the University's student body and curriculum.

2. To provide a forum for sharing instructional methods which University faculty have found to be successful.

3. To encourage faculty to think critically about the selection and design of instructional methodology.

4. To provide a forum in which affiliate and full-time faculty may participate to improve instructional thought and awareness of the variety of instructional methodologies.

All documents used to plan and implement the colloquium are provided to encourage other universities to follow suit and make materials from their colloquium available to be shared. The results of "A Study of University of Central Texas Student Opinions Concerning Academic and Service Program" may be found as ERIC document number ED 319306. A careful review of the recommendations resulting from the study will indicate the need which the Colloquium Concerning Instructional Methodologies was designed to address.

Results of an evaluation survey are also included in this document. Using the results of the survey, future colloquia will be based upon suggestions offered by participants through the survey instrument.

PRESENTATION INTRODUCTIONS

by

Terry P. Dixon, Ed. D.
Vice President For Academic Affairs

COLLOQUIUM

April 16, 1992

Dr. Dixon - Welcome to the Colloquium Concerning Instructional Methodologies. I think that after talking with some of the people doing the presentations, you're going to be very pleased with today's program and activities. We're going to have an opportunity to share some thoughts you may have concerning instructional methodologies. The procedure we're going to follow is on the Agenda and I've distributed a hand-out. We'll have Ms. Guthrie go first and continue in the order as stated.

We're recording the colloquium as we did last year. Last year's was published in ERIC and we'll try to do the same thing this year so that other people can share in what happens today. I'll also be asking if you want a continuous type of colloquium going on in terms of methods. The survey in the last colloquium indicated this was something you felt would be useful in terms of sharing ideas. So we'll be asking different groups as we go to the different colloquiums so you might share other methods of teaching with the rest of us.

We all have a large library of teaching methods and that's why I always look at teaching, methodologies. It's like a library, the larger the library, the better the chance is when you need something specific you'll go into the library and find it. I think instructional methodologies are the same way. The more methods that you know about, even though you don't use them, when you come across a part of a lesson or something you're trying to teach, and

you don't know how to communicate it well, you can go to that list of ideas you have in your mind and pick a method of teaching. You can find one that may be more appropriate than if you have a limited number of methods available. So, today's colloquium is to present three of those methods so we might have an opportunity to increase the number of methods that you have in your library of methods of teaching. We will begin the program with Ms. Guthrie.

THE REFERENCE INTERVIEW

by

Melinda Guthrie
University of Central Texas Librarian

Ms. Guthrie - When I was told I had volunteered for this program, I thought, I did? What instructional methods can I talk to instructors about? I decided to use what is pertinent to the library, which is the instruction we use every day, every minute: THE REFERENCE INTERVIEW.

Reference as a total service only came about after the Civil War. It is primarily an American development. Other countries' libraries do not use this as much, or even at all. It was first written about in 1876 by Samuel Green, a Massachusetts public librarian. He had several "radical" ideas, and the first (bear with the archaic language) as he titles his paper when it's published, is "Personal Relations Between Librarians and Readers." The reason he was talking about personal relations is that previously libraries and librarians only acquired, preserved, and organized materials, and perhaps let others use them. They certainly didn't explain how to use their systems or the materials. Instead of this laissez faire method, with just a little courtesy for the true scholar, the Americans started saying "we need to do more with what we have, to connect our people to knowledge." So they either gave direct answers, which is another part of reference service, or they started giving instruction on how to use particular tools. This was also the very beginning of when indexes and abstracts were being published, so that now you had tools that got you the information, rather than finding answers by just happening to know the entire field that you were interested in. They also didn't have card catalogs at that time. (By the way, we are doing away with card catalogs now.) The card catalog was a development of 25 years later. So the purpose of reference service and the reference interview is to connect the person who has a question to the

information he needs: that is, to connect that person to the information that satisfies his question.

Now, why do people need help? One thing is that they don't do research frequently. Another thing is that the system, the resources, are complicated to use. The third, is that the search requires specialized knowledge, whether it's the librarian's training in bibliographic resources and systems--or, it's because they are the insider who knows how their particular library works. The reference librarian must develop what Sam Green called Mental Classification. Reference service, and here we're talking of a part of the interview that is negotiable, is one-on-one, like all reference service. And like other reference services, it has certain advantages: the individual attention is comfortable for the librarian and the user. Usually, the user doesn't have to shout their question out in a classroom. They just come up and whisper to the librarian.

The reference interview does have disadvantages in that it is time consuming. It's on demand, which means you have to have sufficient staff, and you have to have high quality staff able to handle the diversity. The method doesn't teach broad concepts. There can be a problem reaching sufficient users without sufficient staff. Although the library is a communication channel, for most people, it is a frustrating and complex channel. So you have intermediaries to do the reference interview and improve its effectiveness. With some restrictions, they'll answer or attempt to answer almost all questions that are brought forth. I mentioned a direct connection from Sam Green concerning the reference interview versus other instruction. (I like the 125-year-old language.) You might have "an unlearned student [who] wished to know something about" (whatever)...."You pick out for

him some simple handbook', etc. However, there are obvious limits to this method for librarians. We don't give medical advice, we don't give legal advice, and he mentions one here that I had not thought about...we probably don't do this either. We don't "instruct applicants in regard to the practical manipulations of the workshop or laboratory." So those are some of the restrictions.

So far, we have talked about the reference interview, and the total reference service as the whole library's communication channel. We use mainly two methods in this communication, verbal and non-verbal. I'll talk about that later. We're now going to talk about the negotiation process, especially techniques to reach a resolution. From the 1870s until some time in the 1960s, nobody really looked at reference services, particularly the reference interview as, I guess, a field of direct, academic study for research and evaluation. Starting about then with Robert S. Taylor, who wrote an article called "Question-Negotiation and Information Seeking in Libraries" (College & Research Libraries, May 1968, p. 178-194), he started setting up models of how these negotiations flow; how they operate, exactly what happens. The negotiation process is adaptive, it's a dynamic interchange and one-on-one. It's directed by the details that the reference librarian uncovers. It's structured so that you reach a conclusion, and yet, it is totally unprogrammable. For example, our faculty don't do this, but some other faculties do: At 5 p.m., here come 20 students from a class who have been sent to the library to locate whatever, right when the day staff is changing for the evening staff. They want something on demand, right now to do their research. As I said totally unprogrammable and unplanned.

Some of the factors that we look at in a negotiation is that it

uses a series of steps that filter the information exchange. First, is to give it structure, organizing it to reach a particular outcome. It should have conerence, that is, you want all parts of the interview to relate to one another. You want these relations to be clear to the client, not just to the librarian. Because you want him to agree and cooperate to go along with you. For example, here are some of the statements that might occur as you're doing an early outline of what's happening: "Tell me how you've planned and plan to use [the required topic]." Then, "what do you know about the topic?" So you go a little further and you might have a transitional stage, statement or question. "From what you tell me, I think I understand that whatever it is you are looking for is...." Then you might want to summarize. "Now you want criticism about (whatever it is)." You identify, you think it's what he's looking for. All of this because most people do not come with a question in a format, or even say exactly what they think they want, because they don't know what they want. During all of this, you have developed a relationship through negotiations, and the discussion just means that each will agree to stay with the entire interview process. To do that you use open and closed questions. You have a sequence of general to specific questions, and you have methods of feedback between the librarian and the user. You have to determine how much time you both can give to the interview. This length is also set by the fact that there may be other demands from outside this interview during this same time. When libraries are open, most interviews of this sort are not by appointment, they are just, "I'm first, here is number two, here is number three." How much time do you give this person? You may seat them down over here; you come back to them (maybe you get back to them); if you do, you check on their

progress. It's also set by the users' needs. An awful lot of people come in saying, "I need this tomorrow, and I have 10 minutes." So you have objectives you are meeting, you're identifying the user's need, you're identifying what the acceptable answer would be that matches their need and how it can be met in this library's environment.

So you have a situation that can't be too rigid. If you go too fast, you might get an exchange like this. "Can you give me the current Time?" "It's a quarter to three." "No, can I have this week's Time magazine?" Don't go too fast, you'll risk giving misinformation. When you have related the objectives you discovered, your discussion will uncover the true problem, not the question as asked. You will find the client's own limitations and that's something you have to be careful with....that you're not determining motivation and indirectly, their reasoning ability. You have the external constraints such as a deadline and the availability of materials. So the reference interview's form is set by the objectives that reach relevant content efficiently, while you keep the client involved and interested; and still respect that person's own knowledge. When you finally reach a resolution, you get them to relate their inquiry to the system, the library system, which has it's own valid organization which they don't know. The librarians know "the rules of the game." They'll seek to explain as much of it as possible to assist each individual and answer their learning needs.

