



EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY

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Faculty Symposium on Teaching Effectiveness*

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**INSTRUCTION AND QUALITY CONTROLS
IN THE
COLLEGE OF CONTINUING EDUCATION
AT
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY**

Paper for CCE Symposium

by

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INTRODUCTION

The Faculty of Embry-Riddle Aeronautical University, in adopting its constitution, chose to have as its primary responsibility "assurance of academic excellence through delivery of the academic process which includes quality teaching, scholarly activity, and service." It is with continued improvement in the first of these listed items, "quality teaching" and support of improvement of the second, scholarly activity," that this symposium series has been initiated. It is but one of numerous ways in which we, as a Faculty, seek continuous improvement in our quest for academic excellence. This is a product of the Faculty and by the Faculty, and we hope that all who teach, wherever you teach, will benefit from it.

You will notice that much of the emphasis of the papers presented here deals with the adult student. For those of you who are not familiar with the Embry - Riddle Aeronautical University and its College of Continuing Education, some idea of the background, size, and scope is presented by Dr. Hal Gray in the first paper.

The papers selected for presentation were chosen by a selection committee consisting of the elected officers of the Faculty Senate and the members of the Faculty Development Committee.

Dr. Paul Bankit
Dr. Ronald Clark
Dr. John King
Dr. Vance Mitchell
Dr. Frank VanderWert
Dr. Earl Wheeler

A call for papers for the next symposium, to be presented in late spring, 1994, will be issued soon. I urge you to consider a submission.



ABSTRACT

The quality of instruction at Embry-Riddle Aeronautical University has been observed and analyzed to determine if there is a need for different approaches to teaching the traditional students at the Daytona Beach Campus and the non-traditional adult students enrolled in ERAU courses at 85 Air Force, Army, and Navy Bases across the country. This diversity was recognized by the former President of ERAU, and he advocated the unification of the various divisions of the University into an ideal "One University Concept" despite their differences. The administrators, of course, are charged with the responsibility of developing and maintaining high academic standards in all the on-campus and the off-campus degree programs.

The University must comply with the standards set by the accrediting agency - the Southern Association of Colleges and Schools. The SACS team completed its regular investigation of policies and practices of the University. This inspection was successful; however, the University must continue to adhere to high standards of quality in courses, curricula, and degree programs, while maintaining productive and efficient teaching methods.

This report describes the educational philosophies and psychologies applied: Cognitive, Gestalt, Behaviorism, Behavior Modification, Conditioned Reflex, plus motivation by satisfying needs and achievement; instructional techniques, including Lecture, Interactive Discussion, the Case Method; also measurement and evaluation techniques.

The advisory system involving Center Academic Advisors, Regional Faculty Advisors, under the surveillance of Center and Regional Directors is scrutinized. The effectiveness of the CCE system of teaching, monitoring, and supervising is also assessed.

The College of Continuing Education is proud of its recent accomplishments: recognition by SACS as an outstanding model of Continuing Education, and winning the Ray Ehrensberger Award granted by the American Association of Adult and Continuing Education.

ERAU is still striving, however, to gain stature in the "Big League" of higher education.



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BACKGROUND: THE HIGHER EDUCATIONAL STAGE IS SET

An Ideal: One University Concept at ERAU

General Kenneth L. Tallman, former President of ERAU, espoused the ideal that this university should strive to be a unified institution rather than three separate entities. This was a very ambitious objective, as traditionally ERAU evolved from a single campus located at Daytona Beach, Florida, expanded to a second campus at Prescott, Arizona, then branched out to include education centers located at 85 military bases in the United States, also in Europe and England.

The University Experiences Expansion and Division

With ERAU Headquarters in Daytona Beach, Florida, including the major administrative offices, classrooms, flying school and flight line, student dormitories, library, laboratories, and other support facilities, the administration and its faculty tended to regard this operation as "The Main Campus." Naturally the university policies, regulations, and operational procedures, courses, and curricula were initiated at this headquarters.

As the University expanded, a second base was established at Prescott, Arizona, with its administration, faculty, flight school and flight line, and its administrative offices and educational facilities. Prescott has taken on the status of a "lonely relative," despite a shorter but very successful history.

The third addition to ERAU was the College of Continuing Education, with its multiple operations at 85 military bases across the United States, England, and Europe. The College of Continuing Education continues to attract around 12,000 adult students annually - most of whom work their regular military jobs during the day, and attend school at night. Some of these education centers have added civilians to their student body. This "rich relative" collects millions of dollars in tuition, but very little prestige accorded by the Daytona Beach administration or faculty. However, this disdain is characteristic of Continuing Education operations at colleges and universities across the country.

These strained relations between the three entities have improved only slightly during the past five years, and there is little progress being made toward integrating them into one closely aligned single university - as General Tallman envisioned. It may be that unification is unrealistic. Why is it necessary that these three independently successful offspring be united? They are all recognized as Embry-Riddle Aeronautical University.

Division Does Not Obviate Unity

Many large and prestigious universities maintain their unity despite their numerous divisions: colleges, schools, institutes, branches, centers, etc. Harvard Business School has never been accepted by Harvard College; yet these entities enjoy the highest level of prestige. Perhaps the differences between these three entities at ERAU will contribute ultimately to the quality and greatness of this university.

ERAU is not unique in its conflict and disfavor for "Continuing Education." Most colleges and universities have witnessed increasing numbers of adults to their on-campus and off-campus programs - both in their credit and non-credit offerings. Some elite faculty members regard continuing education for the non-traditional students as a departure from the traditions of higher education. Others - including ambitious administrators and university accountants - welcome the addition of these mature students to their institutions.

Institutional Growth

Until the last two or three years, ERAU has enjoyed phenomenal growth in all its divisions. The "Main Campus" at Daytona Beach - with emphasis on its flight training and academic programs attracted more students than it could handle. But with the economic recession and the decline of the aviation industry - both in general aviation and the airlines - the enrollment at Daytona Beach has dropped from 5000 students, with an eager waiting list, to about 4000 students. Prescott also dropped from 1800 to 1500. CCE dropped enrollments during the Desert Storm War, but it has recovered mainly because many military students realize they may be released from the service, and must be prepared for the civilian market.

ERAU Structure

For the past year the University has been undergoing administrative changes. The overall university structure has included a President and several Vice Presidents, one for Administration, another for Academics; with three Chancellors - one for each campus: Daytona Beach, Prescott, and the International Division (more recently the College of Continuing Education). The Chancellors by title were replaced with three Provosts over Deans for each of the units. Most recently the Provosts were eliminated, which left Deans in charge of each campus. However, CCE has a Dean over two Deans, one for the U.S. Division; the other for the European Division.

Under the Deans at Daytona Beach and Prescott are Department Heads, supervising the various curricular units, also Flight Operations; plus some subdivisions: Centers, and support functions. CCE has some support divisions on campus, but CCE does not have any departments. Departmental functions are handled by committees.

Constitutions and Senates Emerge

In order to gain some semblance of governance, the President, aided by the Vice President for Academics, allowed and encouraged the introduction of Constitutions for all three academic structures; although Daytona already had a Constitution, Prescott and CCE were encouraged to develop their own Constitutions - which they did. In addition to the regular provisions for academic freedom and governance, CCE added administrative duties to its committee members, that is, those faculty representatives with full-time status. These are full-time faculty who teach and serve as Regional Faculty Advisors, and also serve on designated committees. The effectiveness of this organizational structure remains to be experienced.

Mission of the University

With its expansion, ERAU has developed into a national and an international university. In the process, its mission has been broadened - also prodded by a review of its operations by its accrediting agency - the Southern Association of Colleges and Schools.

After a thorough investigation of ERAU, including an intensive self-study exercise, the accrediting agency gave the University not only a favorable grade, but recognition as a model institution of higher education. Of course their assessment team made some recommendations. One was for a revision of the University Mission Statement, plus a request that the faculty develop a precise "Outcomes Assessment Program" to ensure that the students at all levels accomplished the predetermined objectives of each course in the curricula.

Here are some excerpts from the revised University Mission Statement. The ERAU purpose is stated clearly in the 1992-1993 catalog: "To provide a comprehensive education to prepare graduates for productive careers and responsible citizenship to support the needs of aviation, aerospace, engineering and related fields." This is to be achieved by offering "undergraduate and graduate degree programs which prepare students for immediate productivity and career growth while providing a broad education with emphasis on communication and analytical skills."

Broad Education Goals

The educational objectives were broadened with this challenge: "To develop mature, responsible graduates capable of examining, evaluating and appreciating the economic, political, cultural, moral and technological aspects of humankind and society, and to foster a better understanding of the working of the free enterprise system and its social and economic benefits, and of the profit motive, as vital forces to the potential of individuals and of groups."

Behavior was added to these ambitious goals: "To promote ethical and responsible behavior among its students and graduates in local, national and international aviation and aerospace communities and in the community at large."

These are noble goals and objectives, which go way beyond mastery of subject matter studied in any particular course; thus adding additional responsibility for the instructors "to promote ethical and responsible behavior . . . while preparing graduates with communication and analytical skills required for productive careers to support the needs of aviation, aerospace, engineering and related fields."

In addition, the students should be prepared to become responsible citizens, capable of examining, evaluating and appreciating the economic, political, cultural, moral and technological aspects of humankind and society - while understanding the working of the free enterprise system, its profit motive and social and economic benefits. The inclusion of understanding the profit motive and the free enterprise system was added by a member of the Board of Trustees.

These objectives are added to the subject-matter objectives of all the courses of instruction; therefore, requiring ingenuity on the part of the instructors to provide relevance and timely applications. While most of these objectives apply to the young traditional undergraduate student at Daytona Beach and Prescott, they could constitute additional challenges to the non-traditional military student at military education centers - especially those who may be leaving the service to compete in the civilian world of aviation, business, and industry.

Administrative Controls

The expansion of course coverage to include these mission objectives adds responsibilities for supervision and surveillance to the duties of the Center Directors, Center Academic Advisors, Regional Directors, and Regional Faculty Advisors. The real challenge for the administration is how to enforce compliance. There is a "school of thought" that seems to prevail that compliance is implemented by administrative decree, reinforced by memoranda and regulations - supported by course outlines, syllabi, and lesson plans.

Strict Compliance

Let us consider this concept of compliance for a moment. The official course outlines are supposed to specify that "The students will comprehend" a list of the course objectives. One course has 22 objectives required for the students to comprehend. Along side of these objectives are the specified hours and minutes to be dedicated to teaching these objectives. Incidentally, these objectives are changed whenever a new textbook is adopted for any particular course.

There is nothing wrong with specifying comprehensive objectives for all the courses of instruction. In fact, most of the Adjunct Instructors would be lost without the guidance of strict Course Outlines, Syllabi, and Lesson Plans - plus coaching provided by Center Academic Advisors and Regional Faculty Advisors. The irony here, however, is that the students must comprehend the objectives, and the instructors must require learning "by the numbers." This is more of a military order than an academic concept of teaching/learning.

MAINTAINING HIGHER EDUCATIONAL STANDARDS

Of course, it is understandable that the university is responsible for maintaining high academic standards, identified by predetermined objectives, and ensured by recognizable outcomes. Can educational objectives be ordered and accomplished by decree and regulations? Success is not achieved by order of administrators; favorable results are attained only when the student's and instructor's minds are tuned to the same frequency, and they are motivated strongly enough to aim for the same target - effective learning.

Total Quality Education

The latest edict, imposed on American management by the cult of D. Edward Deming, was imported from Japan, is called "TOTAL QUALITY MANAGEMENT." The concept has been interpolated for higher education by General McPeak, Chief of Staff for the Air Force. He has made it a requirement for all U.S. Air Force operations. Apparently, implementation of this order was delegated to General Loh, Commander in Chief of the Air Combat Command. He reiterated that TQM, now identified as QES for "Quality Education Standards," be adopted by all colleges and universities located on Air Force Bases, and providing courses and degree programs for the military personnel in the United States, England, and Europe. (The Flyer, Feb. 14, 1992, HQ TAC Public Affairs)

General Loh's order states that all colleges and universities offering courses on base for military personnel must provide courses with the same content and quality as those offered on their respective campuses. Quality standards must be established and measured by an inspecting team made up of military and civilian experts, representing a cross section of academic institutions. If these education programs do not meet the high quality standards, the faulty institutions will be asked to discontinue their on-base educational programs.

