

**TEACHING STRATEGIES FOR  
TODAY'S COLLEGE CLASSROOM**

By:

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**ABSTRACT**

Everybody has something to say about teaching. Everyone has an opinion on the subject. This is probably because everyone has been on the receiving end of it.

It is a favorite pastime of students to compare and contrast their professors. Much, if not most, of what they have to say is of a personal nature. Conspicuous in its absence is anything of substance about their teaching.

Talk at faculty meetings isn't much better. You will hear about lighter teaching loads, smaller class sizes, and fewer committee assignments. Invariably, some intrepid instructor might even suggest the need for better instruction. Talk about a conversation stopper!

Most college faculty members have grown dissatisfied with superficial talk about teaching. They know it is complicated and more than what it appears to be on the surface. But, what?

Our intention in this paper is to review the cogent literature and present theories on how it is that people learn. We will present the four theories that are most commonly accepted. We then go on to develop each of these theories into a teaching strategy, which can be used easily by any faculty member. We conclude the study with examples that illustrate how each strategy can be applied in the classroom.

This is a paper that was written for individual faculty members, no matter the field of study, who want to improve their teaching.

**Teaching Strategies  
For  
Today's College  
Classroom**

Students must be  
taught as if  
you taught them not,  
and  
things unknown  
proposed to  
them as things forgot.

Alexander Pope  
'An Essay on  
Criticism'

**Introduction:**

Everybody has  
something to say about  
teaching. Every one has an  
opinion. This is probably  
because everyone, at some  
point, has been on the  
receiving end of teaching.

It is a favorite  
pastime of students to  
discuss their professors.  
If you ever get a chance to  
listen in on them, it is  
enlightening. Much, if not  
most, of the discussions  
are on the personal level.  
They don't like one's ties  
and the other one's shoes.  
One shouts too much and the  
other one puts you to  
sleep. One never allows  
time for questions and the  
other is always getting off  
subject. And, so it goes...  
a lot of opinion without

much depth. Should we  
really expect anything but  
this? Most of them have  
been sitting in a classroom  
for 12+ years: in many  
cases, a classroom where  
the teaching has been  
little more than adequate.  
Can we really expect these  
students to have developed  
an in-depth perspective of  
what the teaching-learning  
process is all about? We  
should be concerned about  
their critiques but we  
should also realize they  
could hardly be expected to  
come up with supportable  
thoughts about effective  
and efficient teaching  
based on theories commonly  
accepted in the discipline.

The talk at faculty  
meetings isn't much better.  
Faculty members want  
smaller classes, lighter  
teaching loads, and fewer  
committee assignments. If  
we just had these and  
better students. The  
students are not motivated.  
They can't read. They  
can't write. They don't  
know how to think. During  
a pause in the discussion,  
an intrepid instructor  
dares to suggest that  
students would do better if  
they had better  
instruction. A discussion  
starts but then ends  
abruptly when a senior  
member of the geriatric  
oligarchy pontificates, " I

have always been of the opinion that great teachers are born not made." Talk about a discussion stopper!

Fortunately, most college faculty members have grown tired and dissatisfied with the superficial talk about teaching. 'Fortunately' because they are demanding their concerns are addressed. They know in their hearts and minds that teaching is a much more complicated task than it appears on the surface. They know there has to be a sound theory that supports good, even great, instruction. Faculty want the evidence. What research has been done? What are the conclusions of those studies? What do they mean in the classroom?

#### **Background:**

There are research studies on college teaching. Sometimes it seems there is no end to them. A short list of examples illustrates the nature and scope of this research.

Effect of  
programmed texts  
on academic  
achievement under  
three different

techniques of  
instruction.

Effect of class  
size on academic  
achievement and attitude.

Effect of  
intelligence and social  
atmosphere on group problem  
solving.

Study of the use  
of lectures to large groups  
of students when teaching the

fundamentals of  
speech.

The relative  
merits of lecture  
and recitation  
when teaching  
college physics.

Comparison  
between lecture  
and discussion  
methods when  
teaching  
psychology.

Reading  
improvements as a  
function of teaching  
method.

Comparison of  
directed self-  
study versus  
lecture when  
teaching general  
psychology.

(Davis, 1996)

For a more extensive list, the American Educational Research Association has published the 'Handbook of Research on Teaching' (Gage, 1983). It contains a summary of research on teaching in higher education with a particular emphasis on teaching technology and methods.