The reference librarians want it all to be accurate, but we're not superhuman. To make up for that, we do a lot of collaboration. It's best to have librarians on staff who collaborate with one another in developing the reference collection, and the methods to use. And when we don't know something, we ask each other. We also

collaborate with outside sources. We try to match answers that will resolve the students' inquiries. The essential problem is to adjust the questions to the way the system presents the answers. And so the information seeker begins to ask for what he really needs.

Then, we can look at this poster of the "Song of the Library Staff, Stanza II, The Reference Librarian", and enjoy the joke:

" Ah, they know she knows she knows things, and her look is education;
And to look at her is culture, and to know her is salvation."

But our true purpose is for you to know that you have a " right to know" and that "librarians make it happen." Thank you.

THE SOCRATIC TEACHING METHOD

by

Roy Bonnett
Chair, Division of Technology

Socratic Teaching Method

Questions

and

Questioning

Mr. Bonnett -

I originally planned to talk about a method of evaluating teaching methods; however, I discovered I could not complete the talk in twenty minutes. Therefore, a few weeks ago, I chose something I have been interested in pursuing for some time -- the Socratic teaching method, questions and questioning.

The lecture teaching method remains the most economical means of disseminating the greatest amount of information in the least amount of time. You can express an abundance of information using the lecture method. Unfortunately, an expression of information does not decree learning. Research confirms student retention is extremely low. This remains the lecture method's major disadvantage. Accordingly, you have a major advantage and a major disadvantage.

Logistically, student questions are the most expensive means of assuring students learn what you want them to learn. Logistically, it is a problem constrained by time.

In the book Meno, Plato described a dialogue between Socrates and Meno's young slave boy named Meno. According to the story, Meno's slave boy was uneducated. Socrates engaged in an extended question and answer dialogue regarding geometry of squares with Meno. To illustrate Plato's concept, questions acknowledge the recall of something hidden within oneself in a pre-existing form. The key to the dialogue is Socrates' use of leading questions and his technique of using the boy's answers to develop inferences and deductions. This led to formulating leading questions into hypotheses. Throughout the middle ages, this ancient model of

teaching, the Socratic dialogue, was used comprehensively as the principle mode of teaching at universities. Haplessly, this method of teaching is minimally employed today. Presumably there is not enough time to teach what has to be taught in a given semester.

Please allow me to digress for a moment. What is learning? I think I can possibly define what knowledge is; but what is learning? When is it that we learn something? Is it not the identification of a problem of some type? The problem is identified and something has to be done to solve the problem. You hypothesize a solution. You test your solution, and either the solution works or it does not work. If it works, you know the solution to the problem. If the solution does not work, what do you do? You start over at the beginning and form a new hypothesis based on your newest level of knowledge and learning.

This is one definition of learning I feel comfortable addressing. Other definitions are more complex.

This overhead projection depicts Bloom's taxonomy or classifications of cognitive development which can serve to develop educational objectives. Today, I will only address the cognitive domain; time prohibits addressing the affective domain.

The most fundamental level, ***knowledge***, involves the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting (Hunkins, 1976, p. 19). Three subclassifications are associated with the knowledge level:

1) knowledge of specifics is the recall of specific and isolable bits of information, knowledge of terminology, and knowledge of specifics (Hunkins, 1976, p. 20).

2) Knowledge of means of dealing with specifics -- This subdivision has the following categories:

   knowledge of conventions, how things are done,
   knowledge of trends and sequences,
   knowledges of classifications and categories,
   knowledge of criteria, and
   knowledge of methodology (Hunkins, 1976, p. 20).

3) Knowledge of universals and abstraction in a field: knowledge of principles and generalizations and knowledge of theories and structures (Hunkins 1976, p. 20).

According to Bloom's classification scheme, the first type of question is the knowledge question. The knowledge question just explores if students understand specific terms, not if they can process information (Hunkins, 1976, p. 22).

For instance, what state produces the most maple syrup? Either you know or you do not know. Nevertheless, Vermont produces the most maple syrup. Other examples: When is Veterans' Day? Who wrote the Declaration of Independence?

In plane geometry, the shortest distance between two points is

A. straight line.
B. curved line.
C. elipitical line.
D. dependent upon line conditions.

Simple recall. According to the overhead, the listed key words can be used as indicators of questions at the knowledge level: define, describe, distinguish, how, identify, indicate, list, name, recall, reorganize, show, state, tell, what, when, which, who, write. When I use this laundry list, what am I identifying? I am identifying lesson objectives, at a very simple level. Generally, the lesson objective will state to the effect: List something without error 70 percent of the time or whatever standard you wish to employ. You have a simple lesson objective based on the first cognitive level, knowledge.

Bloom's second cognitive level is ***comprehension***. This cognitive level refers to the type of understanding or apprehension which implies that the individual knows what is communicated and can make use of the material or idea communicated without necessarily relating it to other material or seeing its fullest implications (Hunkins, 1976, p. 20). There are three subcategories: (Hunkins, 1976, p. 20)

1) Translation: comprehension evidenced by the care and accuracy with which the communication is paraphrased or rendered from one language or communication to another,
2) interpretation: the explanation of summarization or communication, and
3) extrapolation: the extension of trends or tendencies beyond the given data to determine the implications, consequences, corollaries, effects, etc.

Questions at the translation level ask students to translate or paraphrase a communication from one form to another. Example, an individual says that he cheats a little on his taxes, but everyone does it. This person is

A. behaving as a mature adult.
B. experiencing an illusion.
C. acting in a childish manner.
D. rationalizing.

We are all past rationalization; we must deal with the facts.

The second level of comprehension is interpretation. A good example: What are the reasons why the United States developed a system of super highways?

Questions at the extrapolation level urge students to go beyond the recounting of the basic idea of material read when a

situation is encountered. The following key questioning words are used as indicators of questions for the comprehension level: compare, conclude, contrast, demonstrate, differentiate, distinguish, estimate, explain, extend, extrapolate, fill in, give an example of, hypothesize, illustrate, infer, inform, predict, rearrange, relate, rephrase, reorder, tell in your own words, what, which (Hunkins, 1976, p. 35). You may have noticed there is some duplication between this list and the list provided earlier at the first level of cognitive development, knowledge. The expectations of responses to a question impose cognitive level.

The third level, ***application*** uses abstractions in particular or concrete situations. The abstractions may be in the form of general ideas, rules of procedure, or generalized methods (Hunkins, 1976, p. 21). Mathematics and science, particularly computer science, thoroughly use application. If a student cannot apply specific principles in computer science, mathematics, or science then the student does not comprehend the theoretical foundations of the studied principles.

Application questions engage students in applying successfully some understanding or technique to a problem or situation. Example: I can paint my living room alone in three hours. How long will it take me if I and three friends paint it assuming each friend can work at the same speed as I (if we stay on the task)?

Interjected question by Mr. Myrah: "What about discuss? Would that not fit as a possible word in the application group?"

Mr. Bonnett - "It could. You generally discuss at the analysis and synthesis levels."

Mr. Vitucci - "It goes back to one important word here, if you are describing something - discussing it, very obviously, it is comprehension. If you are asked to discuss something as a list, then you are back to knowledge."

Mr. Bonnett - "Discussion depends on what level you intend. What type of question did you raise?"

This overhead lists the application key words: apply, build, check out, choose, consider, construct, demonstrate, develop, how would, indicate, plan, show your work, solve, tell us, and test (Hunkins, 1976, p. 37).

Analysis, the fourth level of Bloom's taxonomy of cognitive development, is the breakdown of communication into its constituent elements or parts (Hunkins, 1976, p. 21). There are three subtypes: (Hunkins, 1976, p. 21)

1. Analysis of elements: the identification of the elements included in a communication.
2. Analysis of relationships: includes the connections and interactions between elements and parts of a communication.
3. Analysis of organizational principles: the organization, systematic arrangement, and structure which can hold the communication together.

Questions at the first level of analysis, analysis of elements, require students to diagnose materials, situations, or requirements and to separate them into their component parts (Hunkins, 1976, p. 37). Example: History repeats itself. Is this a fact or a hypothesis? Analyze your materials. Analyze the research.

Questions regarding analysis of relationships, the second subcategory, direct learners' attention to relationships among various elements recognized in the first stage of analysis (Hunkins, 1976, p. 38) . Example: GRE scores

A. indicate the absolute ability of potential graduate students.
B. have little relationship to a graduate student's GPA.
C. have little relationship to a graduate student's ability to complete successfully a master's program.
D. provide only an indicator of a potential graduate student's ability to complete successfully graduate level studies.

Questions illustrating the final subcategory of analysis, analysis of organization principles, pose students to grasp a communication or situation as a whole (Hunkins, 1976, p. 40). How do the insights and their inherent interrelationships relate to the total situation? These are "what do you think?" questions with no unequivocally correct answer.