Climate of Compliance

This authoritarian climate of compliance is inconsistent with the Deming philosophy of Total Quality Control - as a review of his "fourteen points" will reveal. His entire philosophy is based on voluntary dedication of all members of the employee-management team working together to eliminate errors and raise quality standards. One of his major points is to "cease dependence on mass inspection to achieve quality." Nevertheless, if ERAU is to continue its operations at U.S. Air Force Bases, the university personnel must structure their programs to meet these requirements. (Quality or Else, Lloyd Dobyns & Clare Crawford-Mason, 1991)

Differentiate Training and Education

Some educators tend to equate **training** and **education**. The ERAU curricula contain a spectrum of courses covering essential skills for training pilots and aircraft mechanics, plus courses requiring mathematics emphasizing analytical skills. Many courses in exact sciences, such as physics, meteorology, and aerodynamics do require use of precise mathematical and statistical tools. However, many courses, particularly graduate courses, require comprehension of concepts and utilize abstract reasoning in problem solving.

Standards for Teaching/Learning

Certainly **standardization** is not the dominant ideal for higher education. Of course, standards of Teaching/Learning may be established. This is by no means a simple task, as no absolute standards exist in a national data bank, which can be retrieved for all instructors to follow on any subject. Recent televised discussions about **standard levels of achievement** for students attending elementary and secondary public schools would lead the public to believe that these standards could be ordered for every public school with compulsory compliance. In higher education, this is an evasive ideal.

Recognized Body of Knowledge

How can subject-matter standards be determined? A realistic approach is to recognize that subject matter may be identified within every **academic discipline**, in what scientists and scholars call "The body of knowledge." As a matter of fact, this range of information exists in encyclopedias, textbooks, non-fiction books, and miscellaneous documents stored in libraries and other depositories all around the world. These depositories are updated with information from newspapers, magazines, journals, microfiche, microfilm, audio and videotapes, and now on Compact Disks.

Bodies of Knowledge have been accumulated within all disciplines, such as the Natural Sciences, Social Sciences, Fine Arts, Astronomy, Architecture, Geology, Engineering, Psychology, Sociology, Philosophy, History, Geography, etc. Of course, all of these disciplines have subdivisions and specialties, such as "Management," which is subdivided into such areas of concentration as City Management, Personnel Management, Human Resources Management, Airline Management, Maintenance Management, etc.

Courses of Study

Moving toward the classroom, closer to the student, these disciplines are subdivided into courses, which are allocated modules of information that can be handled feasibly for students by teachers. Blocks of these courses may be designated as a "curriculum," or courses of study, which when completed enable the student to obtain a degree. The degree actually certifies that the student has mastered the subject matter - or body of knowledge - sufficiently to be able to apply this range of information - and in some cases, skills - to a job, within a career. Of course, this is a simplification of this whole process of being educated. Now let's turn attention to ways in which this subject matter is taught and learned.

Implementing Educational Policies and Procedures

Faculty orientations on policies, practices, and regulations give some general ideas on the nature of ERAU students, and how they should be treated, taught, tested, graded, and graduated; however, the determination of effective methods and techniques requires some exploration - even experimentation.

In a study of the student records two years ago, the administration discovered that there was a significant discrepancy in the grades received by students at the Daytona Beach Campus

and the students enrolled in courses offered at military bases by faculty of the College of Continuing Education. The grades were much higher for the CCE students. The administration identified this phenomenon as "Grade Inflation," and they admonished the faculty to raise their testing and grading standards. This they did, but not without argument.

DIFFERENT STUDENT BODIES AT ERAU

Individual Differences

Controversy over grade inflation does not warrant its treatment as a **Cause Celebre**, but the incident does raise some questions about the need for different methods of instruction for the vastly different student bodies pursuing their degrees at the "Main Campus," the Prescott Campus, and the far flung CCE Campuses.

A tour of the ERAU classrooms at the Daytona Beach Campus, the Prescott Campus, and a typical ERAU classroom at an Air Force base would reveal vast differences between the students. The basic characteristics include: differences in ages, interests, attitudes, motivations, values, experience, respect for authority, short-term objectives, and long-range goals. Since interest profiles, aptitude or intelligence tests, and psychological tests are not required for ERAU students, these measurements are not available, they have no bearing; but such scores might be enlightening to the researcher and the administration.

Traditional Main-stream and Non-traditional Students

The popular terms used to identify these two types of students are "traditional" and "non-traditional." The **traditional students**, ages 19 to 25, attend the "regular," or elitist four-year colleges and universities across the country. They live in dormitories, sorority or fraternity houses, and attend day-time classes at colleges and universities, such as the University of California, University of Southern California, Stanford, Chicago University, Yale, Harvard, Princeton, Duke, all the State Universities, and over 1700 other four-year institutions of higher education.

The **non-traditional students**, ages 25 to 50, attend the 1700 or more Community Colleges, and they have invaded most of the four-year colleges and universities. These students are mixed with large numbers of students who take non-credit hobby courses, leisure-time self-development courses, and vocational training courses. It is almost impossible to identify any of these as **typical students**, as they represent such a wide cross-section of our society; but their numbers keep increasing, as they realize the need for additional education and training to keep up with the changing technology in preparation for jobs and careers. However, a great number of them desire not only to improve themselves, but they want degrees to certify their achievement.

The Traditional ERAU Students

Versus

The Non-traditional ERAU Military Students

The traditional ERAU students at Daytona Beach and Prescott do not fit the pattern of the typical college and university students attending the elitist institutions. A main factor for ERAU students would be **interest**, and their major interest is **aviation**, as a high percentage of them take the flight training program in preparation for careers as airline pilots. The rest of them are planning for careers as aviation mechanics or managers in the aviation industry.

The other characteristics of these traditional students are closely allied with their counterparts in the elitist institutions. They have just come out of the mainstream of American high schools, and their tastes, values and attitudes are quite similar to those found in the student

unions and dorms at any college or university. There are some differences, however, in their motivations, goals, and objectives. Their career plans are predetermined before they come to ERAU - especially those who want to be pilots, mechanics, or managers in the airlines and aviation industry. They would differ decidedly from the great number of college students who have no idea of what careers to pursue; so many of them have a difficult time selecting a major, let alone choosing a career.

Now to compare these traditional students with the non-traditional career military types found in the ERAU designated classrooms at Air Force, Army, and Navy bases around the U.S., England, and Europe.

The average age of these **non-traditional students** pursuing undergraduate and graduate degrees with ERAU is 31 versus 21 for the **traditional students** at the Main Campus and Prescott. Their military careers have been certain, and their studies are directed toward qualifying for higher ranks and increasingly challenging careers as pilots, mechanics, specialists, and managers in recognized career fields and occupations. With the end of the Cold War, they have been made aware by the newly elected administration that their military careers may soon be terminated, and they must compete for civilian jobs in a depressed market. They are certainly not thrilled with the idea of filling menial jobs building roads and bridges in the American infrastructure - as they have been led to believe by some outspoken members of the Democratic Party.

There is no question about the strong motivation of these non-traditional students; they are very serious with definite goals and commitments. Most of them have families to support, and they are driven by the unmistakable urge to survive in a troubled economy. Yet their careers have always included an element of danger, as they performed their duties as pilots, flight crews, ground support personnel in combat zones. They have traveled and lived at bases all around the world, typically serving tours of duty lasting two to four years.

The students pursue their studies after hours - not four to five-hour days, and five-day weeks, enjoyed by students enrolled in regular colleges and universities. The classroom schedule at ERAU begins at 4:30 or 5:00 p.m. and ends at 9:00 or 10:00 p.m. They attend class after performing a full-time job during the daytime - often interrupted by Temporary Duty flights. Most of them had to interrupt their studies to perform their regular military duties in Desert Storm - the recent war against Iraq.

In addition to their military duties, and the ERAU studies, most of these students have family responsibilities - many with spouses and children. These full lives, with their multiple activities have given these men and women enriching experiences that enhance their preparations and discussions of course problems and applications to their work, and their projected careers either in the military or civilian occupations. It is understandable that these non-traditional students earn higher grades than the less motivated traditional students.

EDUCATIONAL PHILOSOPHIES

Pedagogy Versus Andragogy

Malcolm Knowles, one of the leaders and innovators in adult higher education, introduced a concept which raised a lot of controversy among educators. He identified the adult educators as "a band of wild horses, all going essentially the same direction but with many strays and much competition for leadership." (1980, p. 160) He contended that the adult student and the traditional college student are so different as to demand a "distinct discipline" which he titled "andragogy." He defined the term as "the art and science of helping adults learn." He claimed also that the age-old term for teaching, "pedagogy," be used to identify "the art and science of teaching children." (Freedman, 1987, p. 62)

Leonard Freedman, Dean of Extension and Continuing Education, at the University of California at Los Angeles, recommends six essential **methods of teaching/learning** which are appropriate for educating adults: (p. 63)

1. Continuing education should be learner rather than teacher centered.
2. The adult learner should be self-directing rather than dependent and should participate actively in every stage of the educational process including setting the objectives, design of the curriculum, and selection of learning methods.
3. The content and methodologies should draw heavily upon the learner's life and work experience.
4. Adult learners tend to be motivated by the desire to address problems rather than to master subject matter. Thus, adult educators should be concerned more with process than with specific content.
5. The teacher - whom Knowles prefers to call the "facilitator of learning" - has an important role but is only one learning resource among many. The teacher/facilitator should enter into a partnership with the learner, sometimes embodied in a "learning contract" through which the learner undertakes to complete a series of agreed-upon processes to achieve a self-identified objective.
6. The success of this partnership requires that a climate of mutual respect and trust be established between teacher and learner.

Student-centered Versus Instructor-centered Education Military Students Not Always "Sold" on New Methods

This approach to the education of adults as non-traditional learners challenges many of the assumptions which prevail in traditional methods of instruction. It may be noted also that many instructors, especially those adjuncts who have had their basic and advanced instructor training in military service, do not accept these "radical" departures from traditional methods of

instruction.

Furthermore, many military students do not think they are learning if their instructor - who is the **authority** on the subject - does not transmit that subject matter via the lecture method. Of course, many of these "over-worked" students would prefer to have the answers to forthcoming examinations rather than being motivated by the instructor to think or to solve practical career problems.

Teacher-directed Versus Self-directed Learning

It is not unusual for some students who are unfamiliar with unconventional methods of teaching/learning to misconstrue **non-directive** methods of instruction as lack of leadership on the part of the instructor. These students and many of our faculty are not familiar with the early Psychoanalytical Schools of Psychology espoused by Freud, Jung, and Adler. Later, Carl Rogers promoted the practice of **non-directive counseling**, which has become very popular in most occupations. These **interactive non-directive teaching methods** are not easy "to sell" to those who have lived and worked in the environment of regulations, and implementation by order of higher ranking officers.

Non-directive Techniques Not Appropriate for Combat

Outside the classroom, the permissive instructor is readily made aware that **non-directive techniques are not very effective under combat conditions**. Obviously, during wartime in the heat of battle, soldiers, non-commissioned, and commissioned officers must carry out orders quickly not only to defeat the enemy but also to survive. Those are conditions under which effective training pays off.

EDUCATIONAL PSYCHOLOGIES

Cognitive and/or Gestalt Psychology

More recent "Schools of Psychology" have direct relevance to **how adults learn**. The currently most popular is **Cognitive Psychology**. Mark Ashcraft, Professor of Psychology at Cleveland State University, defines **cognition** as "the collection of mental processes and activities used in processing, remembering, and thinking, and the act of using those processes." (p. 10)

Expanding this definition, he states that "cognitive psychology is the scientific study of human memory and mental processes, including such activities as perception, remembering, using language, reasoning, and solving problems." To this he adds "three assumptions that pervade the field of **cognitive psychology**: (1) that mental processes exist; (2) that people are active information processors; and (3) that mental processes and structures can be revealed by time and accuracy measures." (p.31)

In a book entitled, "Applying Cognitive Psychology to User-Interface Design," edited by two British authors, Margaret Gardiner and Bruce Christie, these authors give definitions which broaden the scope of **cognitive psychology**: "Cognitive psychology is the study of knowledge and of how people use it. It deals with how we gain information from the world, how it is represented and transformed as knowledge, how that information is stored, and how that knowledge is used to direct behavior." (p. 57)

The various authors in the above cited text were very clever in implying the connection between cognitive psychology and the trends in computer technology toward the development of **artificial intelligence**; however, they dodged the dramatic but evolutionary conclusion that the computer will exceed **human intelligence**. Nevertheless, they did emphasize the importance of human and computer compatibility. (p. 305)

There is no doubt that the computer is becoming an indispensable tool for conducting research, especially in its ability to store, retrieve, and transmit information. These three functions are included in all the definitions of cognitive psychology, as it emphasizes the human **thinking process**.