When reviewing the research literature it is easy to be left believing there are 'no significant differences' in teaching methods. Some studies make significant positive conclusions about a particular teaching method but then one does not need to look much farther for other, apparently similar, studies that strongly contradict those conclusions. In far too many individual studies, the conclusion reached is that one most dreaded by the researcher: 'There is no significant difference.' We feel the answer might be in the examination of collections of studies to see if there are any trends in this extensive body of research literature. There are some such reviews available from very competent researchers.

W. McKeachie (1980) as part of a reference work did one of the better reviews. He focused on studies of teaching at the college level. The studies were examinations of lecturing, discussion, laboratories (demonstration and performance), independent study, and automated teaching methods. As was expected, he found seemingly similar studies that indicated significantly contradictory conclusions and a disproportionate number of studies with 'no significant difference.' Some of the conclusions he was able to formulate are:

Lecturing appears to be an effective means for disseminating information but others appear to be much more important for achieving higher cognitive and attitudinal objectives.

Discussion proves useful in accomplishing certain objectives but the method varies in its effectiveness according to how the discussion is conducted, the size of the group, and the

degree of student centeredness.

some conclusions. Among them are:

Laboratory methods (demonstration and performance) develop problem-solving abilities provided the emphasis is on solving cogent problems.

Small class sizes appear to be better for basic retention, problem solving, and attitude differentiation.

Even though independent study seems to increase motivation for learning, it appears to be less effective than other teaching methods for achieving certain educational outcomes.

The discussion method seems best for developing problem-solving abilities and for dealing with attitudes and motivation.

The effectiveness of automated teaching techniques varies directly with the quality of the teaching resources and the specific objectives pursued.

Lectures to large groups are only truly effective when complemented with small discussion sections.

Student-centered discussions appear to be the most favorable for the more complex educational outcomes.

In a later review, McKeachie (1990) brought his examination of research studies on college-level teaching up to date. The most important addition made is the recognition of methodological problems (primarily, research design) with individual research studies he reviewed. He still draws

Students probably do not learn more with automated devices but they appear to learn more efficiently and/or enjoy it more.

McKeachie (1990) is cautious when addressing the methodologies of the individual studies he reviewed. He has some

concerns with research design. His overall conclusion is that different methods of instruction seem to be most effective for different objectives.

Ohmer Milton (1992) completed another review of a collection of research on college teaching. He makes quite a case that the effectiveness of the commonly accepted methods of instruction at the college level has never been proven. He claims that even though the traditional methods are vigorously supported, there seems to be little, if any, concrete evidence that warrants such support for conventional teaching/learning arrangements. In developing his argument, Milton notes that the assumption about transfer of learning, which is the premise for most of the teaching that takes place at the college level, has been generally disproved. There is little evidence the four-year lockstep model is the only, or necessarily the best, format for a college education. And, there is significant evidence that students do not require nearly the oversight in the learning process their

faculty think they do. The individual studies Milton reviewed clearly indicate current research on teaching at the college level fails to support the continuation of traditional teaching methods.

Unfortunately, there is little evidence to support any alternative teaching methods as being any better.

The first clear indication of where research in this area appears to be taking us is in 'Teaching Technology and Methods' (Cohen, et al, 1993). There are indications that students experience significantly higher tension, poorer achievement, and less satisfaction in a competitive learning environment than they do in a cooperative one. Most important to us is a study that indicates a statistically significant collective relationship between instructional methods, learner characteristics, subject matters, and academic achievement in a fashion that could be designated a 'definitive pattern.'

In 'A Comparative Analysis of College Teaching Methods' (Dublin & Taveggia, 1998), its authors undertook a

systematic analysis of 96 comparative studies of college teaching, which showed 'no significant differences.' They analyzed these studies by balancing those that favored one method against those that favored another. The end result was that they cancelled each other out. The summary conclusion was that their 'data demonstrates clearly and unequivocally that there is no measurable difference between any distinctive teaching methods used for college teaching when evaluated by student performance on final examinations'. Implicitly, perhaps, something is being indicated about grading, per se.

If there is no apparent difference between teaching methods, is there sufficient justification for faculty meetings to discuss instructional methods, or even this very faculty development seminar? It is tempting to conclude there are no answers and whatever one does makes no difference so each faculty member might as well teach based on personal preference.

We are convinced there is an answer. But, the answer has remained

obscured because the problem is much more complicated than anticipated. We are equally convinced the answer has remained unrevealed because the question has been asked incorrectly. Up to this point, the research methodology has been inadequate in addressing the complexity of the problem. Substance is given to this suggestion from the conclusions drawn by Dublin and Tafeggia (1998) in their studies. They were amazed to discover that otherwise competent researchers persisted in using research methods that continually gave inconclusive results. Dublin and Tafeggia (1998) argued that the need was not for the replication of existing studies but rather for a new research design. Our intent is only to explain their suggested research methodology to the degree necessary to be able to discuss its possible outcomes.