The analysis overhead provides the analysis questions: analyze, categorize, classify, compare, describe, discriminate, distinguish, explain, indicate the, recognize, relate, support your, what assumption, what do you (Hunkins, 1976, p. 41).

How you use these key words exhibits to the student and to yourself where you want your students functioning. There is some redundancy here in this listing with what we saw in lower cognitive levels and associated lists. Analysis builds on much of the former cognitive levels. With analysis you start drawing inferences.

Synthesis, the fifth and highest cognitive level, positions together elements and parts to form the whole (Hunkins, 1976, p. 21). Usually we cannot learn the whole about some theories until we independently study each of the component parts. Hopefully, to that end, we can aggregate the parts and see the total picture. There are three subcategories associated with synthesis: (Hunkins, 1976, p. 21)

1. Production of unique communication: the development of a communication in which the writer attempts to convey ideas, feelings, and experiences to others.
2. The production of a plan or proposed set of operations: The development of a plan or the proposal of a plan of operations.
3. The derivation of a set of abstract relations: The development of a set of abstract relations either to classify or explain particular data or phenomena or the deductions of propositions and relations from a set of basic propositions or symbolic representations.

The first level of synthesis, production of unique communication, solicits students to produce something representative of them. Example: Write a politically sound defense of the need to curb pollutants in the earth's atmosphere. The response to this question is highly challenging and exemplifies the cognitive level of synthesis at its best!

Questions for the second classification of synthesis, the production of a plan or proposed set of operations, request students to generate a solution satisfactory to the requirements

(Hunkins, 1976, pps. 42-43). Example: People are becoming more health conscious. Conceive a comprehensive plan to construct a total health facility within the provided budget.

The third subcategory of synthesis, derivation of a set of abstract relations, invites students to derive some type of statement to explain some data they can analyze (Hunkins, 1976, pps. 43-44). With the emphasis upon inductive and deductive discovery, this type of questioning is concerned witn the student's ability to formulate generalizations (Hunkins, 1976, p. 44). Example: Based on your observations in the newspapers and television reporting Desert Storm in the 1990 Iraq war, what three major hypotheses can you conceive explaining the United States' historical success?

This overhead illustrates the synthesis question key words: create, derive, develop, formulate a solution, how, make up, propose a plan, put together, suggest, think of a way, what conclusion, plan, synthesize, write (Hunkins, 1976, pps. 44-45). The use of these synthesis questions allows you to perfect construction of some of your more detailed and synthesis level course objectives.

The final and highest cognitive level is ***evaluation*** which makes judgments about the value of material and methods for given purposes (Hunkins, 1976, p. 21). There are two subtypes: (Hunkins, 1976, p. 22)

1. Judgments in terms of internal evidence evaluate the accuracy of a communication from such evidence as logical accuracy, consistency, and other internal criteria.
2. Judgments in terms of external criteria evaluate material concerning selected or remembered criteria.

Students who respond to judgments in terms of internal evidence are creating their own questions. Students deliver the task of judging, appraising, or valuing (Hunkins, 1976, p. 45). Example: Ms. Smith presented her case last evening for maintaining the valuation of the American dollar on world markets. She suggested the world's economy depends in part on the U.S. economy and the subsequent valuation of the dollar. This being the case, devaluating the dollar in the world markets in view of the United States' trade deficit and national debt is counterproductive. Analyze Ms. Smith's reasoning and show whether her reflections are sound. Ostensibly, this type of example necessitates active student involvement.

Students responding to judgments in terms of external criteria evaluate external criteria. Such questions require students to apply known criteria to judge situations, conclusions, or objectives that they have encountered or developed. This judgment directs students to consider if their conclusions and their findings are warranted and worth keeping (Hunkins, 1976, p. 46).

Example: Analyze the local school district's newest facility construction plan. Evaluate the positive and negative factors, make recommendations, and justify your recommendations.

This overhead characterizes evaluation questions: check, check the, choose, decide, defend, evaluate, indicate, judge, select, what is, what is most appropriate, and which would you consider (Hunkins, 1976, p. 47).

According to this next-to-last overhead, professorial provision of activities for involving students and student-to-student interaction has the following virtues: (Hunkins, 1976, p. 3)

1. Tends to produce a more sustained variety and enriched responses.
2. Stimulates volunteering by more students.
3. Contributes to more group cooperation.
4. Approaches a more realistic social situation.
5. Minimizes the tendency toward teacher dominated lectures.
6. Places a burden for active learning upon the student rather than overdependence upon the professor.
7. Increases the flow of ideas and avoids fragmenting discussion.

The tendency to produce more sustained variety and enriched responses is true if you furnish the student time to answer the question. Professors and teachers ask questions. Habitually, according to statistics from the relevant literature, they accord the student about two seconds to respond. Not many of us can think that fast! The literature further conveys if you give students three to five seconds, their response is three to seven times better. 300% to 700% better answers than if you just fire questions expecting immediate replies! If you merely stand in front of your class and hurl questions, you resort to recitation, a form of knowledge which is found at the lowest cognitive level. Providing adequate response time stimulates voluntary participation by more students.

Questions contribute to group cooperation which represents a more realistic social situation. A well-timed question minimizes the tendency toward teacher dominated lectures.

"I did not learn because he did not teach me." "She did not teach me." How often have you heard that? Questions place the burden of active learning upon students rather than over-dependence upon the professor. Increasing the flow of ideas avoids fragmenting discussions. I find you have to be careful though; you can start off on tangents. Sometimes, digressions are tolerable when you relate the discussion back to what you are attempting to teach.

In summary, and with this final overhead, no other event better portends learning than a question arising in the mind (Dillon, 1988, p. ix). You are not really ready to learn until you can form a question. When I train a new secretary to use wordprocessing, I show her the computer, I demonstrate how to enter the wordprocessor's editor, and I ask her to start typing. Within a few minutes she inevitably makes a mistake. Then the secretary asks, "How do I fix it?" Now, she has a "need" to learn some mechanics. I could have acquainted her ahead of time how to correct the many combinations of mistakes she could raise; but, is she going to remember those instructions? I do not think so. She has no "need" to retain the information. I could detail her a dozen different things; maybe she will remember one or two. When she formalizes a question, she waits for an answer. She is ready to learn.

"When students ask questions, learning follows in answer" (Dillon, 1988, p. 7). "Question and answer join to form knowledge and understanding" (Dillon, 1988, p. 7). "In the skillful use of the question more than anything else lies in the fine art of teaching. For in such use we have a guide to clear vivid ideas, the quick spur to imagination, the stimulus to thought, the incentive to action" (Hunkins, 1976, p. 1).

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Dr. Dixon - It's very appropriate the question be asked, "What is learned," and I have a demonstration that I have used to show or illustrate to people what learning is. The most difficult thing, and why in higher education if the construction is lost, it's because, like Mr. Bonnet has just said, If a person doesn't ask a question, they really don't care to hear the answer. When the professor asks a question and the professor gives the answer, no one really wants to hear it.

Here's what learning is. We go along in our life and we think this is my world, this can represent my picture of the way the world is. I always compare it to the traditional college student who has a fiancee' or girl friend and he goes off with a basketball team and he's writing her letter every day and she's writing him letters every day. He really thinks she loves him and the whole thing. Well he comes back on campus and he finds out that she has been sleeping in everyone of the men's rooms in the dorm. He thought the world was this way, but suddenly a new experience comes along and he can't deny it. This is the way he thought the world was but guess what, something happened that demonstrated to him that it was not that way so he can't deny it, he has to accept it.

What he has to do in psychological terms, I think we call it accommodate, he has to restructure his thought process. You know a lot of the changes here at the University have caused a lot of us to feel that way also. You can tell when people are in this process because when you are talking to them you know they hear you, but they don't really hear what you are saying. They have that glaze in their eye. The people we can usually tell it most

with are people we love and are very close to. So what happens is they can't deny this new experience has happened. So he has to change his world so his new world happens to fit this new experience he knows is true. That's learning.

This is an example of taking an abstract thought and putting it in concrete terms. Generally speaking, even adults think concretely. We teach mathematics and statistics sometimes. The problem that happens is that we start off with the abstract. You don't lead them from the abstract to the concrete. So that he mentioned learning was very appropriate.

Also, one of the comments he made about response time. When you ask a person a question, it takes longer if the person is older. Because you ask a question and they think, "Okay, if I give the wrong answer, what's the person sitting next to me thinking, what's the person in back of me thinking, or if I say this, it might insult the person." It takes them awhile to crank it over in their mind and say, "Okay, I am comfortable with it, I can ask it no matter what happens." Then they'll ask the question.