Gestalt Psychology and Insight

In contrast to the cognitive psychologists, the Gestalt Psychologists made a behaviorist analysis with emphasis on mental processes involved in solving problems. The term "Gestalt" means "shape," with respect to the relation between the parts and the whole configuration. When an individual is confronted with a problem, he or she senses the answer to the problem, the discovery they termed "**insight**." This process involves **thinking**, which the Gestaltists "conceived of as grasping relationships in the perceptual field, and as such it was synonymous with insight." (Gardiner & Ghristie, p. 66)

As a method of instruction, the Gestalt concept is an effective approach in structuring learning projects which include problems designed to motivate students, and structured to give students the opportunity to apply **insight** for their solutions.

Behaviorism and Behavior Modification Behaviorism

J.B. Watson's **behaviorism** (early 1900s), though abandoned by the cognitive psychologists, does have some validity for teachers who need overt feedback cues to determine if the students are learning anything. The behaviorists rejected any theory that dealt with "reading the student's mind." However, they were mainly emphasizing skills training, or learning by doing - which involves behavior that can be measured, such as mastery of skills in mathematics, reading, drills, or athletic activities.

Behavior Modification

Although still endorsing behaviorism, B.F. Skinner, very skillfully launched a psychological concept that lasted some 50 years, and still persists in education and business. It was labelled "Behavior Modification," and it was used by every exercise and weight-control "expert" in England and America. He strengthened the concept of behavior control by adding "positive reinforcement" to the learning and training process. It was overwhelmingly accepted in educational circles as well as in business, extended also to "management training." Skinner also developed concepts and technology for "Teaching Machines" and "Programmed Learning."

His concepts predated the computer, but he undoubtedly would have been an advocate of computer-assisted learning.

Negative Reinforcement

Traditional military discipline - along with its basic training - persists in its use of "negative reinforcement"; yet its results are usually positive, despite some resentment on the part of the learner.

Conditioned Reflex

This ancient concept of "conditioned reflex" was developed by I.P. Pavlov in his experiments with dogs. He associated feeding his dogs by ringing a bell, and he discovered that the dogs would salivate even if they were not fed. This he termed a "conditioned reflex." This concept is still effective in training pilots, or any military personnel, to respond with step-by-step **emergency procedures**. Automatic responses are certainly effective in meeting contingencies of all kinds. Motivation for such training is immediate, and procedures are readily memorized and drilled for instant response.

Motivation and Achievement

Maslow's Hierarchy of Needs

Abraham Maslow's "Hierarchy of Needs" (1940s) is still a very plausible explanation of **motivation**. He conceived that people's motives formed like a pyramid with the **physiological needs** at the base, transcending upward to **safety and security needs**, to **belongingness and love**, to **esteem, approval, and recognition**, to **aesthetic order and beauty**, and ultimately to **self-actualization**. (Lefton & Valatne, 1988, pp. 169-170)

Yet as progressively satisfying as these **drives** appear to be, they are very difficult to measure, and even harder to achieve. **Self-actualization** appears to be an unattainable goal, as it moves higher as the achiever comes close to its realization. Some psychologists relate this

term to **self-realization** - which is more of a pursuit than a level of achievement.

However, to the instructor and the students this **drive for self-actualization** is a real incentive for learning - **if it can be activated.**

McClelland's Achievement Motivation

Quite akin to Maslow's concept of motivating through needs is McClelland's contention that **achievement is a characteristic of the human personality.** Although in follow-up studies of this hypothesis, he discovered that this personality trait could be found only in capitalist countries espousing the "profit motive." (McClelland, 1961)

Undoubtedly this is a concept that has face validity in the military, with its emphasis on rank, and dedication to duty. The **drive for advancement** is real and very strong. Of course, it serves as an advantage for teacher and student in the military classroom.

A PHILOSOPHY OF ADULT EDUCATION

Dr. Bill Herlehy, one of the leading professors in the College of Continuing Education at ERAU, adds a touch of philosophy upon which to base an effective approach to the teaching/learning of adult students:

Before you accept the challenge of educating these unique persons, it is well worthwhile to take a close look at what it is that makes them "tick." The adult learner who works full-time in a profession does not bring the same experiences and expectations to the classroom as does the traditional full-time student. . . . Each person in your classroom has different experiences, values, needs, aspirations, and persuasions which cause them to act and react differently from other individuals. . . You'll have to teach accordingly.

(ERAU Faculty Academic Orientation Manual, p. F-1)

ADULT INSTRUCTIONAL METHODS AND TECHNIQUES

Teachers and administrators in higher education, especially those involved in **Continuing Education**, have been challenged by questions asked by students, faculty, and administrators: What is the role of the teacher in this rapidly expanding adjunct of education? Is the instructor to be regarded as the **leader, expert, authority, director, facilitator, a resource, a coach, or referee?**

According to Freedman, "The teacher as imparter of authoritative information and ideas is still omnipresent and is still usually identified as teacher, professor, faculty member, or instructor. The lecture remains a principal method A great deal of continuing education is subject rather than problem centered." (p. 67)

In spite of administrative decree, and advice of Center Directors, Center Academic Advisors, Regional Directors, and Regional Faculty Advisors - the most popular method of teaching/learning is the **teacher-centered, subject-centered lecture**, not the **student-centered methods and techniques** recommended for **adult and continuing education**.

The answers to these questions determines the methods and techniques that may be used in the classroom, laboratory, or wherever courses are taught. The **concept of teaching** is being challenged here. Does the teacher really **teach** anything? The process of teaching appears to be a simple matter of **transfer of knowledge**, but can knowledge be simply transferred from teacher to student? Is not **learning** something that happens to the student, if the student wants it to happen? Learning is not a simple automatic process that takes place when the teacher **covers the subject**, or the student **reads the text**.

Lecture Versus Interactive Learning Techniques

Nearly everybody - students, teachers, administrators, and the general public - believes that the lecture is the most efficient method of teaching and learning. As a matter of fact, proven by tests and experiments, **the lecture method is the least efficient method of teaching/learning**. Cited in Freeman's text is K.P. Cross, an adult educator states: "The lecture tends to be regarded as profoundly inimical to effective learning." (Cross, p. 92)

The Foxfire Method

A provocative essay appeared in **JAAER**, Embry-Riddles' Journal of Aviation/Aerospace Research. Its author, Stephen Newburg, is a graduate student pursuing an **MBAA**. He titled his paper "Goodbye To The Lecture: Embracing Interactive Learning Techniques." In arrogant language he condemns the lecture method: "The lecture method of teaching might consider, for the good of education, laying itself to rest in a grave of banality, allowing innovative and creative teaching methods to rise from its wake." (p. 32)

In its place, Newburg touts the "Foxfire Method," conceived by Professor Eliot Wigginton of the University of Georgia, who describes his method: "The Foxfire method is based on the notion that classrooms should revolve around the interests of students, rather than the direction of teachers or bureaucrats." Implementing the method, the teacher is not a boss or an authority but a guide for the students who have a vested interest in learning. The process thrives on interaction, group discussions, role-playing, peer reviews, with positive feedback. (p. 34)

Interactive Discussion

When students reach the stature of adults, they no longer take the teacher's statements at face value; they want to know **why**. Thus the **Discussion Method** comes into being in the classroom. The process adds interest, direction, and motivation to the learning situation. It gains more depth and momentum when provocative questions are posed purposely by the teacher and the students. The students must engage in search, research, and discussion to find the answers.

"Yet discussion does not in itself assure educational quality, for it can easily degenerate into an incoherent, discursive pooling of ignorance," claims Freedman. (p. 70) How can this trap of ignorance be avoided? The enlightened instructor in continuing education precludes this possibility by requiring the students to prepare for discussions of designated topic by reading assignments in the text, library searches of books, periodicals, newspapers, or television programs, etc.

The Case Method

The Harvard Case Method, which has characterized the Harvard Business School for the past forty years, is still an effective method of teaching/learning while integrating subject matter with the traditional disciplines of business education. The integrating medium is the **Case Study** derived from a practical business problem confronting an enterprise. Information for the problem comes from interviews and observations of an actual business. This complex problem is written into the format of "The Case Study," prescribed by professors at the Harvard Business School.

That Case Study - along with all the others developed by the students in each class - becomes the center of discussion as it is presented by each student and critiqued by the professor. Instead of requiring the students to attend different subject-matter courses, the students are assembled into one big class, and the professors of each specialty are scheduled to listen to the cases presented by the students, and the professors then comment on the application of the subject matter to solving the problems found in each case.

Thus teaching and learning are intertwined in solving practical business problems - which in reality is the way businesses are operated in the American "Free Enterprise System." These cases written by the students and critiqued by the professors are compiled into **Case Study Books** and distributed to Business Colleges all over the world, thus helping students learn how to become business managers and operators.

COMPUTERS AND DATA BANKS

The development of advanced computer technology has provided more than word processing systems; **data banks** filled with billions of bits of information are available to students studying any subject in the college and university curricula. In fact, this information is available through public and private libraries and commercial depositories - retrievable through computer networks. To cite a baffling example: twenty-six volumes of Compton's Encyclopedia are stored on a 4 1/2 inch disk, called a CD ROM, which stands for Compact Disk with Read-Only Memory.

Computers as Research Tools

Data banks are available in most college and university libraries - also many public libraries. Libraries are no longer just musty depositories for books, magazines, and local newspapers. Even the wooden catalogs with their multiple little drawers are replaced or augmented by rows of computers, accompanied by printers that are clicking away, spewing out yards of tractor-fed printouts endlessly.

The research-minded student is in "hot pursuit" of topics being researched for term papers and research reports. The topic searches are expedited by the computers and their CD-ROMS, storing thousands of abstracts and articles from the latest issues of magazines, trade periodicals and professional journals. The most recent issues of periodicals not yet stored on CD-ROMS are available in neatly divided shelves, which can readily be duplicated on copy machines standing by for their feeding of dimes and quarters, or plastic cards for frequent copiers.

Life for the researcher has changed from the old days of stack searches and scribbled notes on 3 x 5 cards or notebooks, later to be copied by typewriters. Now the computer is the word processor, operating at high speeds, for the composer who is shifting material from paragraph to paragraph all over the screen - with speedy printouts in publishable formats suitable for final submission to the demanding professor or editor.

Modem Access Through Computers From Home

Another mind-boggling breakthrough: topic searches can be conducted via telephone modems from dormitories, fraternity or sorority houses, even from the student's own computer at home. This access can be expanded to inter-library loan services through which information may be obtained from libraries all over the country. For the wealthier researchers, data and topic searches can be rapidly activated by modems at all hours of the day and night for subscription fees and real-time charges. This certainly demonstrates self-directed study and research beyond the classroom.

Computer Assisted Instruction

The Laptop Computer has become a portable teaching tool, which can even be pre-programmed for classroom presentations. A projection panel can be attached to an overhead projector that displays an enlargement of the computer screen on the wall. This is much further advanced technology than B.F. Skinner provided as "Programmed Learning." Now the process can be automated for instant projection to assist in teaching/learning.

MEASUREMENT AND EVALUATION

In these departures from the traditional modes of teaching/learning, how can quality of education be optimized? With the introduction of new computer-assisted learning, is the process **dehumanized**? Is personal interaction lost, which heretofore was the source of motivation and inspiration? Is quality of instruction sacrificed for synthetic learning expedited by impersonal technology? These questions must be addressed.

Monitoring Quality of Instruction

The ERAU College of Continuing Education is faced with a real challenge: how can instruction be monitored at remote Air Force Bases all over the country and across the ocean to England and Europe? Currently, the teaching done by Adjunct Instructors is prescribed by regulations and policies, observed and evaluated by Center Academic Advisors, who are oriented, assisted, and monitored by Regional Faculty Advisors - all under the supervision of an Academic Dean - also remotely located at Daytona Beach, Florida. In the case of the European Dean, his surveillance and supervision cover Europe and England.

Evaluators and Measuring Devices

In accordance with Job Descriptions, the **Evaluators** are the Center Directors and the Center Academic Advisors. The measuring devices for effectiveness of instruction currently used include observations by Center and Regional Directors, evaluations by Center Academic Advisors - some of whom are full-time faculty, some part-time adjunct instructors; evaluations of Center Academic Advisors by Regional Advisors (they also do classroom observations). Of course, all of these observations and evaluations are conducted at teaching sites, some local, others all across the country. How valid and reliable these evaluations are must yet be tested.

Student Evaluations of instructors are added to the measuring devices. Because of other college competition, the desire to please the students is very strong. Furthermore, since Adjunct Instructors depend on student evaluations to retain their teaching positions, and their pay, their tendency is to try to please the students. There is some question about the validity and reliability of student evaluations. Of course, they do give a feedback which will quickly identify trouble spots. Student evaluations, therefore, must be heeded; but they are not the ultimate and infallible measure of the effectiveness of instruction.