The assessment of college-level teaching is more complicated than using student test scores as a measure of performance to indicate the effectiveness of a specific teaching method and making one-to-one comparisons of teaching



methods. Lawrence and Lisa C. Seigel (1997) developed guidelines that are turning research on college teaching methods in a new direction. They concluded from their studies that comparisons between teaching methods could only be made if the instructional procedures are independent and homogeneous. By independent they mean the method must be significantly isolated enough from any other learning factors so as to be considered a distinct influence on the learning process. By homogeneous they mean the teaching method cannot be a general method that actually subsumes several distinct activities under one label. For instance, under the label, 'discussion method' the researcher must separately examine (1) the nature of the verbal interaction taking place, (2) the role and the dynamics of the faculty member, (3) the objectives of the discussion, (4) the nature of the inquiry process, (5) the motivation and learning behavior of the student, and other factors. In this example, 'discussion method' cannot be treated as a single variable. To compare

teaching procedures, the researcher must isolate single variables.

Further, the Seigels (1997) suggest final exam scores are probably not adequate criterion measures. Grades on final exams and final course grades are strongly influenced by much more than classroom teaching methodology.

The research design that will address faculty concerns about the complexity of the teaching/learning process should be a multivariate model that uses both factor and multivariate analysis. Variables that must be addressed can be sorted into:

Learning environments;  
Instructor variables;  
Learner variables; and  
Course variables.

The structure developed from this design would result in the researcher being able to identify any one key specific variable, examine and manipulate it, and hold all other variables, to the extent possible, constant. The researcher would then examine the effects of class size, interaction

between instructor and student, previous knowledge of the subject, academic aptitude, teaching method, etc. in isolation and know, more definitively, where relationships exist and not be presented with 'no significant differences', ad infinitum. In other words, the researcher can determine what seems to be the most important variable and gather data on just it. The variable does not operate independently but it is tested independently. Furthermore, effects on theoretically related outcomes could be examined as a whole, then isolated for individual analysis.

So what does the college teacher need to attend to if he for she is going to become effective, or more effective. Contrary to the original suggestion that perhaps nothing matters, it appears more likely that research with the design/methodology suggested by the Seigels will cause us to answer now that everything matters.

Yes, everything matters!

--Class size can make a difference.

--Motivation of the student can matter.

--The entering behavior of the student might make a difference.

--The intellectual climate that prevails in the classroom can make a difference.

--Even the geography of the institution (classroom) can matter.

--The pacing of rewards for learning may make a difference.

--The process by which inquiry is carried on can matter.

--The ways students are evaluated might make a difference.

--Interpersonal relationships between faculty and students may matter.

--Different students will respond to the same instruction in different ways.

--Teacher behavior can matter.

--Ad infinitum

Yes! Everything matters. And, that is the point.

'Webster's Encyclopedic Unabridged Dictionary of the English Language' (1997) defines 'strategy' as 'a plan, method, or series of maneuvers or strategems for obtaining a specific goal or result'. Applied to college-level teaching, the term refers to a method or series of activities designed to achieve a

particular educational goal. Good teaching strategies are based on some notion of how people learn. Differing strategies are based on different perceptions of what learning is and how it takes place. Most important for our purpose is that faculty must employ some strategy. M.H. Dembo reports, "All teachers have a belief or theory about learning that is the very fabric of their teaching strategy." (1988). While we are in agreement with Dembo, we question the effectiveness of those beliefs or theories that are based on some vague recollection of the teacher's own time as a student. The assumption that a faculty member, however well prepared in a discipline, can walk into a classroom, start talking, and something educational will just happen needs to be totally abandoned. It is our sense that faculty members can greatly improve their teaching by diligently applying one or more, or some combination, of the time and research-tested strategies we are about to suggest.

## Teaching Strategies

### Behavioral Learning

In recent years, some college faculty members, as a matter of conscious choice, have begun to develop a more analytic and systematic approach to teaching. They have begun to specify instructional goals more definitively. They have developed stepwise progressions (approximations) to achieve those goals. And, they have begun to employ, with specific intent, various kinds of incentives. They are using programmed instruction, computer-assisted instruction, and self-paced courses - to name but a few.