What happens at all levels is an instructor will ask a question and will typically not give the people time enough to resolve those issues. They already have an answer quickly, but they're not ready to give the answer to the open forum at which they are speaking. I thought that it was very appropriate that Mr. Bonnett would have stated that. And now we have Mr. Vitucci.

LEARNING CONTRACTS

by

Steve Vitucci
Assistant Professor of the Division
of Business and Management

Mr. Vitucci - When I was asked if I was interested in addressing this forum on the use of learning contracts. I became interested in using learning contracts because I had used them in my own doctoral program After using them as a student, I thought they could also be used by me with my students.

The use of learning contracts is not a new technology. Dr. Malcolm Knowles has written on this subject and has made extensive use of them with Adult learners. At the University of Central Texas most of our students can be classified as nontraditional learners and so it becomes very appropriate for us to consider the use of learning contracts. Our students are very experienced in the work place and are about 34 years of age. Our students bring a great deal of experience to the classroom and know those skills they want and need to gain for career and/or for personal reasons. Our student is well motivated and seeks to have the instructor to assist in the learning process. It is for these reasons that I believe learning contracts are most appropriate for use at the University of Central Texas.

The process of writing a learning contract can be very profitable or it can be a waste of time. In order for the learning contract to be useful, it is important for the instructor and the student to have a dialogue about the learning objectives, the methods to be used, and some method of assessing progress. The learning contract is a formal agreement between the student and the instructor. It allows the student to control and be responsible for the learning environment. It allows the student to tailor the course of study to their own particular learning needs. For

example, if I have a student who is interested in starting her own business and I am teaching Marketing Research, I can assist the student in learning about the customer base. Through a contracting process we can tailor the learning objectives to the students particular needs. The learning contracts require the student and the teacher to spend time coming to agreement on the contract. The dialogue established between the student and the instructor is the key to the learning contract being successful. When a student contracts for a grade, I always consider the first look at the document to be a working draft. I expect to sit down and write some notes and ask some questions with the student before the student and I agree to the learning contract. I usually provide the student written comments on the draft contract and ask that the student make an appointment to see me so that we can shape a final contract.

The use of a learning contract is suited especially for small classes, for independent studies, and for directed studies. Here at the university of Central Texas, they are more appropriate for use at the graduate level than at the undergraduate level. Our graduate students tend to be more mature and focused than some of our undergraduate students.

What about the mechanics of the learning contract. The how to of learning contracts is fairly easy and straight forward. Learning contracts have to be tied to outcomes or course objectives. As instructors we spell out our course objectives in the syllabus. The contract needs to address these objectives as well as any specific learning objectives the student might desire.

These additional objectives must be determined to be appropriate by the course instructor. The objectives should state what the specifics (exactly what the student hopes to learn). The resources to be used to accomplish the learning must also be spelled out. The contract must include target completion dates. The student must also address the evidence that demonstrates that learning took place. How does the student know the learning took place? How does the instructor know the learning has taken place? This must be spelled out and verification must take place. The conditions for a grade must also be spelled out. For some reason there is a mistaken impression that just because a student uses a learning contract and contracts for an "A," that the instructor is obligated to give an "A." This is just no so. The conditions for an "A" grade must be spelled out by the students or the instructor. Likewise, the conditions for other grades should also be specified. The student is responsible for showing that the conditions have been met for the contracted grade.

In the syllabus you have in front of you, you will notice that I have specified what needs to be done for each letter grade. If a student fails to meet the conditions for an "A," then he or she automatically is considered for those conditions spelled out for a "B." The conditions change for each letter grade. These conditions and the agreement are clear in the syllabus to both the students and the instructor so that the student can write a good learning contract. As you can see, the student can see the course objectives and can incorporate them into the learning contract. Does the student have to meet all of the objectives? Yes. The

student might have some additional objectives or might have some other way to demonstrate how the course objectives are going to be met. The student is free to negotiate with the instructor so that his or her specific learning needs can be met. In addition, the instructor can also set some standards that he or she feels need to be met with regard to course completion.

Mr. Myrah - Steve, I have one that I reserve the right to use freely, if they don't attend class when other people are making presentations, I just drop a grade or two. In other words, in the contract here, attendance is not one of them. I can be present when I'm giving a presentation but not when others present. This enables me to drop students' grades for this type of inappropriate behavior.

Mr. Vitucci - If you feel importantly about that, then one of the objectives might include something about attendance. This might also be one of the conditions you would spell out for a grade. I cover attendance in my syllabus and what my expectations are regarding absences.

Mr. Myrah - Does that have to be in the contract?

Mr. Vitucci - I don't think so because I think that doesn't have to be spelled out. If you feel it is important to you, then go ahead and put it into the contract.

TEACHING THROUGH PROJECTS

by

Terry P. Dixon, Ed. D.
Vice President For Academic Affairs

Dr. Dixon - The model that I'm going to speak concerning a method of learning is called teaching through projects. Over my 23 years of teaching, I've found that teaching projects, student centered learning, to be a highly effective and rewarding method of teaching. I found it to be applicable to all three domains of learning, for all subjects, and when appropriately designed, applicable to most situations. To give you results, here are some of the results of students that have been in the classes, that have been taught through projects. Here are some of the results of what happens.

I've had students who have won national poetry contests, Save the Animals, TV Guide, have written radio programs that were broadcast by professionals; have conducted research which afforded local cancer research to the tune of millions of dollars; developed expertise resulting in successful development of their own business. I had one student who came in and wanted to buy a computer so he could do his term papers, we sat down and wrote a business plan, he started a term paper program. He borrowed the money from the bank with a business plan and bought a computer and within six months, he bought his own xerox machine and had stopped his education, unfortunately, and started his own business. It's now in operation in St. Louis. It's one of the large printing companies there. Also, developed expertise gained employment.

I had a 12 year old student in a sixth grade class when I taught elementary school, who saw an ad in the paper that said the community college served all the citizens in the community. He called them and wanted to take a photography class. They wouldn't

let him in the photography class. So, we sat down and worked out a project so he could get in to the community college. He made the right phone calls and did the right thing with the project and he was admitted to the class. He took the class and made an "A" in it.

We had students publish articles in local, regional, and national publications and appropriate career choices were made based upon the projects that were taught in class. So the project method can be very effective. Teaching new projects can increase the following when you're teaching students:

1. Student motivation - By increasing motivation, it can serve as a course as organizer. For example, if you teach a course and use a project as a focus of the course, for instance, suppose you' talking about research, you're project could be a professional article. That organizes them, that tells them what they need to do during that semester. Your purpose then becomes to serve as the facilitator to help them learn the things they need to know to be able to write that article. So it can help in terms of motivation.

In terms of motivation, this is a critical one, it serves as the student course organizer, it can provide for active student participation. Students can be active in the learning. When people are active in the learning, fact of the matter is, they learn better and retain it longer. Physical learning, you might see them in the first grade. They take a first grade child they're trying to teach ABCs and they put an A on one of the children and say,"A come over here." A comes over here, B goes here and C goes there. They now remember where they're supposed to be

because they were physically active. That's true for the adult also. It can also provide active student participation. It can provide concrete results, products from student's efforts and that is great. That helps their self esteem.

If they say we're going to do this project, we're not going to say that you have to have it my way, here are some suggestions. The student does it, it's a challenge, they succeed and they feel good about it. So it can also provide concrete results which will improve self esteem. It also places responsibility for learning on each student. It's not "Gosh, I didn't give them what they needed to have for the test," now it's, "Hey, you didn't say to me that you needed to have this, or you didn't need me to help you with this particular project." So it places the responsibility for learning where it should be, with the student and positively enforces the student's efforts.

So these are the things motivation helps the students to do. It also encourages retention of knowledge. A student who learns by this method retains knowledge longer and generally at much more depth. Did you know scientific research indicates that a graduate student who takes a class retains 10 percent of what their taught. That says something if you are doing your planning. That says if you are doing your planning and you're trying to cover a whole bunch of material, you'd better pick out the material you think is most important and really hit it a lot because the 10 percent they learn may not be the 10 percent that's critical. That's the focus I use when I plan my classes and projects.

What's the most critical thing they need to learn from this

class? This is the 10 percent I am going to focus on. This is some other opportunities I'm going to provide. It also helps self-esteem. A student who successfully set out a task, if challenged by the task, places great pride in its accomplishments thereby raising self esteem. (I spend the first two class periods when I teach Research or Human Growth and Development convincing people to stay in class that you can do it). Certainly it's a lot of work, and no I am not going to ax some of the things off the list, but certainly you can make it. I am here to help you, if you fail, I fail. If we do it together, you'll make it.