Those instructors who set high academic standards, requirements for research and reports, and difficult examinations, must also subject themselves to rigid scrutiny from the students and administrators. Of course, most of the academic professionals have been quite successful in this process.

It does appear that the process is relatively successful in reaching its objectives: teaching thousands of students, and granting thousands of degrees. The process has also survived the rigid scrutiny of the Accreditation Agency - The Southern Association of Colleges and Schools. Even more impressive is national recognition award given by the American Association of Adult and Continuing Education to the ERAU College of Continuing Education. Of course, we are all proud of that accomplishment.

Total Quality Assurance of Teaching/Learning

Criteria for setting higher educational standards are still far from definitive. It was believed that if **objectives** were clearly listed for all courses in the **Course Outlines**, then measurement/evaluation would be easy - especially if the measurements were identified as **Outcomes Assessment** - as recommended by the **Accreditation Team**.

Thousands of hours were expended in surveys, investigations, analyses, writing results in the recent **UNIVERSITY SELF-STUDY EXERCISE**. Volumes of material were published and circulated. Everyone at Embry-Riddle Aeronautical University was involved in this exhaustive study. Certainly all of the instructors and administrators virtually pledged themselves to ensuring that **improved student outcomes would be guaranteed in all courses on-campus and off-campus throughout the world**.

Of course, the faculty and administration of the ERAU College of Continuing Education were pledged and dedicated to this all-consuming educational effort. Unfortunately and ironically, the majority of the instructors in CCE are part-time Adjunct Instructors with a broad diversity of higher educational qualifications from colleges and universities all over the world - many with Bachelor's and Master's Degrees from Embry-Riddle.

Challenge to Center Academic Advisors and Regional Faculty Advisors

The higher education and instructor training acquired by most Adjunct Instructors need not be restrictive, however, because the jobs of the Academic Advisors and the Regional Faculty Advisors were intended to upgrade, offset, and counteract any deficiencies encountered by Adjunct Faculty. Nevertheless, all members of the CCE administration and staff do not share this optimistic and enlightened view, including many Academic Advisors and some Regional Faculty Advisors.

Academic Standard Bearers - Regional Faculty Advisors

During the past six years a number of full-time Ph.D.s and Ed.D.s were added to the faculty of the College of Continuing Education. Even though their Job Descriptions were specific about their duties, the President, Vice Presidents, Chancellors (titles changed in interim), Deans, and Directors informed them of their three major functions: (1) to teach courses in their disciplines, (2) to meet requirements for academic accreditation, and (3) to establish and maintain academic standards in their respective regions. Of course, they were to serve as advisors to the Regional Directors, Center Directors, and faculty - and other duties as deemed necessary.

The teaching duties were familiar to these Regional Faculty Advisors, as all of them had been active instructors in colleges and universities, and they all had aviation experience which enabled them to bridge the gap from their regular teaching disciplines and the aviation curriculum at ERAU.

The second function was not so clearly defined: how could these former college "professors" establish and maintain academic standards in their regions, including numerous teaching sites at Air Force, Army, or Navy Bases all across the U.S., England, and Europe? These "professors" also comprised an "Advisory Committee" that helped guide the administrators in formulating academic and administrative policies that would ensure high

academic standards in teaching, testing, and advising students. Of course, they would have to work directly with the Adjunct Instructors in maintaining high standards of instruction and course development, and related duties and tasks.

The third and additional functions were graciously accepted - as these professors were complimented by the trust and confidence that had been placed in them by the administration; yet they had no precedents to go by in their previous university faculty roles. They presumed that everyone they worked with would be informed of their expected roles - in developing and maintaining academic standards.

Academic Roles Need Clarification

Every year at the Annual Meeting, there are heated discussions of the roles, duties, and responsibilities of these professorial types, performing their duties, under varied authorities - most of whom perceive these academic roles quite differently. Misunderstandings abound: who supervises whom is still a mystery, whether recognized officially or unofficially. Academic standards are still suffering in this sea of confusion. Attempts to enforce compliance with higher educational standards by decree and regulation have not been successful. There must be a better way.

Developing Standards by Models and Seminars

Drs. Bill Herlehy and Ron Clark have been very successful in designing and promoting "Instructor Training Seminars." They have even opened enrollments to their seminars to teachers and administrators from other local colleges and universities. They are certainly providing model seminars which the rest of us might follow. Better still, their seminars might be restaged and augmented in different regions. They do deserve congratulations for "showing us how it ought to be done." Perhaps "Teaching Oscars" would be appropriate.

Enlightening Role for CCE Administrators

Discussions at the Annual Meetings at Daytona Beach about the respective roles of Center Directors, Regional Directors, Center Academic Advisors, and Regional Faculty Advisors have been exercises in futility. It should be incumbent upon the CCE administration to review the original concepts of the roles these respective directors and advisors, and relate their duties and tasks to the higher educational standards required by the accreditation agency, the Southern Association of Colleges and Schools.

New CCE Organization Structure

During the past two years, after developing and publishing their own Constitution, the members of the CCE Senate - through their various committees - have developed an organization structure, theoretically designed to administer curricula, courses, and degree programs for the College of Continuing Education. Whether this too is a futile exercise, or the CCE structure represents a viable organization ready to operate, remains in question.

Changes and Protocol

Procedures to be followed by CCE with respect to development of curricula, courses of study, and degree programs must be clarified. Too frequently the TELEMAIL reveals new proposals and changes in courses and curricula that affect the entire University. The "Main

Campus" still seems to make changes at will - which reflect university policy. Recent changes proposed by the Daytona Beach MBA/A Department, adding nine credit hours to the MBA/A Degree would be disastrous to CCE enrollments, and certainly reduce revenues for the university. Other course changes made by departments at Daytona Beach would affect course offerings all across the country. Furthermore, little attention is paid to suggestions made by CCE faculty or staff. This is a constant source of frustration.

ONE UNIVERSITY SEEKING STATUS

The "One University Concept" is still a dream. Diversity is regarded as a weakness not a strength. Nevertheless, the College of Continuing Education seems to be making some progress. In the recent evaluations by the Southern Association of Colleges and Schools, and the American Association of Adult and Continuing Education, the ERAU College of Continuing Education gained some favorable national recognition.

Maintaining strict **academic standards** while preserving **academic freedom** is the criterion for measuring institutional effectiveness. The faculty and administration at Embry-Riddle Aeronautical University must find a way to achieve this objective if they are to gain stature and recognition in the "Big League" of higher education.

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**THE DEVELOPMENT OF ANDRAGOGICAL TECHNIQUES OF INSTRUCTION
FOR ADULT EDUCATION**

by

Ronald E. Clark, Ed.D

**A Paper Presented at the First Annual
Embry-Riddle Aeronautical University
College of Continuing Education
Faculty Symposium on Teaching Effectiveness,
Daytona Beach, FL**

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INTRODUCTION

As the Twentieth Century began, there was a traditional posture evident in higher education in the United States. For those males whose families could afford it, beginning college immediately following high school provided a liberal arts education. For select 21 year old college graduates, specialization in a professional field was available in graduate school. For the remainder of America's youth, and nearly all of its women, high school graduation was the highest academic pinnacle they might obtain for the remainder of their life.

PEDAGOGY DEFINED

Coupled within this traditional academic posture was another factor which is the subject of this paper: at the turn of the Twentieth Century, nearly everyone in America was taught by a conservative lecture style which will be referred to in this paper as the pedagogical method. The literal meaning of pedagogy is the art and science of teaching children. Various dictionary definitions of pedagogy indicate that it is (1) the profession or function of a teacher; teaching, or (2) the art or science of teaching; especially, instruction in teaching methods. It is important to note here that the use of the term pedagogy in this paper will be to depict a teaching style which is primarily lecture and faculty-bound, with most, if not all, responsibility for the educational process vested in the teacher.

EDUCATIONAL SHIFTS

Much has happened in higher education since the turn of the previous century. Most notably, for purposes of this paper, two striking changes stand out. First, there has been a break in the tradition of who goes to college and graduate school, and when. Second, there has been a breakthrough in adult teaching methodology wherein pedagogy has begun to be augmented and even replaced by a new instructional paradigm called andragogy.

Most notably propelled by two world wars and resultant world leadership, American youth have set their sights on the attainment of a college education of varying lengths. The achievement of this goal has taken many forms, and is being accomplished in a very extended time frame. It is possible to find adults from their twenties through their sixties, and beyond, in American colleges and universities. Most working adults receive their college education at night, and on weekends. America is witnessing an adult educational upheaval and exodus into classrooms of massive portions, with no signs of slowing on the horizon. Gone forever is the selective education of the rich and favored in America, for the newly educated have powerfully become the rich and favored.

Fueled by this "get educated to be successful" message, the American adult is back on campus in record numbers, highly motivated and ready to learn. Coincidentally, or because of this phenomenon, pedagogy has faded out of the spotlight and into the background, augmented

and replaced by a new champion of educational paradigms, andragogy.

ANDRAGOGY DEFINED

Andragogy, while not an entirely new concept, is currently undergoing a revival of sorts in American education; sort of a rediscovery. By definition, andragogy is nonexistent. No current American standard or unabridged dictionary or encyclopedia contains a definition of andragogy. Brookfield (1986) mentions that andragogy is viewed variously as a descriptor of adult learning styles, a rockbed from which adult teaching behaviors can be carved, and a rallying cry. He affirms that andragogy is the most popular concept of the 1980's in the teaching of adults.

According to Knowles (1980), the concept and derivative of the word andragogy traces back in origin to Germanic, French-Canadian, and Yugoslavian beginnings. In their writings describing the folk high school in Germany, Anderson and Lindeman (1927) mentioned that andragogy was the "true method of adult learning" (p.3) .

FOUR ASSUMPTIONS OF ANDRAGOGY

In his writings concerning andragogy, Knowles (1980, pp. 43-44) has postulated what he calls "The four assumptions of andragogy":

1. Adults both desire and enact a tendency towards self-directedness as they mature, though they may be dependent in certain situations.
2. Adults' experiences are a rich resource for learning. Adults learn more effectively through experiential techniques of education such as discussion or problem-solving.
3. Adults are aware of specific learning needs generated by real life tasks or problems. Adult education programs, therefore, should be organized around 'life application' categories and sequenced according to learners' readiness to learn.
4. Adults are competency based learners in that they wish to apply newly acquired skills or knowledge to their immediate circumstances. Adults are, therefore, "performance-centered" in their orientation to learning

SEVEN COMPONENTS OF ANDRAGOGICAL PRACTICE

Along with these four assumptions, Knowles (1984) has identified seven components of

andragogical practice which he feels are replicable in a variety of programs in almost every kind of institution throughout the world:

1. Facilitators must establish a physical and psychological climate conducive to learning. This is achieved physically by circular seating arrangements and psychologically by creating a climate of mutual respect among all participants. By emphasizing collaborative modes of learning, by establishing an atmosphere of mutual trust, by offering to be supportive, and by emphasizing that learning is pleasant. Such a caring, respectful, helping, and accepting climate is said to be a climate of humanness.
2. Facilitators must involve learners in mutual planning of methods and curricular directions. People will make firm commitments to activities in which they feel they have played a participatory, contributory role.
3. Facilitators must involve participants in diagnosing their own learning needs.
4. Facilitators must encourage learners to formulate their own learning objectives.
5. Facilitators must encourage learners to identify resources and to devise strategies for using such resources to accomplish their objectives.
6. Facilitators must help learners to carry out their learning plans.
7. Facilitators must involve learners in evaluating their learning, principally through the use of qualitative evaluation modes.

THE QUALITY SCHOOL

Noted psychiatrist William Glasser (1990) has teamed up in an unlikely alliance with noted business consultant of Total Quality Management fame W. Edwards Deming in a thrust for quality schools in America. In their work, oral and written communication skill development are mentioned as necessary in every class irrespective of the class main subject. They believe that this development should begin in the first years of school and continue for a lifetime. In this paper, their oral and written communication skill development are included in the author's proposal of an andragogical model of instruction. To the work of Glasser and Deming, the author adds the requirement of enhancing computer fluency skills in every class from cradle to grave.