Most of the concepts used in these various systems grew out of principles developed by behavioral psychologists. Behaviorists are not ultimately interested in the mind, the emotions, and various states of consciousness. They are interested in behavior.

The basic principles of behavioral learning theory are relatively easy to grasp. In Skinner's (1968) words: "Behavior is said to be strengthened by its consequences, and for that reason, the

consequences are called 'reinforcers'. When a hungry organism exhibits behavior that produces food, the behavior is reinforced by that consequence and is therefore likely to recur."

There are two types of reinforcers, positive and negative. A positive reinforcer strengthens any behavior that precedes it. Therefore these behaviors are likely to be repeated. Positive reinforcers can be almost anything an individual is willing to put forth an effort to obtain. Aversive, or negative, reinforcers are those things an individual will work hard to avoid. Behaviors that precede these consequences are not likely to be repeated.

The most important thing to remember about reinforcers is that their effect does not depend on their properties but rather on how an individual responds to them (Skinner, 1974). The use of a 'good grade' or a 'poor grade' as a positive or negative reinforcer is only as effective as the importance of grades is to the individual student. The wide range of learning behaviors, for which students can earn,

depending on the individual faculty member, a 'good grade' gives cause to be concerned about the students' response to the reinforcer. Are these faculty members reinforcing mediocre learning behavior?

Faculty can initiate, maintain, or increase the frequency of a learning behavior with both positive and negative reinforcement (negative reinforcement is aversive stimuli not punishment). Thorndike's "law of exercise" explains that the more frequently a reinforcer is used, the stronger its effect. A 'hit and miss' strategy of using reinforcers is as effective, or ineffective, for a faculty member as it is for a parent.

Withholding reinforcement decreases a behavior. This is known as extinction. A behavior can also be decreased by punishment (Skinner, 1953). Punishment is not the answer though in some instances it is still used. There are definite problems associated with punishment. Most important, is that it can be used effectively, as stated, to decrease or stop a behavior but seldom can it be used to initiate, maintain, or increase one. Returned papers that are 'bloodied' with pointing

out errors but contain little reinforcement of what was done correctly or how corrections should be made will never teach students to write properly. According to Stevenson and Stigler, the use of errors as precursors to failure is partially to blame for the overall failure of our school systems (1992). Dembo suggests yet another method of reducing unwanted behavior, satiation. Here the student is encouraged to engage in an undesirable behavior repeatedly until he or she tires of it.

So how can the college teacher employ reinforcement consciously and effectively? The first things to be done are:

- To identify a definitive behavioral goal.
- To obtain a measure of present performance level.
- To break the behavioral-learning task into successive steps.
- To reinforce successive approximations until the goal is reached.

Most important for classroom application is to formulate general goals by describing them in behavioral terms and to implement them with

complementary objectives that are relatively specific statements of learning outcomes expressed from the learners' perspective and that describe what the learner is *to do*.

Not:	But rather:
to know	to write
to understand	to recite
to appreciate	to solve
to enjoy	to list
etc.	etc.

Robert Mager (1982) developed the classical specifications for behavioral objectives. These learning outcomes should be statements of what the student will be doing, under what conditions, and against what standard of performance. The case for behavioral objectives is difficult to refute. If Skinner had not developed a precise and specific goal with terminal objectives, would the pigeon have ever turned in a circle. And, the behaviorist has neither an interest nor much of a belief in pigeons 'appreciating' circles.

For the college teacher to be successful when using the behavioral-learning approach, he or

she must use reinforcers for what Skinner (1953) refers to as 'shaping', which is not much more than using reinforcers to increase or decrease the frequency of desired learning behaviors. All instructional systems, depending on how simple or complex, rely to some degree on this basic concept, which grew out of behavioral-learning theory. So how has the progressive educator applied this in today's college classroom?

Behavioral-learning theory can be applied in the college classroom in various ways. The faculty member can guide the direction and focus of a discussion by the way reinforcement is handled. The classroom atmosphere (educational environment) can be established as positive or aversive—unfortunately, or punishing—with a predictable response. Motivation can be initiated, maintained, or increased by the use, or more frequent use, of various incentives. Such applications of behavioral learning theory are intended to develop immediate behavior patterns. They are categorized as behavior modification techniques.

### Cognitive Psychology

There are those who say traditional teachers lecture while those who are progressive and innovative will avoid the formal lecture. This is unfortunate. Lecturing is neither good nor bad, per se. It has been and still is one of the most used teaching techniques by college faculty. The only thing wrong with lecturing is that it is all too frequently done poorly. It is done poorly because those using it so often do not understand the complexities of the transmission and reception of data. To understand this process, the college faculty member needs to know about the human cognitive processes.