It takes me the first two class periods to convince them to stay. Once they stay and they get into class, do the projects, they have a very good self-esteem. They feel they can accomplish more and they usually do accomplish more than what they would in a traditional class. An appreciation of the subject. We some times assume somebody is in a major, therefore, they appreciate the subject. The fact of the matter is they are probably taking the class because it is required. So we have to somehow motivate that student to want to learn what is taught in the class.

One thing you can do with projects is develop an appreciation of the subject. If students have to do what they are learning how to do, and they see how difficult it is, they are going to retain. Let me give you an example. I taught a college class in physical science and in this particular class we studied for the first three weeks, physical science equations, how they apply and the like. Then we took a trip on the Oregon Trail. What the students had to do was create art similar to work created by people on the Oregon

Trail. The purpose was to have them appreciate. We visited museums and saw some of the projects in the museums to appreciate what talent somebody must have had to create the art. Because here they are focusing every bit of energy they had trying to create this same thing. Students looked at that and compareed it to this outstanding artist and they said, "I did create this and I gave it everything, but look at this, look how they did this." Point being, they appreciated what that artist did because they tried their best and they could not approach what that artist had done. I've had students start businesses that way. Willingness to take risks.

Students are willing to take risks and you cannot learn if you won't take risks. I guarantee you will not learn if you will not take risks. Think about what you have learned and what you have not learned. Every time you've learned something, I guarantee you've taken a risk.

You can also provide career opportunities. I had a student who took a class that required students to make a quilt and each square had to relate to something with a topic in the class. This was a college class. We had open house and over 250 people visited. She then had requests to make quilts, so that's how she paid for her tuition. She started a very successful business making quilts for people. Again, that's just one example. There are other career opportunities from these types of project teaching.

How do you plan a teaching project? First of all, the student project comes from organizing the instruction. It's how you

organize the instruction. What I try to do is take particular topics that are in the subject, find out what the most important ten things are and select them. Here are seven steps to teaching a project lesson.

First you identify the objectives for the lesson in the course. I'll give you an example. Here is an objective perhaps you think is important to this class. To be able to apply the group dynamics theories described of chapter 1 one the text.

Step two, identify a project which incorporates that objective. Example: writing the journal article.

Three, inform students of expectations. Example: students will write a practical journal article submitted to a teenage girl of their choice communication how the use of dynamics techniques for conducting meetings. In Human Growth and Development last semester, I asked everyone what they did for a living. I thought, "There is more talent in here than I could possibly bring to the class." We need to get this changed around. So, I set up a project for them to create a journal article. The students had to pick a particular topics, in which they were interested, in their field of counseling. They had to write an article, either for a teenager or a person who is walking the street so they could read the article in Ladies Home Journal or some other magazine, and take this expertise that they have and all this technical knowledge and relate it to something practical that people walking on the street could use. We had five articles published out of that class. That's what I'm talking about when I say to take the objective and express it in some kind of project.

Step four: Identify the things students need to know to complete the project. For example, in this particular case, they need to know how to write a journal article. They need to know how to select a journal. They use what is in the journal and it doesn't really matter what it says for the most part. It really matters if you have it in their style. And if you take a look at the last three issues; outline their style; and you write your article in their style; you have a better chance of getting in whether your's is sound or somebody else's is more sound. That's one of the things they need to know. They need to know how to select a journal. Three - Group dynamic theories. How are they going to write an article about group dynamic theories if they don't know the theories. They can't just know it, they have to know how to explain it to someone. Four - how to write a letter of submission.

Five - an appreciation of publishing, six - self confidence, and seven - protocol for submitting articles. These are the things the students need to know to complete the project.

Five - Use the things the students need to know to complete the project as an organizer of course work. These projects become your lessons. What they need to know to know at that time becomes your lesson. When I teach with projects, I ask the students what they need to have done this week and what they need to have next week to get where they need to go. I do a calendar the first week of the semester. Then they can plan every objective that is on the syllabus and every sub-step. I ask them what they need to have first in order to be able to accomplish these things they are

trying to do. So I use these things to let the students know what they need to complete and the focus of the lesson.

Six - Establish milestones for completion of projects. Most people, when they teach by project, say, "Here's the beginning of the class, in the class you're going to do this," and the last thing the student sees about this project is when they get to the end of class to submit it. That is inappropriate teaching. You need to provide students feedback so you set milestones. Divide a project into pieces and say, "Here is a piece that needs to be submitted here." If they have a journal article, I require them to have two drafts. I will accept no more than two drafts so when your draft is turned in to me it better be rehashed pretty good because I won't take it more than two times. If you don't say that, you get it every week. You don't want students to seek your approval, you want them to ask for your suggestions. That's significant to the student. You don't want to criticize what they are doing, you want to make suggestions to help make that article publishable. So here are milestones I set. First, outline the articles due April 16, first draft, second draft due April 22, final draft due May 1, cover letter draft due May 5, and so on until the article is finished.

Ladies and gentlemen, I think that you will find that this is a very successful way of teaching. A very effective way, a way that students retain what they learn and I guarantee you, when you teach by this method, some of the students in the class are going to take some of the projects you teach them and are going to use them on their own even though they're not in the classroom. Which

is what quality graduate education is about. When we are talking about graduate education, where are new theories going to come from? Teaching our student the theories of the past, no. New theories are going to come from informing our students of the theories of the past and challenging them to say, "What is wrong with this?" "What is good about this?" "What would you change if you could?" And project teaching is a good way of accomplishing that.

An example of some project type objectives are, willingness to share thoughts and feelings concerning topics by doing these things. Actively participating in class discussions, planning as part of a team a symposium. Last semester, we did six symposiums and we've gotten word that four of them are going to be published. Those are projects graduate students completed on their own. All I said was they had to have a symposium, it needs these qualities and go do it. They brought expertise, people that they could talk to in the community that I probably couldn't get to visit the class, but they work with them every day on their job. They brought guests in and they shared them with some other people who would not have had an opportunity to interact with them. By that interaction, they better understand those people.

I think I used an example here, how many of you talk to a topless dancer. "What do you think about people thinking about people thinking this is really bad, so to speak." It provides an opportunity for that discussion to go on. It helps people who are going to be counselors to better understand where that person is coming from. That would be an example. We had one on children

dying, how to deal with death. A whole series of discussion. The students will be able to verbally and symbolically express emotion by writing reactions to films and completing a birth journal. You know a birth journal asks questions about your birth and there are a lot of things we don't know. I've had people answer birth journals and they suddenly, for the first time in their life, realize that, excuse me but it's an old word, illegitimate child, and they couldn't understand why their mother could not relate to them, never in their whole life. They would come to me and say, " You know I was filling this out and I suddenly realized why the relationship between my mother and I was so bad, and I called her on the phone and I said it was okay and now I feel good about it." I've had that happen several times so these types of activities can be significant in a person's life because if their mind is not there, no matter what you're teaching, they'll not come across.

Here are some other objective commitments towards community by community projects. These are some of the different types of objectives that I call project objectives. Selecting a topic, writing and submitting a 500 to 1,500 word article with submission to a journal concerning human growth and development. The article may be for a formal journal or for a health, better living related magazine. The article must be submitted in the following manner. And then I have a hand out that I give out on how to write an article.

These are some of the ways that the projects look. Contract learning, by the way, is a very effective way of teaching. The most effective type of contract is where you specify to the detail,

just like you were buying a TV subject to the conditions. Just as Mr. Vitucci said, the more detail that's there, the more understanding the student has. Otherwise, it is easy to misunderstand.

Appendix A. Copies of Handouts Distributed During the Colloquium

Questions Often Asked About Methods of Teaching

Terry P. Dixon, Ed.D.

Why do I need to know more teaching methodologies?

Teaching methodologies can be compared to books in a library. The more books a library has in its collection, the more likely a patron will find a book concerning the subject they choose. By having a huge library of teaching methodologies we can choose the most effective method for teaching the topic of our lessons to the students we instruct. The Colloquium Concerning Instructional Methodologies is designed to increase your "collection of methods" from which to choose for planning an instructional lesson.

How many types of teaching methodologies are there?

Three basic teaching methodologies have been identified, though thousands of variations exist. The three basic methodologies are:

The Pure Discovery Method- With the Pure Discovery Method of instruction students decide what is important by learning (discovering) whatever they interact with in their environment. The weakness of this methodology is that the student may not learn (discover) what the instructor wants the student to learn (discover). The strength of the Pure Discovery Method is that students have a high retention rate. Using the Pure Discovery Method the student chooses the questions and provides their own answers. This means the student may never learn (discover) what the instructor wants the student to learn (discover).

The Guided Discovery Method- the Guided Discovery Method of instruction differs from the Pure Discovery Method in that the instructor develops an environment in which the student is likely to learn (discover) what the instructor determines to be important. The weakness of this methodology is the time necessary for learning is great in comparison to other methodologies. Its strengths include a high retention rate and the methodology is highly motivational. Using the Discovery Method the instructor chooses the question and the student learns (discovers) the answer.