PEDAGOGY TO ANDRAGOGY SHIFT

Concerning the blending of the "best" carry-over qualities of the existing pedagogical model and the new age andragogical model described above, the most useful construct proposed by the writer is to view both not as a dichotomy, but as bookends, with each facilitators' position somewhere in between. The task of every would-be facilitator of adult education is to:

1. Understand the elements of pedagogy and andragogy as described above in this paper,
2. Determine where he or she is on the continuum from pedagogy to andragogy,
3. Determine if and where he or she wants to move on the pedagogy-andragogy continuum, and
4. Implement those procedures and instructional style changes necessary to move to that new position.

CAUTION

A word of caution suggested by the author is equally applicable for this paper (Clark, 1992). It would be just as dangerous to implement a radical shift from pedagogy to andragogy overnight, especially during the course of teaching a single class during an ERAU 10 week term, as it would be to determine a needed shift in the direction of andragogy, and do nothing. What is recommended is a very careful and selected "Pedagogy to Andragogy Shift", with evaluation and student feedback along the way. In a system in which most or all instructors of adults are largely pedagogical in nature, an andragogical instructor will be very successful eventually, but will also evidence some resistance from the students, who are quite used to being told what to do, and when to do it. Proceed with caution here, and map out a plan to get from "mostly P" to mostly A" in a series of successive approximations. Once you and your colleagues have begun your P to A move, quick and eager acceptance by the majority of the students is forecast.

ANDRAGOGY ACROSS THE CURRICULUM

Some may feel that andragogical facilitation principles are especially applicable to certain curricula such as liberal arts, but inapplicable when instructing math and the physical sciences. The writer would indicate that in the "drier" disciplines, there is an even greater need for andragogy. As all who have viewed the recent movie "Stand and Deliver" have witnessed, even math can come alive in the minds of motivated, information-hungry teenagers. It is simply a

question of empowerment. The writer is reminded of a recent story of an adjunct professor who complained that andragogy would "further empower the students." **IT IS HOPED THAT THIS WOULD HAPPEN**, and that this result would be greeted by an accepting facilitator, not an "easily bruised ego" lecturer.

Expanding on the concept of andragogy by suggesting that, as Glasser (1990) and Deming are saying, responsibility for learning must be instilled at a very early age, the writer suggests that the concept of andragogy as described in this paper is applicable to students of all ages. As the writer has shifted from a mostly pedagogical "standup lecture" style of instruction to a largely andragogical style of facilitation, it has been apparent that these "truths" apply to all ages. In fact, a readiness for andragogy must be instilled as soon as possible, similar to the "writing across the curriculum" idea recently popular in many circles.

It is fitting to close by suggesting that a movement to ensure "andragogy across the curriculum" is long past due in America. Such a movement may prove to be the "bailout" of our education system so sorely needed, and will, in large measure, return to both facilitator and student a more complete feeling of accomplishment, and the quality attitude needed to compete successfully in the increasingly technological world of the Twenty First Century.

AMERICA 2000: AN EDUCATION STRATEGY

How does andragogy fit in with other education goals? The andragogical facilitation method, viewed as an "across the curriculum" construct, is especially applicable to the U. S. Department of Education's America 2000: An Education Strategy (1991). Goals 3 and 5 of this strategy indicate applicability in their intent (pp. 38-39):

Goal 3: By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

Goal 5: By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

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TEACHING TECHNIQUES

FOR THE

"LONG HAUL"

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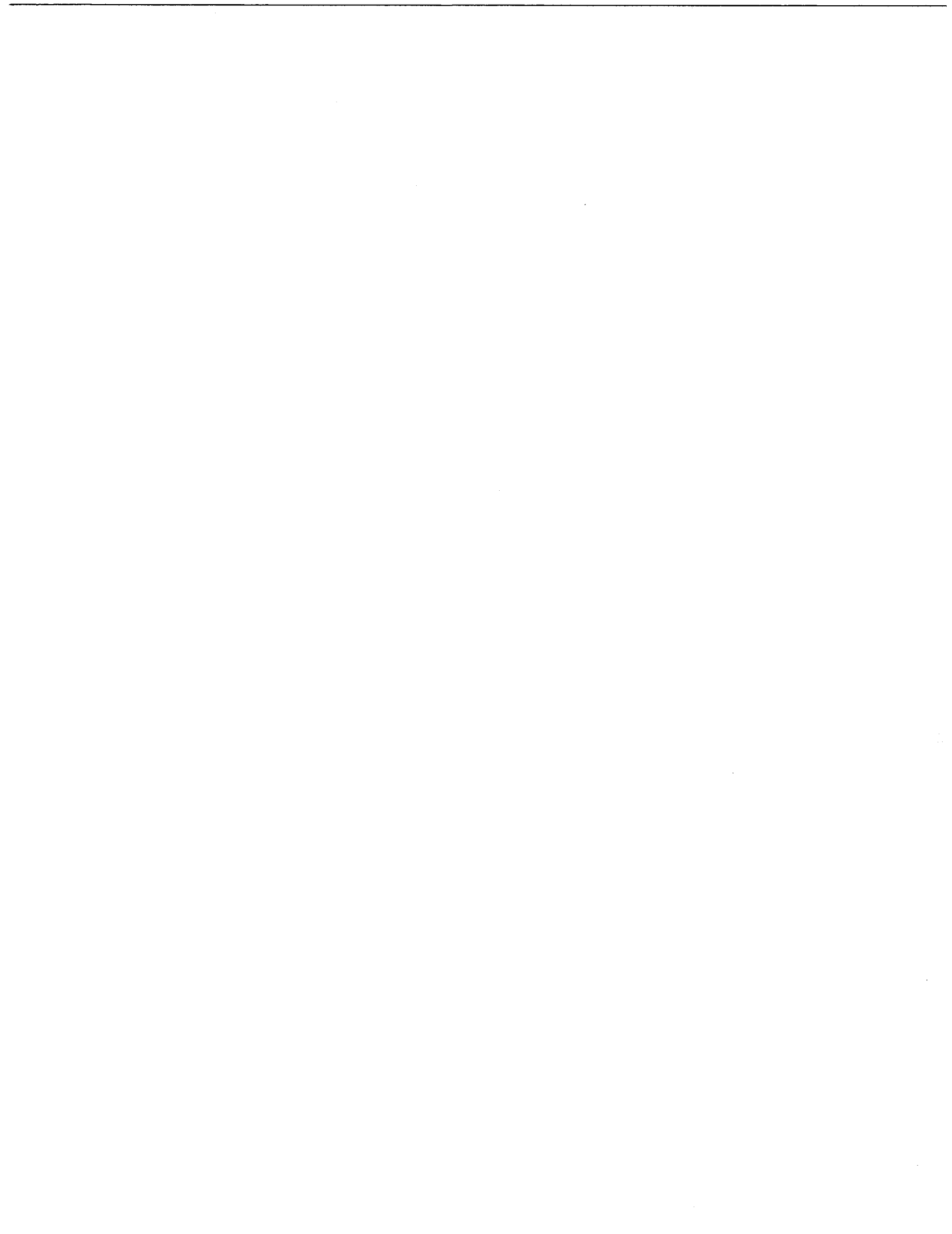
ABSTRACT

TEACHING TECHNIQUES FOR THE "LONG HAUL"

There is not a faculty member who has taught the adult learner in the non-traditional environment that has not pondered the question of how it is you keep a class "going" for four or five hours. I have talked with quite a number who have even reached a conclusion--"You cannot! So just make the best of a bad situation." WRONG!!!

There are proven strategies and techniques for keeping a class "going" and doing it week after week, term after term. And, believe it or not, it can be done without an inordinate dependence on "there I was at 20,000 feet..."

The answer cannot be found solely in traditional strategies and techniques--and that is where most of us are looking. The answer does emphasize multi-media presentations, simulations and gaming, and active participation and interaction by both faculty and the adult learner (the operative word being, "active").



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THE ADULT LEARNER IS DIFFERENT

The mature adult learner who works full-time in a profession does not bring the same experiences and expectations to the classroom as does the traditional full-time student. To conduct, control, and evaluate classes in the traditional fashion would be foolhardy at best. Before you accept the challenge of educating these unique persons, it is well worth your while to take a closer look at what is that makes them "tick."

The primary focus of the instructional act is human behavior. More specifically, it is to bring about some new and desired behavior. Each person in your classroom has different experiences, values, needs, aspirations, and persuasions which cause them to act and react differently from other individuals. As a result of maturation and learning, adult behavior is a very broad and complex phenomenon unlike anything observed in the traditional classroom. You will have to teach accordingly for the "long haul."

The biggest difference between the traditional undergraduate student and the "adult-learner" undergraduate student is a much broader base of experiences. The biggest difference between any graduate student and an undergraduate student is an even broader base of experiences. It is very important to give some consideration to perceptual determinants if you expect to change behavior to some new desired behavior. These include the following:

Beliefs:

What adults believe to be true affects their behavior. whether the belief is based on faith, knowledge, assumption, or superstition, it is reality to the individual. The more mature the individual the firmer the conviction of reality will be. Beliefs can be changed but not easily.

Values:

Values are peoples feelings about what is important to them. They could be related to ideas, knowledge, learning, people, etc. The adult learner will have a wide range of and more firmly established values than the traditional college student, the graduate student more than the undergraduate student. This perceptual determinant needs to be dealt with in your teaching strategies and techniques.

Needs:

Needs are those things individuals feel they require to maintain or improve themselves. Needs can be divided into the physiological kinds and the social kinds. Traditional college students are usually rather involved in dealing with

physiological needs and commonly view the attainment of a degree as a less clearly defined need than the adult learner does. The adult learner can be expected to feel a rather definitive need for the undergraduate or graduate degree but with varying degrees of intensity. The adult learner is more intent on dealing with social needs, both in pursuing the degree and in life in general.

Attitudes:

Attitudes are the emotionalized belief about the worth, or lack thereof, of someone or something. If you accept the notion that both beliefs and values are different with the adult learner, then a logical assumption is to expect different attitudes. This will usually, but not always, work in your favor because the adult learner generally has a positive attitude towards the educational process.

Self-Concept:

Self-concept is how people see themselves, how they feel about that person, how they think others see them, and how they see other people. Another key part of this concept is role perception.

Because adult learners have lived in this world for a given number of years, they have had the opportunity to gain many perceptions of their environment and the objects and events within it. The sum total of these perceptions is an adult learner's past experiences. These past experiences form the adult learner's behavior as he or she begins your class and are the point of departure for the change of behavior (learning process) which will hopefully take place. The adult learner's behavior at this stage is more rigid than the traditional college student's behavior because it has been formed over a longer period of time and with more reinforcement. An attempt to change behavior is commonly perceived as a threat by the adult learner. There are special strategies and techniques, appropriately used in the learning environment, that will change person's perceptions and subsequent interpretations of past experiences and modify his or her behavior so that, in fact, learning will have taken place and the process will have been both meaningful and pleasant.

THE ENVIRONMENT

Learners in the non-traditional environment come to your classroom as another part of an already busy day. They have been through the pressures of a full day at work and it has taken its toll. They have been through some portion of their "family" day--whatever that exactly consist of--and it has taken its toll. They come to your classroom ready to challenge your position. They come to your classroom ready to "dare you to teach them anything." They come to your classroom ready to silently tolerate you. They come to your classroom ready to ignore you.

The instructor of this learner comes to this classroom as another part of an already busy day. He, or she, has been through the pressures...

However, it is the instructor who comes to this classroom that bears the burden of transforming it into a learning environment. This is not to suggest the instructor must necessarily do it alone but it should be abundantly clear that IT IS THE INSTRUCTOR WHO BEARS THE RESPONSIBILITY TO SEE THAT IT DOES HAPPEN.

It is not just the "first night" of class that the instructor needs to establish this learning environment but rather each and every night of class. Establishing this "learning environment" is not just something that is done at the beginning of each class either. It is an environment that needs to be maintained for the entire class period--and that is not easily done for the last hour or two. There are specific reasons, which will be discussed later, that explain why it is not so easily done.

Not establishing and maintaining a "learning environment" is one thing that will quickly turn the classroom into the "bored-room" or, worse yet, into the bedroom.

THE INSTRUCTOR

When most people think of instruction, the approach to teaching they usually visualize is known as the "institutional mode." To a large extent, teaching in this way assigns responsibilities for the process to the instructor as the institutional representative. The premise is that this leaves learners free to put their energies into learning. The disadvantage to this approach seems to be that faculty continue to assume even more responsibility--for learning, and the student willingly gives it up.

Probably the most popular approach to the delivery of instruction for the adult learner has been the "individual" mode. In this self-directed mode, the adult learner is both the instructor and the student. For the mature, self-disciplined learner, this is a very satisfying approach. A frustrating disadvantage to the approach is that many adult learners have not developed the ability to set personal objectives, locate learning resources, and/or evaluate their progress.