Not everybody agrees with the behaviorists. Opponents suggest that operant conditioning is not adequate to describe human learning. Cognitive psychologists suggest the human mind will react to and reorder stimuli. It is that covert mental process—that thing that goes on in head—that is the key to understanding human behavior and learning.

The earliest psychologists studied what

they referred to as states of consciousness. It was the rejection of this concept that prompted the self-proclaimed empiricists to gravitate towards behaviorism. The behaviorists claim cognitive psychology is not empirical. This is not totally fair to cognitive psychology. The work of cognitive psychologists is based on rigorous experiments and observations. And, the conclusions are derived from inferences about human behavior. The behaviorists have a problem with the psychologists developing theories and concepts based on inferences instead of sticking to strict observations. This is to suggest that because most mental activity is not directly observable it does not exist (Broadbent, 1967).

The behaviorist does not have much use for the formal lecture. The cognitive psychologist sees it as an opportunity to put an extremely complex process into motion. First of all, before we can process any information we must give our attention to it (Davis, 1996). Researchers have shown that human beings appear to have an amazing ability to pay

attention to an identifiable line of reasoning and pick it out of a jumble of stimuli. Some subjects of their research blocked out undesired stimuli so effectively, they weren't even sure it was there. When we do attend to something, we attend to it almost exclusively.

So what do we do with the stimuli we attend to? The cognitive psychologist has developed theories and concepts about how human beings process data.

There is not a one-to-one relationship between our perceptions and the stimuli that produce them. We process stimuli as they come in. We sort them. We compare them to abstractions. We compare them to developed patterns. We reorder them. And, we make extractions. Only a part of what the cognitive process is about is what the stimuli bring to it; another substantive part is what we individually bring to the stimuli. We are going beyond response-stimuli. We are now addressing how it is that we attend to the stimuli and how the stimuli are processed before there is a response.

Perceptions do not take place in isolation. They must be related to something familiar. Schema provide the structure for how easily we can process and build upon information. Is it easier to remember/process the groups of letters:

QJB

ZBX

YKL

Or: IBM  
CIA  
IOU ?

It is not difficult to see that the second groups of letters are tied to the familiar. They have a meaning that is derived from familiar surroundings and associations. While most of our perceiving is tied to the familiar, some of it is the result of social conditioning. A substantive part is highly individualized and idiosyncratic (Lindsay and Norman, 1992).

There is no agreement among cognitive psychologists about what makes up the best information processing (learning) theory. Most important, to our research is their agreement that the behaviorists' stimuli do not reinforce the response (behavior) without the stimuli being subjected to the cognitive process. The synthesis of stimuli with

long-term memory is what should be of the most interest to the college faculty member.

So? All of this discussion does suggest a theory of human learning. Between stimuli and response there is a complex and important organism. As an array of stimuli present themselves, we attend to and process certain stimuli for certain reasons and begin to act upon the stimuli so as to put them into a form we can hold on to (remember). Things are not always seen as they are but rather as they are related to some previous experience.

There are topics that lend themselves to the lecture that do not lend themselves to discussion or inquiry. What are the implications of cognitive-learning theory for the college faculty member who is going to conduct this lecture?

We know students must attend to information before they can process it. So, first of all, we need to get them to accept the importance of the topic so they will give attention to its presentation. The complete coverage of a topic will contain many terms, concepts, theories, and illustrative material.



We need to identify for our students those items that are key to the cognitive processes (learning) that we want to take place (Norman, 1989).

The lecturer will then need to enter into a description of what is, or should be, familiar about the topic. This description can readily be a presentation of concepts and symbolization because we only need to develop abstractions of the central features of the topic. After this, the lecturer wants to bring in the unfamiliar and have students make associations with the familiar abstractions. The lecturer should be expecting questions at this point because of idiosyncratic interpretations of what has just been presented. This is something that should be taking place. It is the self-flattering lecturer who thinks, 'Not in my lecture hall. I make it clear enough that they don't have questions.'

Throughout the lecture the faculty member must keep in mind that his or her students are active processors of data. When they are truly listening, they are processing for essential features and

patterns. The notes they will take are idiosyncratic codes for their perceptions. Handouts assist the student in making the coding process orderly and complete. Students will only follow what they give attention to and will only remember what, for some reason, they have made unforgettable. That 'reason' being what came out of the cognitive processing of stimuli. Any concepts other than those attended to and processed are but chaff that fall to the floor.