The Expository (Lecture) Method- in the Expository Method of instruction the instructor chooses the question and provides the student with the answer. The weakness of the Lecture Method of instruction is that the retention rate of the student is very low. The strength of the lecture method is that much information can be presented in a short period of time. It is generally thought of as the least effective method of teaching for retention. Using the Lecture Method the instructor chooses the question and provides the answer.

What do you need to know to plan a lesson?

To plan a lesson you need to know about:

Yourself and what methods you feel comfortable using.

The classroom environment and its limitations.

knowledge is current research based (comes from an exploration of many sources by the student, i.e. library, actual research by student, or through interactions with experts in the field (through faculty or journal articles)).

If you teach graduate classes a question to ask yourself is, "Do I provide a variety of sources from which the student may synthesize and learn?"

If you teach undergraduate classes a question to ask is, "Do I provide one sound organized source on which students can focus to learn the basics of the subject I am teaching, or do I overwhelm them by using a variety of sources which requires the student to organize the information?

The method by which to effectively communicate the subject- to successfully plan a lesson you must know various methods of teaching and the strengths and weaknesses of each so that you may match the most effective method with the type of knowledge you are trying to teach.

The students you are planning to teach- effective lessons are responsive to the characteristics of the students being taught. Therefore in order to effectively teach a subject you must know the characteristics of the students you teach.

What do you mean "types of knowledge"?

In order to facilitate the planning of instruction, knowledge has been classified as coming from three domains of learning. These domains include:

Cognitive Domain- the Cognitive domain refers to knowledge, facts, etc. Several levels of cognitive learning exists. For example learning a definition is low level cognitive learning, whereas, synthesizing a concept is high level cognitive learning.

Psychomotor Domain- refers to movement controlled by the mind. For example counselors sometimes must be able to control their facial expressions in order to be effective. Learning to control facial muscles is an example of learning knowledge from the Psychomotor Domain.

Affective Domain- refers to attitudinal or emotional domain of learning. For example teaching someone to appreciate the value of using a technique is an example of learning knowledge from the affective domain.

Most teaching is believed to come from the cognitive domain. Many times instructors do not realize that to be effective, they need to create instructional plans which have objectives from each of the domains. Just knowing how to do something is not enough, you must also believe it will work.

How do you plan a lesson?

Though there are many models which describe the instructional/learning cycle, essentials of instruction and their sequence have been identified (Broderius, 1985). Keep in mind these are the essentials of instruction. A lesson missing any of these essentials is not considered complete or effective.

ESSENTIALS OF INSTRUCTIONAL PLANNING

Step 1. **MENTAL SET (Preparing the student for the lesson.)**

This is a planned activity for a lesson which introduces the objective, focuses the learner's attention on the lesson topic or sets the learner to anticipate the lesson.

Step 2. **RATIONALE (The reason for needing to know)**
This is the part of a lesson which gives learners a reason for accomplishing the objective.

Step 3. **OBJECTIVE (Content & behavior; to be made public.)**

The objective is a statement defining what the learner is to learn (content) and what the learner must do to demonstrate that the objective has been mastered (behavior).

Step 4. **INSTRUCTION (Teaching)**

Instruction is the part of a lesson which gives the learner the information needed to master the objective.

Step 5. **MODEL**

The model part of a lesson is where a demonstration of expected learner behavior is provided. Together with Step 4 and Step 5 it uses exploration, exposition and/or demonstration to demonstrate expected learner behavior.

Step 6. **GUIDED PRACTICE (Specific and immediate feedback to the learner.)**

In this part of a lesson, the instructor provides feedback to the learner by closely monitoring learner performance to determine if the skill is being practiced correctly, then providing the appropriate feedback directly to the learner.

Step 7. **CLOSURE (Checking for understanding.)**

Closure provides feedback from the learner at the end of a lesson, or practice to determine if the learners understand the learning.

Step 8. **INDEPENDENT PRACTICE (Specific and immediate feedback to the instructor.)**

This part of a lesson provides practice without direction or assistance after adequate guided practice.

Step 9. **PROGRESS CHECK**

This part of a lesson is where a test or check of some type is used to determine the learner's mastery of the objective.

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THE UNIVERSITY OF CENTRAL TEXAS
Presents

A COLLOQUIUM CONCERNING INSTRUCTIONAL METHODOLOGIES

2:30 P.M., April 16, 1992
Conference Room

INTRODUCTION

Terry P. Dixon, Ed. D.
Vice President For Academic Affairs

PRESENTATIONS

Ms. Melinda Guthrie
University of Central Texas Librarian

Mr. Roy Bonnett
Chair, Division of Technological Studies

Mr. Steve Vitucci
Instructor, Division of Management and Business

Terry Dixon, Ed. D.
Vice President For Academic Affairs

DISCUSSION

Terry P. Dixon, Ed. D.
Vice President For Academic Affairs

ADJOURNMENT

Bloom's Taxonomy of Educational Objectives: Cognitive Domain

Knowledge

Comprehension

Application

Analysis

Synthesis

Evaluation

(Hunkins, 1976, pps.19-22)

The following key words can be used as indicators of questions at the *knowledge* level: (Hunkins, 1976, p. 31)

Define
Describe
Distinguish
Identify
Indicate
List
Name
Recall
Reorganize
Show
State
Tell
What
When
Which
Who
Write

The following key words can be used as indicators of questions at the *comprehension* level: (Hunkins, 1976, p. 35)

Compare
Conclude
Contrast
Demonstrate
Differentiate
Distinguish
Estimate
Explain
Extend
Extrapolate
Fill in
Give an example of
Hypothesize
Illustrate
Infer
Inform
Predict
Rearrange
Relate
Rephrase
Reorder
Tell in your own words
What
Which

The following key words can be used as indicators of questions at the *application* level: (Hunkins, 1976, p. 37)

Apply
Build
Check out
Choose
Consider
Construct
Demonstrate
Develop
How would
Indicate
Plan
Show your work
Solve
Tell us
Test

The following key words can be used as indicators of questions at the *analysis* level: (Hunkins, 1976, p. 41)

Analyze
Categorize
Classify
Compare
Discriminate
Distinguish
Explain
Indicate the
Recognize
Relate
Support your
What assumption
What do you

The following key words can be used as indicators of questions at the *synthesis* level: (Hunkins, 1976, p. 44)

Create
Develop
Derive
Formulate a solution
How
Make up
Plan
Propose a plan
Put together
Suggest
Synthesize
Think of a way
What conclusion
Write

The following key words can be used as indicators of questions at the *evaluation* level: (Hunkins, 1976, p. 47)

Check
Check the
Choose
Decide
Defend
Evaluate
Indicate
Judge
Select
What is
What is most appropriate
Which would you consider

Providing activities for involving students in student-student interaction has the following virtues: (Hunkins, 1976, p. 3)

.. Tends to produce more sustained variety and enriched responses.

.. Stimulates volunteering by more students.

.. Contributes to more group cooperation.

.. Approaches a more realistic social situation.

.. Minimizes the tendency toward teacher-dominated lectures.

.. Places a burden for active learning upon student rather than over-dependence upon the professor.

.. Increases flow of ideas and avoids fragmenting discussion.

"No other event better portends learning than a question arising in the mind."
(Dillon, 1988, p. ix)

For when students ask, learning follows in answer.
(Dillon, 1988, p. 7)

Question and answer conjoin to form knowledge and understanding.
(Dillon, 1988, p. ix)

In the skillful use of the question more than in anything else lies the fine art of teaching; for in such use we have the guide to clear and vivid ideas, the quick spur to imagination, the stimulus to thought, the incentive to action. (Hunkins, 1976, p. 1)

Appendix B. Copies of Overheads Used During the Colloquium

REFERENCE INTERVIEW INSTRUCTION

- PART OF REFERENCE SERVICE
- COMMUNICATION CHANNEL
- NEGOTIATION PROCESS
- QUESTIONING TECHNIQUES
- RESOLUTION

67.