A third approach to instructing is the collaborative mode. Once the members of the group are willing to trust each other and have mutual respect, they will provide support and be a resource for one another in the learning effort. Meaningful communication and mutual motivation make this group process an ideal environment for exploring new concepts and attempting new behaviors.

Adults learn in each organizational pattern but there are disadvantages to each. It is the instructor who develops the idiosyncratic hybrid, tailored to the specific group, that establishes and maintains a "learning environment".

Learning is part of a transactional process. Teaching is another part. Instructors have used numerous ways to organize the learners they teach. Most traditional school systems organize around age, achievement and/or vocational interests, and usually in that order. However, in the non-traditional environment major attention has been given to organizing learners around the distinction between individuals and groups. Teaching approaches that address these distinctions range from independent study with a tremendous emphasis on self-initiated and self-planned learning efforts to approaches that place a significant emphasis on interrelationships and transactional processes. Both approaches have an appropriate place in the non-traditional learning environment. Neither is better nor worse. Nothing I have said is intended to make a case for a specific teaching approach. If anything, I would hope to make a case for adaptability and variety in teaching approaches.

The astute instructor of the adult learner will become attuned

to existing classroom environments and adopt teaching approaches that will be most effective with whatever approach to learning has been adopted and prevails amongst the students. If a "learning" environment does not exist one will have to be established. Again, flexibility in the instructor's approach to teaching could likely make the difference in the classroom becoming the "bored-room" or the bedroom.

The type of organizational structure the instructor of the non-traditional learner is faced with is usually what is referred to as the "informal." This informal approach to the organizational aspects of the process allow the learner to make most of the decisions about the ways and means of pursuing the learning objectives, which have been articulated by the instructor and agreed to, at least implicitly by the learners. This approach allows the learner to grow as an individual, which is, of course, why he or she is there. It also allows learners, as participants of the total process, to be used as educational resources. The process allows control of the objectives and strategies to remain with the instructor.

THE LEARNER

The adult learner can be described around two factors. These factors are "needs" and "preferences." It is certainly the descriptions that surrounds these factors that gives the best picture of that adult learner for purposes of "teaching for the long haul."

Regardless of what it might specifically be, it is always a perceived utilitarian need which motivates the individual to pursue his/her education in the non-traditional environment. This is in stark contrast to being there because of a societal/familial expectation. Many of us who are teaching in the non-traditional environment have satisfied ourselves that the "perceived utilitarian need" is the credential that goes with completion of the course of study. There is certainly ample support for the notion. However, the fact of the matter is that the "perceived utilitarian need" often reflects almost anything that could be included under personal, religious, cultural or escape. Yes! Getting away from "the routine" might be much more important to some of your learners than becoming better informed and/or getting the credential that says they are.

As long as faculty continually attempt to identify the "perceived utilitarian need" and satisfactorily address it, the student will continue to seek out this "learning" that is perceived as movement toward meeting selected need(s). As an aside, this totally discounts the notion that "busy work" to fill a five-hour class session is either teaching or learning. It is not even acceptable.

The second factor, preferences, present the instructor with a real challenge. Adult learners prefer to acquire skills and knowledge in ways that require specific teaching strategies. However, instructors prefer to use selected teaching strategies with which they feel most comfortable. We might be setting up a paradoxical situation that will in no way lend itself to establishing a learning environment.

Those who facilitate learning activities for the non-traditional adult student must pay attention to the personal preferences of those students. Hiemstra (1986) points out, "the concept of self, the wealth of experiences, the variety of real problems, and the various reasons (perceived utilitarian needs) for learning that the adult learner brings to the non-traditional educational setting must be reckoned with by the instructor."

With this in mind, the instructors responsibility is to provide the adult learner with opportunities to acquire the desired learning in a meaningful way. The instructor must use strategies

that encourage participation even if they are strategies with which the instructor is not completely comfortable. When the adult learner is able to be an active, participating part of the process, the learning becomes more meaningful. A learning environment exists.

THE STRATEGIES

Not to oversimplify things but rather as a point of departure, those things that make up truly effective strategies for the "short haul" are the same ones that make up truly effective strategies for the "long haul." It's more of the same.

For teaching and learning to be effective for the "long haul" the underlying premise for developing strategy (ies) has to be the development of a complementary, symbiotic relationship between the needs and preferences of the student, of the instructor, and of the administration.

The instructor must go into the classroom armed with both a knowledge and understanding of the needs and preferences of the institution, the administration's perspective. At least, as important, is that the instructor is committed to meeting/satisfying those needs and preferences. The realization of administration's needs and preferences occurs with the commitment of the instructor. This commitment is manifested in the creation of an expectation among the adult learners that those needs and preferences will be satisfied along with their own.

Thus, the first step in the development of a symbiotic relationship is the internalizing, or legitimizing, of the administration's needs and preferences by the instructor and among the adult learners. These must be satisfied as they move towards satisfying their own need and preferences. i.e. satisfying a requirement for contact time is a strong felt need of administration. It must become manifested as an expectation of students. It is the instructor and student who have this expectation that are beginning to prepare for the "long haul."

Adult learners are not going to be taken in by the instructor who has not internalized the commitment to satisfy this need of administration. They will take it for just what it is, "lip service," and this does not lend itself to a learning environment. There must be an attitude, a commitment, and an expectation that a particular/specific learning experience will require the scheduled class time and, that if it doesn't, the learning experience will be broadened. If all three of these are not an integral part of both the instructor's and the adult learner's mind set, the educational process is already doomed to deterioration and, probably, failure.

There is more than one way to facilitate learning for the adult. Unfortunately, those instructors who have been lectured to in their learning experiences also often use the lecture because it is the only strategy they know. "If it was good enough for me, it's good enough for them." That being said, an instructor cannot be too uncomfortable with any specific strategy. The adult learner

will detect the discomfort and usually be uncomfortable too.

The main issue, when it comes to a specific strategy, is usually one of control. How much control of the situation is the instructor willing to share with the students? How much control is necessary to ensure accomplishment of the objectives? In the lecture and in the demonstration, the instructor has almost total control. In the seminar/discussion, control of the situation is shared with the learner. In the performance strategy, control is almost totally held by the learner. So how does the instructor decide?

1. Even though a group of adults has similar learning needs, individuals within the group will have different preferences for what will establish and maintain those interest, and participation.

2. Instructors must use strategies with which they and the students are familiar and comfortable. This does not mean the instructor should not try something new. It does mean that before doing so the instructor should (1) practice detecting what learner needs and preferences call for use of the new strategy and (2) learn how to use the strategy to create/maintain the learning environment.

3. When an instructor's needs and preferences for learning are different from those of the students themselves, the instructor must carefully explain why his/her expectations are important, how they will benefit the learner, and get the learner to internalize those expectations.

If the instructor has "read" the situational environment correctly, as is indicated by the selection of teaching strategy, the learning experiences will be meaningful.

THE TECHNIQUES

At the risk, again, of sounding as though I am oversimplifying, the successful techniques of "teaching for the long haul" are:

(1) creating an expectation

Create an expectation that the needs and preferences of the administration, the instructor, and the learner are compatible and will all be met.

Create an expectation that the learning experience for any particular class session will take as long as the time assigned.

Create an expectation that if the learning experience doesn't take the allotted time, it is the learning experience that will be broadened and not the time assigned for it that will be shortened.

Create an expectation within the student that he or she will get that amount of meaningful time from their instructor they paid for.

Create an expectation that both the instructor and the learner will come to the learning situation prepared well enough to make the learning experience a meaningful one.

Create an expectation that the learner will get meaningful instruction and not clock tending.

(2) establishing and maintaining a learning environment

Anticipate the needs and preferences of the learner.

Determine the instructional strategy that is best suited to the current classroom situation. Adopt a teaching strategy/method that fits.

As the classroom situation changes, change the instructional strategy.

In the collaborative mode, the active participation of the instructor is inversely related to the active participation of the learner.

Teaching and learning are transactional processes. When

there is no transaction, there is no process.

Lecture is only a small part of what it is all about. Learn when, and how, to use the other strategies. And, be comfortable using them.

There are learning resources available for the instructor's use that will satisfy every need and preference held by your students.

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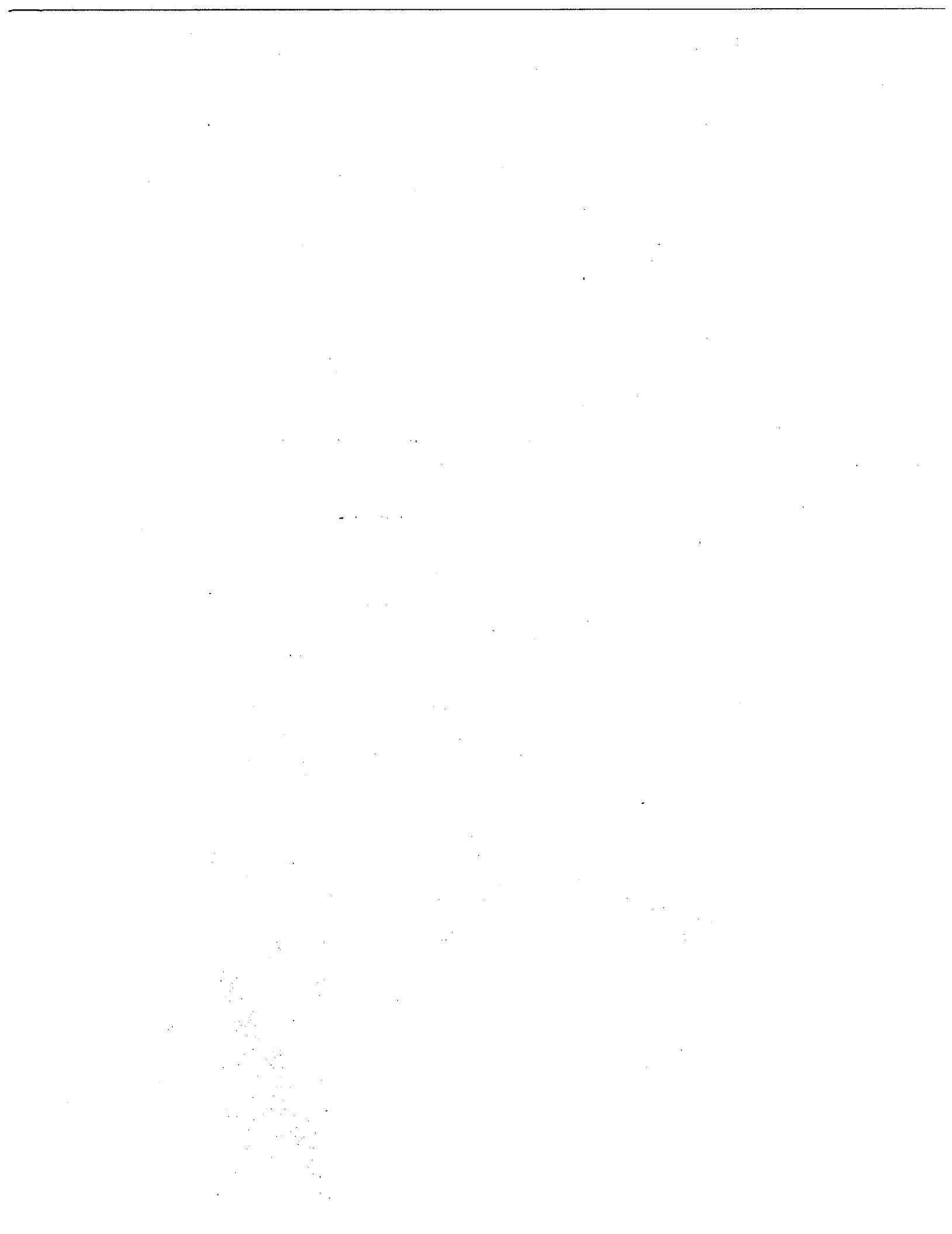
**THE ART AND SCIENCE OF TEACHING
UTILIZING DISCUSSION AND OTHER
GROUP PARTICIPATION METHODS
IN CLASS ROOM TEACHING**

by

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ABSTRACT

The literature concerning teaching is replete with information and research on how to teach and how people learn. There is also a considerable body of knowledge indicating that adult students have learning preferences somewhat different from adolescent and child students. Yet we often find that we are not as well versed in the art and science of teaching as we would like to be, and unless we attend classes in a college of education, little in our formal education teaches us to teach, except our learning from the observational experience of going to class and watching others teach. This lack of emphasis on teaching by college teachers has been exacerbated by structures which reward publication, grantsmanship, and consultation more than effective teaching.