Students need to synthesize information and allow for a process of induction and deduction to apply and solidify the new knowledge. Faculty who actually take into account how the mind works will be effective while the others who lecture will just be talking. Coincidentally, something educational might take place. And, then it might not.

### **Inquiry**

We are here to teach them to think. We are not here to create memory machines. We are not just supposed to fill their heads with data. Remember, the goal is the inquiring mind. So, we are here to

teach them to think. Just what does it mean to 'teach someone to think'? Just what is 'thinking'? What is happening when 'thinking' is taking place? Is the human being the only animal that thinks? Do we confuse the ability to think with the ability to use a language?

Psychologists and linguists agree that there are other animals that communicate but they also agree that those animals do not communicate with the use of a language as 'language' is commonly defined. There are those who hotly contest this view but that is an issue for another paper. A key part of any definition of 'language' needs to be 'a symbolization process that enables a user to develop and manipulate concepts and to exchange those concepts with others' (McGaugh, 1994). Can other animals speak? Yes, but not very well. Can other animals think? Some-maybe. Other animals do not appear to be able to use language to think. Thoughts and language are interwoven. Thinking always appears to be accompanied by the use of language. The reverse is, unfortunately, not always true.

The way we use 'thinking' in the educational environment is to mean the ability to form a concept of something, being able to examine and ponder the concept. It includes being able to join the concept with others so as to cogitate and reason, the result of which is to be able to devise and/or contrive solutions for problems. There are those who would argue that this is beyond thinking, per se, and that it is much higher level of thinking. We do not find ourselves taking exception to this point.

Thinking, reasoning, and logic are, at the very least, identified with each other. In many instances, they are used interchangeably. There is agreement among philosophers and psychologists that reasoning and logic are the outcomes of productive thinking. Thinking is a process. What are the activities that take place when a person 'thinks' in order to solve a problem? Most researchers attempting to identify the patterns of thinking have agreed on certain delineated stages (Gardner and Gardner, 1996; Hayes and Hayes, 1974).

First of all, the inquirer becomes aware of a situation that calls for some type of answer or solution. This early stage usually focuses on problem definition. What precisely is the problem? Why is it a problem? For whom is it a problem? When the inquirer is satisfied with the working definition of the problem, he or she begins to identify the pertinent facts. What data are regarded as relevant to the problem? Usually, as facts are gathered the problem is redefined or reformulated.

Next, the inquirer will develop alternative solutions for what will solve the problem. What might work? What will happen if we try so and so? Learning begins to take place from trial and error. Such learning plays a significant role in the solution process. Equally important to knowing why the solution did work is to know why the errors did not work. Trial and error reduces the possible alternatives.

Problem solving (critical thinking) depends on the inquirer's ability to generate unusual solutions (answers) that

are, despite their uniqueness, relevant (Werthheimer, 1969). Through it all there is reasoning but there is frequently intuition and guessing also. These kinds of mental processes seem to appear more frequently when there are situations too broad and complex for quick logical analysis. Don't be mistaken, intuition is an integral part of the inquiry process.

Inquiry is the method of forming thought by establishing conditions that will arouse and guide curiosity thus promoting the connection to things experienced that will, on later occasion, promote the flow of suggestion, problem creation, and the succession of ideas. How would we arouse curiosity? Is it possible to teach people to think by guiding the process of inquiry?

Teaching is to involve a student in the process by which knowledge is produced. Knowledge is produced in the response to questions. Isn't this where Socrates comes in? The point to this discussion is that once a student has learned to ask questions—relevant and appropriate and substantive questions—the student has learned how to learn and

then no one thing can keep him or her from whatever he or she wants to know.

How does one go about teaching people to ask questions? **The first thing faculty have to do is talk less.** Students cannot ask questions if they don't even get the opportunity to do so. There must be provided an inquisitive environment. One that is non-threatening and that rewards curiosity. Faculty must help their students understand the role of language and develop in them some facility in the use of language. Next, the faculty member must let a student's line of inquiry go wherever it may. For any inquiry to be true it must pursue its own end. Different people will reach different conclusions. Finally, the faculty member who uses the inquiry strategy needs to be less concerned about what their students learn than they are about how their students learn.

The faculty member's evaluation of their students will not be based on how many facts they have memorized but rather on how they have enhanced their ability to inquire. He or she will want to examine the frequency with which they ask questions; the

relevance and cogency of their questions; the conviction of their challenges to other students' assertions; their willingness to change their position when data warrant such change, etc. In short, instructors who use an inquiry strategy first have to learn how to become masters at helping their students learn how to think.