71

REFERENCE INTERVIEW INSTRUCTION

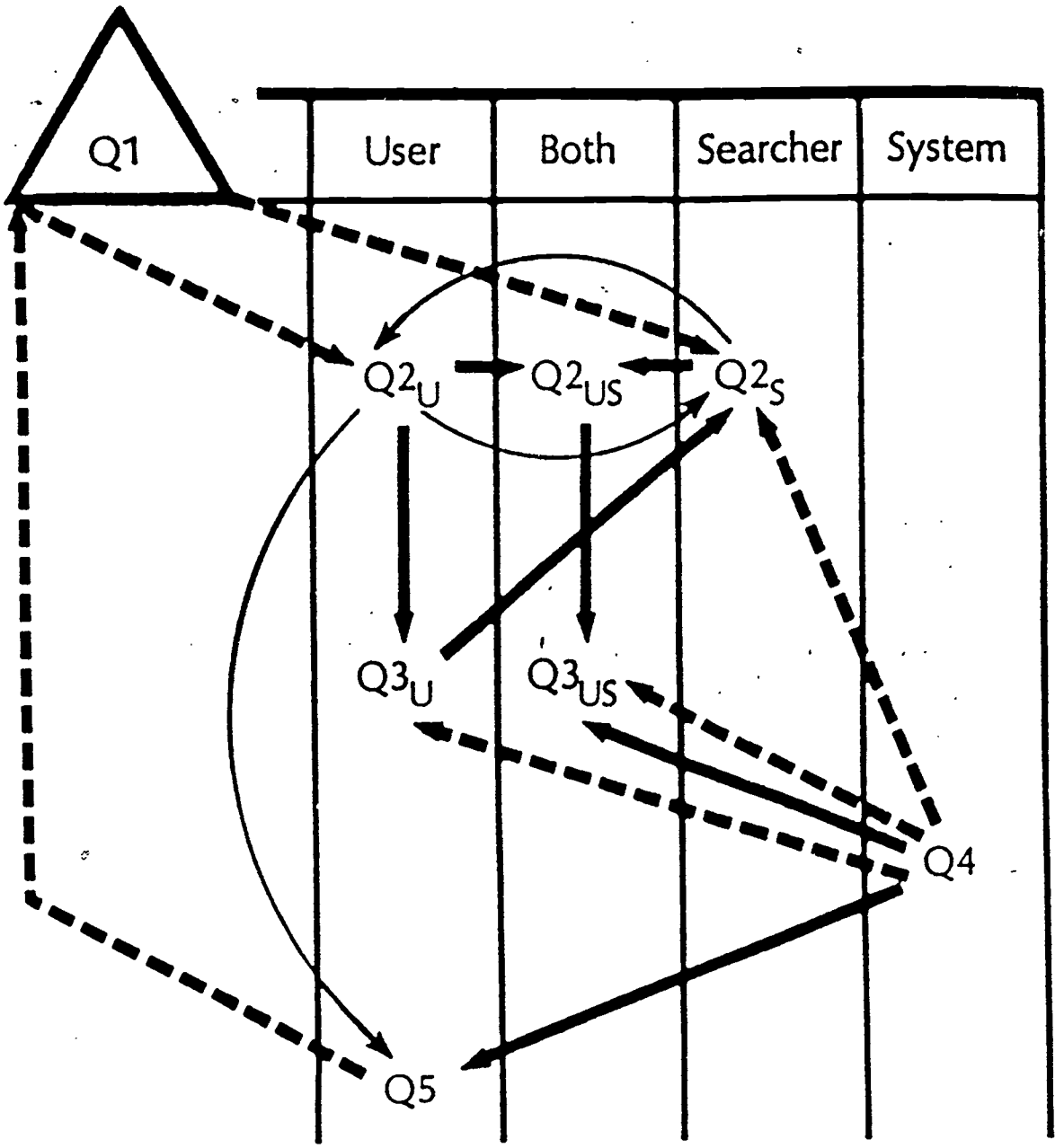

Figure 1. Model of the flow among query states in the reference encounter model

Note: This diagram shows the query in all its states; the major thrust of the interview usually occurs at levels Q2 and Q3. Broken lines show flows of influence on the query more conditioned by perception than the unbroken flows. $Q3_{US}$, for example, is influenced by their perceptions of the information system as well as by the reality of the system when the search is attempted.

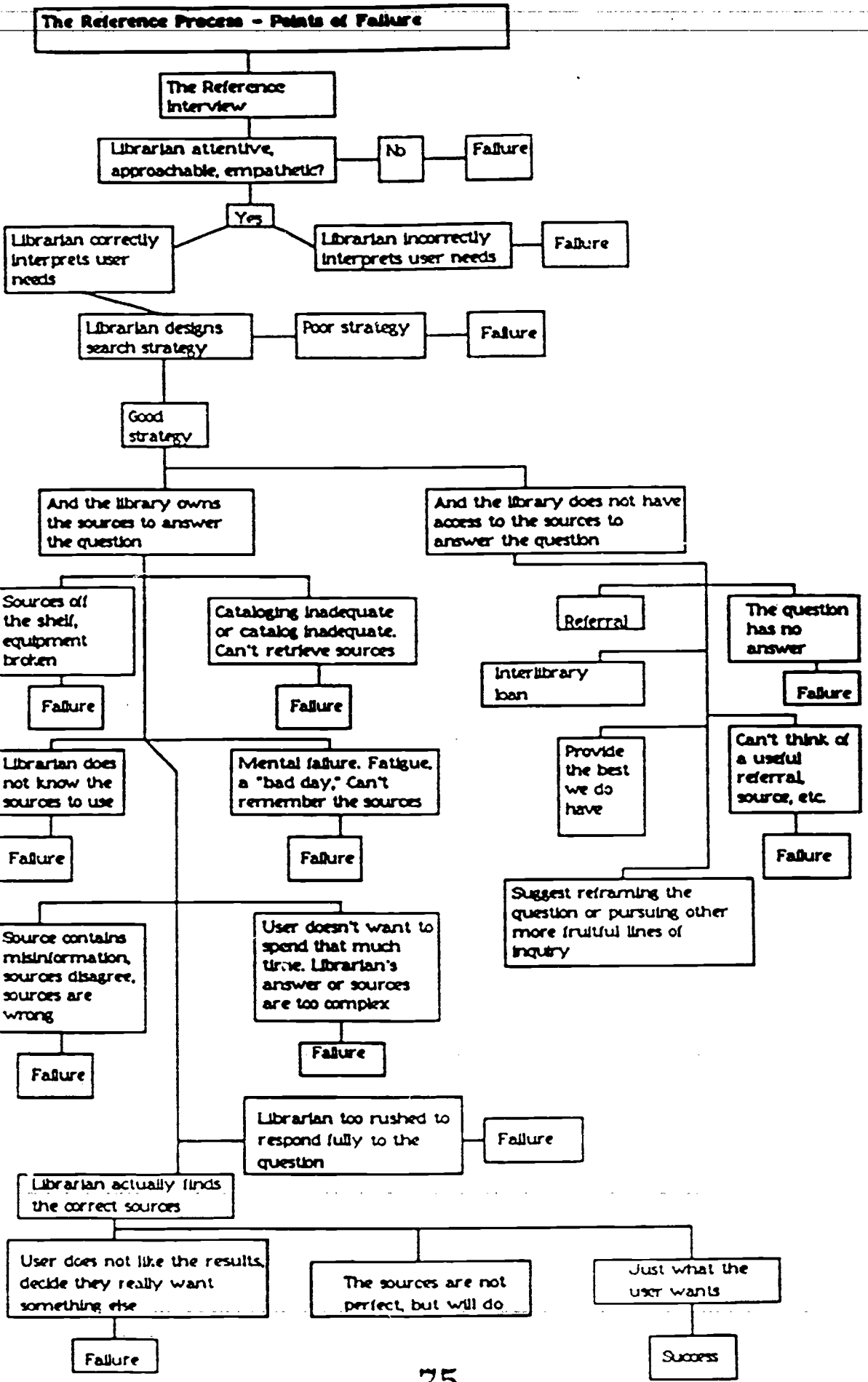

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Fig. 1. Diagram of the Reference Process