Exposure to the literature on teaching allows one to categorize the many methods and techniques for teaching into five broad sets of methods: telling methods, discussion methods, showing methods, performance methods, and supervised study methods. In this paper the author addresses one of these sets, discussion methods. Discussion methods of teaching are often divided into two sets, closed group methods and open group methods. The distinction in the two being the extent of participation of all members. In closed group methods, all learners are active discussion participants. In open group methods one person or a small group take the most active part and the others are essentially an audience. Nine closed group methods and four open group methods are described and cautions and suggestions concerning their use are given.

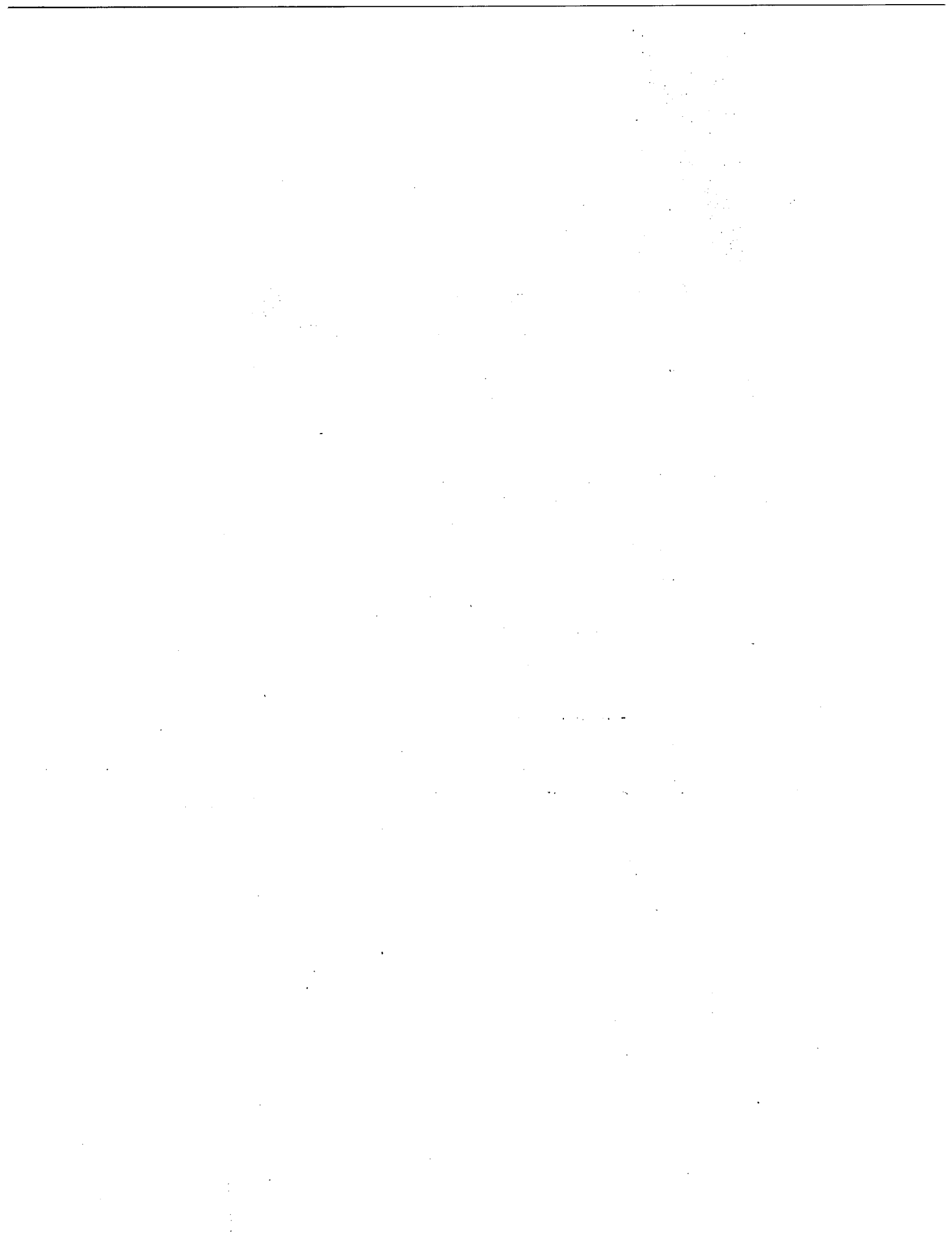


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The Art and Science of Teaching

Utilizing Discussion and Other Group Participation Methods in Classroom Teaching

....Except for a few institutions, the beginning professor emerges from graduate work deficient in almost all the skills of teaching: the formulation of goals, curriculum and course construction, an understanding of student differences, the development of a good lecture, the conduct of lively discussion, the adequate use of teaching aids, the evaluation of students.

Report of the Committee on Undergraduate Teaching, *The Importance of Teaching: A Memorandum to the New College Teacher*. New Haven, CT The Hazen Foundation, undated

INTRODUCTION

As educators we have often heard that the lecture is dead, that it is an ineffective way to induce learning, that it is boring, and a host of other complaints. WE who principally teach adults are frequently reminded that this method of teaching is particularly unsuited for long, adult classes. Yet our academic class structures often virtually dictate that this method of delivery be employed. With the coming to fruition of electronic delivery of courses, the use of the lecture seems, at least at first glance, to become even more pervasive, whether the "head in the box" comes to us live from a remote source by land line or satellite drop link, or whether presented by various video recording means. Furthermore, the use of the lecture as the primary teaching technique is reinforced by the experiences of the instructor. If we, as instructors, were primarily educated by lecture method, it is quite natural for us to view that as the way to teach - it's just the way it's done. It has been my observation that most instructors, particularly those in technical fields, must rely totally on their experiences as models for teaching since they have little, if any, formal training or education in the art and science of teaching. This view is supported by the lead quote.

A competent mechanic would not consider working on an aircraft with only one type of tool, say a graduated set of hammers, no matter how finely made and balanced those hammers were. WE would certainly expect his tool kit to contain screw drivers, wrenches, and other tools. We, as teachers, should not expect to practice our craft with just one or two tools at our disposal, regardless of how good we could use those tools.

While I view the lecture as an important and useful teaching method, it is but one of many methods of inducing learning and certainly should not be the only, or in many cases, the primary tool in the instructor's teaching methods tool kit. My purpose for this paper is to summarize some of the research and reporting that

has occurred concerning another set of teaching methodologies. Those who have been educated in the art and science of teaching are generally well aware of these techniques, but those whose major efforts are or must be in content may not be quite as aware.

The major thrust of this presentation is to explore several of the many ways by which learning can be elicited or enhanced through active participation by the student in teaching methods employing the use of discussion and other group participation means and to offer some advice and hints concerning specific, situational employment of these methods and techniques. As an introduction to this presentation, I will address some of the so called "laws and truths" concerning learning, learners, and adult learners, specifically.

DEFINITIONS

In addressing anything it is usually wise to establish a common ground for discussion; thus the following definitions will be used. There is no claim on the part of the author that these are universally accepted definitions, only that these are the definitions that will be employed in this paper.

Definitions: Learning - Learning is a change in behavior as a result of experience. The behavior may be physical and overt, or it may be attitudinal or intellectual and thus may not be easily seen or measured, or it may be both in combination.

Teaching method - A type of activity in which instructional personnel attempt to elicit learning in others.

Teaching technique - A specific way of presenting instructional material or conducting instruction activities. (Good, 1973)¹

Caveats: While it is currently in vogue to use the terms learners and facilitators, throughout this paper the terms student and learner are synonymous, as are the terms teacher, instructor, and learning facilitator.

LAWS AND CHARACTERISTICS OF LEARNING

Early in the twentieth century Edward L. Thorndyke introduced several postulates, usually referred to as "Thorndyke's Laws of Learning." For decades these were accepted as "laws" and instruction was designed to adhere to these laws. While several of these laws have come into question by later learning theorists, falling out of, and into, favor several times, others are still regarded as applicable in most cases, if not "law." Briefly,

these are summarized as follows.

1. Law of readiness. One learns best when ready to learn and not much learning occurs for which no purpose is evident to the learner.
2. Law of exercise. Learning is facilitated by practice. Repetition and use, which may include recall, review, drill, and physical application, enhances learning.
3. Law of primacy. Primacy, that of being learned first, creates strong impressions and engenders learning which is extremely resistant to change.
4. Law of intensity. A vivid, dynamic, or exciting learning experience is more effective in inducing learning than one which is boring or routine.
5. Law of recency. Other aspects being constant, things most recently learned are better remembered.
6. Law of effect. Learning is strengthened when accompanied by a feeling of satisfaction or accomplishment and weakened when accompanied by dissatisfaction or displeasure.

While the above may or may not be universally applicable, it is difficult to envision situations where these are not applicable to teaching methods employed in class room environments.

Synthesis of these ideas or laws and the years of discussion, practice, and research regarding them leads to the postulation of several characteristics of learning which may be useful to the teacher in selecting teaching methods and perfecting teaching techniques. These are summarized in the statement that learning is purposeful, active, and multi-faceted. These are amplified below.

Characteristic of purpose. Students attend instruction with individual goals and purposes. Students learn from activities that tend to further their goals and purposes. Their individual needs and notions of needs may determine what they learn as much as what the teacher desires or expects they learn. The needs of the students may be shallow, such as getting a passing grade in a required course, or deep such as learning information and acquiring skills that may save their lives or alter the future of their lives. Thus, one objective of the teacher is to show purpose for the learning and to seek to align the goals of the student with the goals of the instructor.

Characteristic of active, experiential process. For learning to take place students must have active involvement in the learning process. This involvement may be observable and outwardly directed or it may be an inwardly directed activity such as thinking or eliciting an emotional state. The student must have some experience, that is some activity, for learning to occur. This experience can be rich and varied or it may be very limited and singular. Seeing words on a viewgraph, hearing someone speak, thinking about a posed problem, and writing responses to questions

are all active, experiential processes, as is extricating oneself, while blindfolded, from a submersed helicopter rollover trainer. These vary not in that the participant is active in one and not the other, but in the degree of participation or action.

Multi-faceted characteristic. Psychologists, learning theorists, and practitioners have often categorized people as being visual learners, auditory learners, or reflective learners. Furthermore, learning itself is often classified by types such as verbal, conceptual, perceptual, motor, problem solving, attitudinal, and emotional. What is being described is not an exclusive way a person learns or exclusive types of learning, but forms of learner preference or learner facility in the type of learning experience. Seventeen different styles inventories are listed by Smith (1982) to aid the adult learner in determining their preferred or prevalent learning style. Some learning occurs whenever the learner is active, and some learning will take place from each of the activities in which the student is involved. In committing the multiplication tables to memory by rote recitation, young Johnny may learn that two times six is twelve, but he may also be learning, quite unintentionally on the part of the teacher, that math is boring and laborious. The adult student who is assigned a term paper, of specified length, on the demise of Eastern Airlines may learn more about the art of "filling" than about why the airline failed. Thus, the astute teacher must be aware of incidental, unintentioned learning engendered by the teaching methods and techniques employed and will employ a variety of methods and techniques in order to address the multi-faceted nature of learning and the multiple learning preferences of the students. (Cross, 1981; Gregoric, 1979; Guild and Garger, 1985; Kolb, 1984)

METHODS OF TEACHING

Ausebel (1963), Bruner (1962), and Joyce and Weil (1980) describe in detail numerous models or methods of teaching. Morgan (1981) has synthesized these and numerous others into five broad categories.

1. Telling methods. One way processes which include lectures, printed material, electronic audio and video presentations.
2. Discussion methods. Two way or multi-directional processes which encompass interchange of ideas, opinions, and observations.
3. Showing methods. These include demonstrations, field trips, use of mockups, observations of plays and audiovisual presentations or real-life events, and other observations of enactments.
4. Performance methods. These include simulations and role play, return demonstrations, supervised experience, case studies and games.
5. Supervised study methods. These include projects,

experiments, research efforts, and synthesizing previous works and research.

It is number two, discussion methods, that is now addressed.