In the classroom, what can we expect the typical college course to be like if the faculty member uses the inquiry strategy? What are the students doing? What is the role of the faculty member? Let's use an English Literature course for an example. Don't let the use of this course mislead you into thinking the inquiry strategy cannot be used for mathematics, physics, or any other course. It's a matter of how the faculty member approaches the subject not its content.

In our example, the teacher chooses a particular work of literature and assigns the students the task of interpreting it. The teacher makes it clear from the start that he or she will be a resource for the students, if called upon to do so, and that he or she

will be a guide through their inquiry. In summary, the students will determine the meaning of the work of literature. The instructor might assist by providing some factual information and guiding the process itself—not the direction and/or focus of it.

Inquiry, as a teaching strategy, is unsurpassed if what you want to do is teach your students to think. There is no substitute for the mental stimulation associated with problem solving. The steps involved in solving a math problem are not unlike the steps involved in the interpretation of a work of English Literature. The words and tools are different. The issues and criteria are different. The process is the same.

Inquiry is slow. In this sense, it is inefficient. It involves 'reinventing the wheel' because it must be practiced, practiced, and practiced some more. It is not the best way to disseminate information. But, if the process of learning (to think) is at least as important as the subject being learned, inquiry is positively the best strategy. Inquiry is, perhaps, Socratic learning at its best.

### Group Processes

There is more to the educational process than just thinking, reasoning, and doing. Shakespeare wrote, 'The heart has its reasons, of which reason has no knowledge.' Some learning involves the 'heart' as well as the head. It involves the change of opinions, attitudes, and/or beliefs. It might involve the development or change of a sense of values.

We teach in an educational environment that stresses cognitive growth and intellectual development. Many professors are reluctant to enter the sphere of opinions, attitudes, and beliefs—too 'touchy-feely' or not politically correct, they might suggest. Before any of you suggest that we are not in the classroom to tamper with our students attitudes and values, we would want to remind you that not everybody agrees with the assumption that humans are essentially rational and given the facts they will draw rational conclusions. Research done by social scientists during the last 50 years on opinions, attitudes, and beliefs (OABs) has led them to

conclude that people hold OABs that are in harmony with their group memberships and identification (shades of, 'You are who you associate with'). OABs are rooted in group behavior. They grew out of social contacts and group affiliations. The more homogeneous the group, the more intense the identification with the group and, thus, the more likely an individual will act upon those opinions, attitudes, and beliefs (Lewin, 1943). In summary, opinions, attitudes, and beliefs are not near as much the product of individual thinking as they are of social contact and relationships.

Opinions, attitudes, and beliefs are not easily changed. When they are changed it is almost always through group affiliations. Research indicates there is very little permanence to OABs that were not developed through familial or other group affiliations. Given familial or other group support to the contrary, OABs are unlikely to change at all—to the point of virtual impossibility. When OABs do change it is through the influence of a reference group or, maybe, a new group affiliation.

OABs are subject to the most influence by the most prestigious members of the group. Short of giving up group affiliation, dissenters are inclined to join the majority of the group (Knowles, 1959).

The results of group processes are of a higher quality and more readily accepted by the individual members of the group—probably, outside of the group also. The having of ideas (ideation), when judgement of those ideas is withheld until the end of the process, is 60% to 90% greater for groups than for the same number of individuals acting independently (Verny, 1984). The presence of other individuals has a profound effect on the norms, standards, values, and behavior of individuals within a group. Individual ideas are altered in the synthesis process that goes on in groups in a way that cannot be explained in terms of the individual mental process. It is quite clear that any learning, which will alter OABs, is going to be best facilitated through the group process.

Many of us will shun any responsibility for influencing OABs. That, of course, is the faculty

member's prerogative. However, there are other teachers who view attitude formation and value development as a central part of their educational responsibilities. Most professionals strongly renounce indoctrination as a teaching technique. Those academicians who are willing to take a stand on the development of virtue and values must focus on one central principle. OABs are deeply rooted in group behavior (the group process). Bandura sheds new light on the role of the group process, or social learning theory, with his belief that, "Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them of what to do. Fortunately, most human behavior is learned observationally through modeling..." (p.22, 1977). Those teachers who shed the responsibility of influencing this process should do so knowingly.

Formal and informal groups are the mainstays of every society. To say otherwise is to defy definition. The strongest reason for using the group process approach as a teaching strategy is that today's college graduate cannot function in our society without an appreciable understanding of group behavior, the group process. A collection of people is a group when it possesses the following attributes.