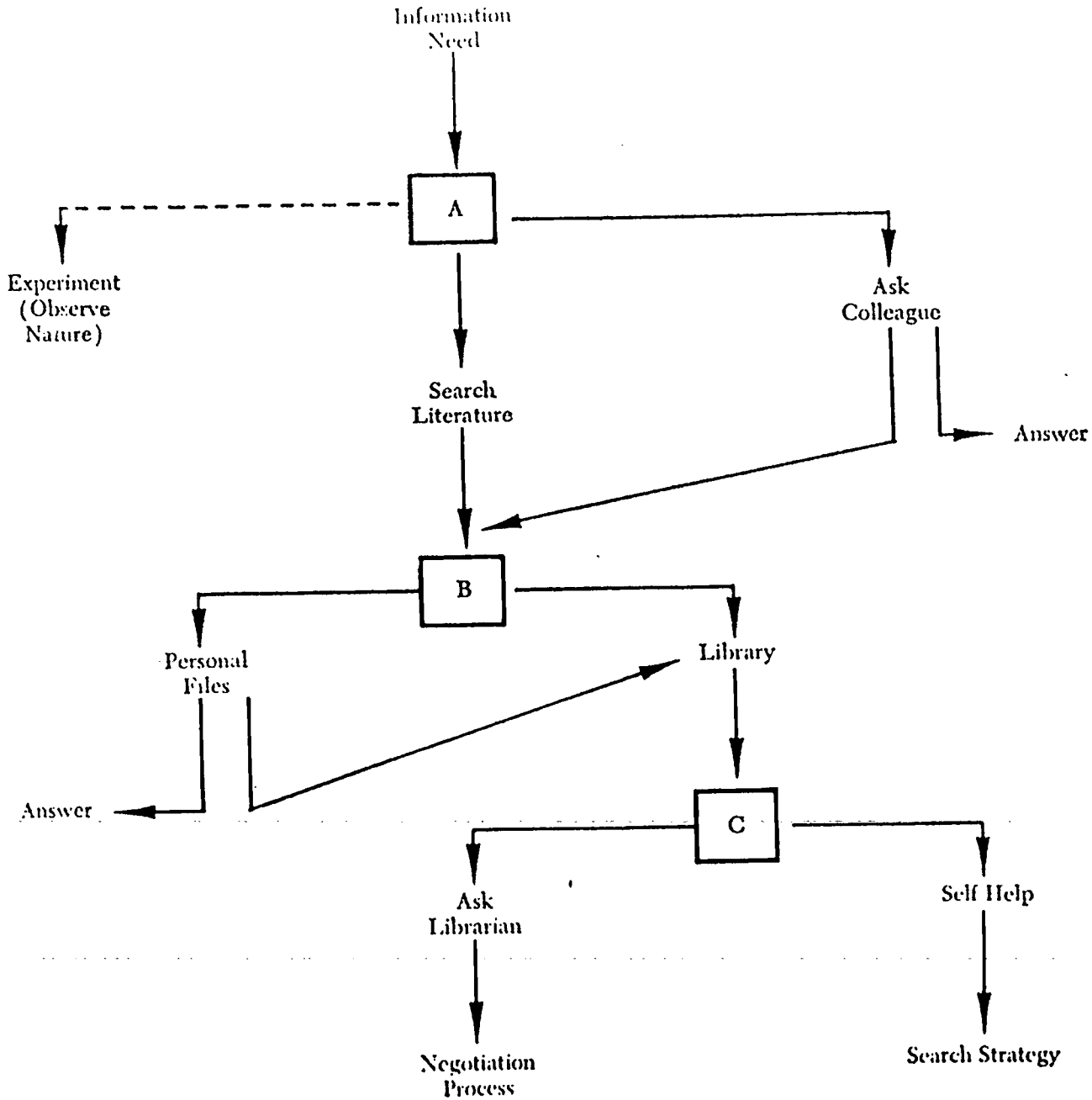

FIG. 1. Prenegotiation decisions by the inquirer.

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Appendix C. Sample Evaluation Survey

COLLOQUIUM CONCERNING INSTRUCTIONAL METHODOLOGIES

Please take a few minutes to complete the following assessment form. It will be used to improve future colloquia. Thank you.

DIRECTIONS: Please indicate your reaction to the various aspects of the methodologies colloquium held last week by placing a circle around the number which shows your rating for the indicated portion of the program. After completing part II of the assessment instrument, please drop the form into the campus mail to the VPAA's Office.

PRESENTATIONS
(1 = Poor, 5 = Excellent)

		Library Methods	Levels of Learning	Contract Teaching	Teaching Projects
1.	The presentation was:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2.	The colloquium handouts were	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3.	The colloquium Overlays	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4.	Opportunity for participation was:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
		(1 = Most definitely will; 5 = No way)			
5.	I plan to use this methodology.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

		Extremely	Somewhat	Not Very
6.	The colloquium was well organized	1 2 3	4 5 6 7	8 9 10
7.	The colloquium delivery was appropriate	1 2 3	4 5 6 7	8 9 10
8.	The information provided was useful	1 2 3	4 5 6 7	8 9 10
9.	The colloquium was personally useful	1 2 3	4 5 6 7	8 9 10
10.	I learned new ideas	1 2 3	4 5 6 7	8 9 10
11.	The pre-colloquium handout concerning methodologies was useful.	1 2 3	4 5 6 7	8 9 10

12. What was the colloquium's strongest contributions to you personally?

13. What was the colloquium's greatest weaknesses or limitations?

14. If you were the presenter for this colloquium you would.....

15. I would like to see a colloquium concerning .....

Thank you!!

Appendix D. Result of Evaluation Survey

Results of the Evaluation Survey Concerning A Colloquium Concerning Instructional Methodologies

The following are the results of the evaluation survey used to assess the effectiveness of the Colloquium Concerning Instructional Methodologies. A copy of the survey may be found in Appendix C.

	AVERAGE SCORE			
Statement	Library Method	Levels of Learning	Contract Teaching	Teaching by Project
(For the next statements 1 = Poor, 5= Excellent)				
1. The presentation was:	4.5	4.0	4.0	4.5
2. The colloquium handouts were:	5.0	4.0	5.0	5.0
3. The colloquium overlays were:	1.0	5.0	3.0	3.0
4. Opportunity for participation was:	5.0	3.5	5.0	5.0
(For the following statements 1= Most definitely will; 5= No way)				
5. I plan to use this methodology:	3.0	4.0	1.0	1.0
(For the following statements 1-3 = Extremely, 4-7 = Somewhat, 8-10 = Not Very)				
6. The colloquium was well organized				1
7. The colloquium delivery was appropriate				1
8. The information provided was useful				1
9. The colloquium was personally useful				1
10. I learned new ideas				1
11. The pre-colloquium handout concerning methodologies was useful				1

12. **What was the colloquium's strongest contributions to you personally?**

Exposure to different teaching concepts.

13. **What was the colloquium's greatest weakness or limitations?**

Transparencies were not readable.
Library preesentation had coherency.
Levels knowledge presentation included reorganization.
I think it should have been recognition which was not included.

14. **If you were the presenter for this colloquium you would.....**

Try ro ensure transparencies were without error.

15. **I would like to see a collquium concerning.....**

Examination design and validation.
Developing partnerships (between faculty, staff, administration and students.

Appendix E. Planning Memo

UCT UNIVERSITY OF CENTRAL TEXAS, P.O. Box 1416, Killeen, TX 76540-1416

MEMORANDUM

TO: Dr. Donald Plym
Professor
Mr. Roy Bonnett
Divisional Chair
Mr. Steve Vitucci
Instructor
Ms. Melinda Guthrie
University Librarian

FROM: Dr. Terry P. Dixon
Vice President for Academic Affairs

DATE: February 24, 1992

SUBJ: Instructional Methods Colloquium

Results of a survey of faculty following last year's colloquium concerning syllabi indicated an interest in a colloquium focusing upon instructional methodologies. After announcing the results of the survey and stating a colloquium would be scheduled, you mentioned interest in being a presenter. This memo is requesting a confirmation of your willingness to be a presenter at the April 16, 1992, colloquium concerning instructional methodologies. I have included below a description of the planned colloquium so that you may have an idea of how it will be conducted. Plans are to once again to transcribe the colloquium and submit the transcript to ERIC for publication. Last year's colloquium was very successful and we are looking forward to this year as being a repeat of that success.

A brief description of your credentials will be listed in the transcript submitted to ERIC for publication and you will be listed as presenter/author for your section of the colloquium. If you are not willing to be a presenter, please call my office and let me know by March 3, 1992, so I may find a replacement.

It is important that presenters keep in mind that their section of the program should:

1. Be kept under **20 minutes**.
2. Focus upon **describing the methodology** you have chosen to share with your colleagues.
3. **Include copies** of a handout which briefly describes your instructional method and how you plan for its

implementation (Get a hand written copy to my office by April 9, 1992, and I will see that it is typed and copies made for distribution).

4. **Not be a discussion**, but a one-way presentation (discussion time has been reserved after all presentations are complete).

Please submit the name of the methodology you will be presenting to me by March 10, 1992, so that I may include it on the colloquium program.

It is important that all presenters be aware that they are to conduct their presentation and not permit questions until the discussion period has begun. This will allow all participants to make their presentations, within the time frame scheduled, and still permit questions and discussion without the colloquium becoming long, drawn out and ineffective.

The goal of the instructional methods colloquium is to exchange concepts and practices which promote adult student learning.

Objectives Include:

1. To generate discussion concerning a variety of instructional methods appropriate for the University's student body and curriculum.

2. To provide a forum for sharing instructional methods which University faculty have found to be successful.

3. To encourage the faculty to think critically about the selection and design of instructional methodology.

4. To provide a forum in which affiliate and full-time faculty may participate to improve instructional thought and awareness of the variety of instructional methodologies.

Thank you.

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