--a definable or identifiable membership

--group consciousness (they think of themselves as a group)  
--shared purpose  
--interdependence  
--interaction  
--can behave as a single organism

Groups pass through the following stages of development.

--a stage of testing and dependence  
(the 'forming' of the group)  
--a stage of intragroup expression and conflict  
(the 'storming' of the group)  
--a stage of group cohesion  
(the 'norming' of the group)  
--a stage of role relatedness  
(the 'performing' of the group)

A group's behavior focuses on its tasks—its purposes, its goals, and its functions. Most groups have a 'job' to do so the group's behavior will be task oriented, or should be. It is expected that a group's behavior will move the individuals of the group closer together and towards the accomplishment of its task(s). Group members also have personal

needs. They don't always focus on the task. They have personal agendas. And, groups don't always function smoothly. Frequently, disharmony within a group relates to an individual, or individuals, playing out their personal agenda or attempting to dominate the group.

The teacher who wishes to use the group process strategy in their classroom will have to become quite skilled at observing the behavior of individual group members. Groups only do as well on task as what is going on within the group. Each group needs a good 'behavior watcher', which is an ideal role for the faculty member who is using the strategy.

The professor must clearly define what learning is to take place and establish an appropriate educational environment. The ground rules for group behavior on task must be established. The teacher must become the model for that behavior. He or she must be the facilitator of communications both within the group and in or out of the group. Finally, the faculty member must be part of and participate in the group. Another role for

the teacher is as the 'resident expert'. The professor might also ensure an appropriate balance is struck between task and social behaviors.

The characteristics of the group process strategy that best facilitate learning are the following.

-To learn means to be involved in the task-oriented group activity.

-What is being learned must be personally relevant.

-The faculty member must be genuine and tolerant with the group.

-The learning experience must provide a memorable insight.

-Learning is a direct function of interpersonal relations.

(Wheeler, 1990)

There are an endless number of group methods for learning. Most of them are designed for initiating and maintaining the necessary interaction process. The differences between them appear to center on the particular educational situation that calls for their use. The effective faculty member using the group process strategy will develop an awareness of various methods and the ability to apply the appropriate one to the



educational situation at hand. The following techniques are frequently used for the group process strategy and will be effective if the particular technique is adapted to the situation at hand.

-Use get-acquainted activities not only for the obvious reason but also to get people talking and engaging in discussion, no matter the subject.

-Work your group, especially larger groups, in pairs or as partners. There is ample evidence for the effectiveness of this technique.

-Use discussion promoters when task-oriented things slow down. Opinion questions are much more effective than questions answered with one word. Yes! No!

-Assign and rotate the role of participant and observer so that each of your students will get totally involved in the process.

-Use competition between the groups but ensure the groups are cooperating internally.

-Use cooperative groups by assigning tasks that require cooperation for success. Let the students figure out the need to cooperate.

-Most groups need a good initial stimulus. It needs to be something that will pose a problem, set the stage for a discussion, or task the group to complete a specific operation.

-Use the 'Case' method

-Use role playing in problem-solving scenarios

-Use 'game playing' and other simulations. The sophistication of these instruments makes them quite effective.

(Shoben, 1988)

Among the techniques for establishing an effective group process, most college faculty can find something that will assure them the learning environment needed to achieve an academically respectable change in opinions, attitude, and/or beliefs. If the change is ever going to occur, it will be through some interpersonal exchange in a small group.

### Conclusion

Teaching is complex. Everything matters! The lecturer cannot get up and talk. There must be reinforcers. There must be clearly established objectives. There must be precision in the

communication process. When the student walks into our classroom or lecture hall, we must quickly learn where it is that he or she is coming from. Teaching is a strategic process. Goals must be established prior to entering the classroom, and the faculty member must be flexible enough to engage in a continuous environmental scan and adjust the instructional method on a as needed basis. So what strategy is best when?

The faculty member must decide this on the basis of personal educational philosophy or personal preference. The faculty member might choose a strategy that best suits the needs of the students. The answer might be in what best fits the educational goals or performance outcomes of the course. Some faculty will only and always use that one strategy that fits them best. Others will draw

eclectically from the four suggested, or others. In choosing a teaching strategy, the answer to the following question should be your guide.

If I use this strategy, what students will learn what things?

Above and beyond anything else, choose and consciously use some strategy. Over time, and with attentive effort, you will become more comfortable and effective with a wider range of instructional theories and practices.

**Talking is not teaching and  
listening is not learning.**

Personally, I am always  
ready to learn,  
Although I do not like  
being taught.

Winston L.S. Churchill

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