DISCUSSION METHODS

Discussion Methods - Limitations

Anxiety reduction. The main purpose of discussion methods to be discussed below is to enhance the learning of the student by causing greater student activity in the learning process. There are many supporting outcomes as well. Increased learning in group social skills, increases in communications skills, and learning planning and control usually also result. However, use of these methods may have other effects as well. Since we deal primarily with adult students it is to application in this field that my comments apply. It is well known that adult students come to class with rich and varied experiences (Knox, 1977). It is also widely accepted that adult students desire greater control of their learning experiences, and desire to be perceived as successes (Gould, 1978). Discussion methods of teaching require a gamble on the part of the adult student. When they openly participate in the class, whether it be specific responding or leading a seminar, they offer themselves up to the opportunity for disagreement and even ridicule by their peers. They expose their weaknesses in vocabulary, grammar, argument, and articulation, as well as weakness in subject content, to the entire class. For the outcomes of discussion techniques to be those that the teacher desires, rather than that of the student learning that coming to class is embarrassing and that embarrassment is uncomfortable it is wise to prepare the class very early with anxiety reducing techniques. Only when an atmosphere has been established where the student is comfortable with participation can the instructor concentrate on other outcomes.

So how does one set such an atmosphere. It is easy and correct to say that you do that by assuring the students that their responses are valued, even though you may be in disagreement with the response. Easy to say, not so easy to convey. If the instructor truly does not value the response of each student then one should stay clear of discussion methods. General advice is to start early and start easy. If you plan to use anything but showing and telling methods of teaching, session one is a good place to start. Setting the stage by explaining that participation is an important part of the learning process and of the evaluation (grading) process (if true) is essential.

Self introductions are a familiar method of preparation for discussion and have other benefits. A valuable alternative is the peer interview and introduction technique, in which students are paired and given several minutes to interview each other. Based on

the interviews, the students introduce each other to the class.

It is also wise to plan some very early Socratic questioning or specific responding techniques where the responses are straightforward and not too complex. Posing follow on questions that lead to alternative answers, rather than direct correction or criticism of answers, particularly early in the course also lead to less anxiety and more open discussion. To keep anxiety level low, the instructors must constantly monitor and control their own response, carefully avoiding words or actions that are likely to cause hesitancy in the respondents.

Maintaining control. For the inexperienced user of discussion methods, loss of control of the class is a danger. This may occur in any one or a combination of ways. Allowing debates and arguments between several of the participants, to the exclusion of others in the class participating, is a frequent occurrence. Structuring in such a way that one or more "grade grabbers", whose major concern is the quantity, vice quality of participation, can dominate the activity is a very real threat. Allowing too much time and allowing participation to become frivolous, inane, or too widely ranging for the intended learning outcome can be a troublesome problem in several of the methods to be described below. Not being well prepared, not having carefully thought-out the learning experience, or just throwing together some discussion groups, or tossing out some questions to fill class time will almost inevitably lead to some loss of control. Of course the greatest danger to loss of control of the class is allowing students to respond, question, or guide the flow of discussion when the instructor is not well versed in the content matter of the discipline. A well developed plan, including ideas about time constraints and the allowable scope, helps insure a meaningful learning experience. Needless to say, one should have some objective, other than filling time, in mind whatever method is employed.

Size and time limitations. To maximize effectiveness, group sizes should be small. Group sizes larger than 15 will be very unwieldy for several of the group methods discussed. Some of the methods are time consuming, and others have been shown to be more effective when very specific time limits are set. Some guidelines for each method are given in the specific sections below.

Discussion methods described

Discussion methods of teaching are often divided into two sets, closed group methods and open group methods. The distinction in the two being the extent of participation of all members. In closed group methods, all learners are active discussion participants. In open group methods one person or a small group take the most active part and the others are essentially an audience. These are briefly described below and expanded later.

Closed group methods

1. Socratic - A task or problem oriented group in which the instructor serves as an opinion or information seeker and the students provide responses.
2. Seminar - A problem oriented effort in which a group of learners, under guidance of an instructor, in a structured or informal setting, attempt to synthesis known facts or information.
3. Debate - Two groups of students formally argue a question using prescribed rules and time allotments.
4. Task group or committee - In a class setting, the instructor assigns specific, clearly defined tasks to all members, to be accomplished as a team effort.
5. Buzz groups - Small groups formed from a larger group, each group considering limited, specific questions pertaining to a more complex question or problem under consideration by the larger group.
6. Round table - Participants discuss specific questions, with the purpose of learning from each other. The instructor may act as moderator.
7. Tutorial groups - One or several competent students guide the effort of other students in learning material with which some of the group are experiencing difficulties.
8. Creative ideation (Brainstorming) - A discussion format with the purpose of generating many unique or novel ideas in a short time span.
9. Discursive method - Free and uninhibited discussion by students on topics of their choosing.

Open group methods

1. Lecture/forum - An expert makes a presentation, one or several experts respond, and the audience responds with questions or comments.
2. Dialogue - Two well informed persons discuss a topic for the benefit of the audience in a direct conversational exchange.
3. Panel - A small group of experts discuss, in direct conversation, a topic for the benefit of the audience.
4. Symposium - Persons with special competence or knowledge deliver brief, prepared papers on several aspects of a topic before an audience.

Each of the methods is amplified below, along with cautions, suggestions, and examples of how they might be applied in teaching situations at Embry Riddle Aeronautical University.

Socratic method. This method stems from the teaching techniques of Socrates, who would pose a problem or question and then question students until they arrived at an answer. Each response elicited

either a challenge or another question leading to an answer. There is process to the method, but product is the desired outcome. An answer to the question or solution of the problem is that outcome.

Almost any number of students may be accommodated by this method, but as the group exceeds 10, the instructor must be diligent to challenge all to be involved. With over 10 participants, or in situations where there are "mouthy" students who try to dominate the responding, it is often wise to use specific responding techniques rather than waiting for voluntary answering. This involves posing the question or challenge, waiting, in silence, for ideas and responses to be generated, and then calling on a specific student to answer.

Typically one starts this two phase method by posing a question which has some divergence, or which has an evaluative element to it. After each student response the instructor must make a snap decision as to whether to challenge the response, reject the response as going in the wrong direction, accept the response as correct in totality and move to the next logical question, or use some portion of the response to fashion the next question. To use socratic discussion effectively the instructor must be able to think quickly and must be very well versed in the content area. The instructor must have a clear goal of arriving at an answer or solution and be diligent in maintaining focus through the challenges and follow on questions. Careful avoidance of cutting or derogatory remarks and belittling answers is a must.

As a transition to the second phase the instructor calls for self-criticism and self-analysis of the responses that have been made and attempts to summarize the points that have been made and list the errors of fact or logic. In the second phase of the method the instructor challenges the students to evaluate their responses and make them more valid, better operationally defined or more accurate. During this phase the instructor, through the use of questions and challenges, leads the class toward clarification and specificity and away from vagueness.

It should be noted that this method can be damaging to students with low self-esteem or low self-confidence. It is not recommended as a first discussion method with a class. It is not appropriate for cases where the students do not have the foundation knowledge to pursue the problem to solution. As an example, it would be inappropriate to use this method to elicit an answer as to what a possible solution to the problems of the Federal airways systems with a group of students who did not have a knowledge of the current system and its operation, its reasons for existence, and its evolution. It would be entirely appropriate to use the same solution from students with that foundation knowledge.

Example: This method could be used in a regulation class

to explore whether a specific regulation was necessary or advisable.

Seminar. A seminar is a problem or topic oriented assembly wherein a group of supervised students, after having performed individual study or research, meet to present their findings, conclusions and opinions and receive benefit from constructive advice and criticism of the group. The major thrust is clarification of the concepts, facts, and opinions surrounding the topic and profit from mutual exchange of these. Successful seminars require that all students be well prepared for the session by having conducted the necessary research or literature survey and be prepared to present those results in an organized, coherent manner. Seminar participation requires that the students have speech delivery and systematic problem solving skills in place.

For instructors, it is necessary that they advise the students well in advance of the seminar, its format, and the preparation required. It is necessary to have selected a focus topic, for which adequate resources are available for student preparation. It is also necessary, in order to direct the seminar, that the instructor be well versed in the topic at hand.

The procedures for a seminar may vary somewhat depending on the size of the group. Seminars size greater than 15 usually lose effectiveness and permit too many students to "slide" without conducting adequate preparation or actively participating. In most cases the instructor acts as seminar leader. It is also helpful to have a seminar recorder who keeps track of the information presented and provides summation at crucial points in the process. If knowledge concerning group processes is also a desired learning outcome it is also possible to assign an observer, who doesn't participate in the seminar discussion, but rather, keeps track of the various interactions, usually by constructing some sort of frequency sociogram. Learning outcomes of all well conducted seminars include increased communications skills and information synthesis skills. In more formal settings, usually with larger groups, the leader has each participant make opening remarks about their findings and then directs discussion on the various aspects presented. In less formal seminars one participant presents their findings, and the leader directs development of the topic by having other participants build on the lead speakers presentation.

Seminars are not appropriate for novice students. They are not appropriate when adequate time or resources do not exist for student preparation, nor are they appropriate when the instructor lacks the initiative to prepare in advance or to demand student participation. If the text is the only resource to be had, a seminar method is not recommended. The seminar method takes time. It is not conducive to continued active participation by the student to require preparation for participation and then not afford the student opportunity to fully participate.

Seminar is not a synonym for general B.S. session.

Example: A seminar method may be used in a Current Issues and Problems course with good effect. Selection of a specific problem for the seminar discussion is made (perhaps one topic for each two hour segment) and students are instructed to come to each session having consulted and summarized several current sources on the issue. The seminar is then commenced by having each student summarize their findings for the class.

Debate method. The debate method of participation finds its primary use in issues' exploration and attitude formation, but is also useful in expanding the students knowledge base. Like other discussion methods, when well done it will enhance the students' communication and organizational skills. As with the seminar, use of debate methods requires advance planning and preparation on the part of both the instructor and the student. Debates may, for large classes, better fit into the open methods category.

In its usual form a debate is a highly structured affair. Students are divided into two teams and each assigned one side of an issue, and given ample time and resources to prepare for the debate. In general, each side is given a specific time to make an opening argument, then each side is given opportunity for a rebuttal of the opposing side's points. Each side may then have opportunity for a closing summary and argument. Breaks are provided between each segment to afford the teams opportunity to make adjustments and seek additional information.

Team sizes greater than five each become awkward. If class size is greater than ten but less than twenty, the remaining students may be encouraged to be active in the debate by acting as judges, with specific, instructor supplied, criteria for judging.

There are several variations of the method which may be useful for this audience. One is to conduct the argument or debate using court room procedures and rules, vice debate procedures and rules. Another is to conduct the debate as a regulatory board or legislative hearing meeting. In the latter, each side presents a prepared statement before the board made up of students, then the board members question the "witnesses" in order to clarify points or expand response.

All of these methods require preparation before the event and usually require resources beyond the text book. These may sometimes be used in the classroom without specific preparation before class time, but only if adequate time and resources are available at the time and place of the class and only if all class members are assigned active roles in the preparation and proceedings. In situations where it is difficult for students to jointly prepare prior to the class session, for this method to be

effective, it will be necessary to allot class time for preparation.

A major caution in using this method is to be conscious of the opportunity for power struggles, rancor, and malice to creep into the proceedings, or for the students, and perhaps the instructor, to lose sight of the learning objectives planned.

Example: After studying airline deregulation, the instructor divides the class into thirds. One team is to prepare a 10 minute presentation before the U.S. House subcommittee on Transportation, as to why airline regulation should be reinstated. A second group is to prepare a statement of the counter argument. The other third are instructed to prepare questions for both groups in order to assist them in making a determination on the issue for the good of the country. The instructor's role is to keep both groups honest.

Task group, task committee method. Among the various discussion designs, this is one of the least complex. In its simplest form, for a small class of up to six or seven, the class becomes a task group and each member is assigned a specific task to accomplish in order to contribute to the larger task of the overall group. In this situation, the instructor defines the overall problem or task to be addressed and assigns specific accomplishments for each member, and directs the compilation of the efforts into the final report. To add the practice of more skills, the instructor may only define the overall task, and require the members to develop their own plan of attack and assignments, and prepare their final report without undue "stick and rudder" from the instructor. The latter takes more time and require risk on the part of the instructor that the students will undertake all the required activities without benefit of instructor guidance. In the former, the method can be applied to almost any class, in the latter, the method should be used when the instructor has good expectation that the class has the maturity as a group to accomplish the task. Variations include forming several task groups within the class, each with the same instructions and each to make individual final report - useful for class sizes from eight to 20, and dividing the class into subgroups or subcommittees, often referred to as Buzz groups, each addressing various aspects of a larger issue.

To insure adequate opportunity for participation group sizes, whether they be of the task group, sub group or buzz group, should usually be limited to no more than seven members. Depending on the complexity of the issue, group preparation outside of class may be necessary.

Example: In a large class in Aircraft and Spacecraft development concerned with exploring the decision to continue with federal funding of the "Orient Express"

hypersonic transport concept, the class may be divided into seven task groups, each tasked to study one of the seven determinants of national interest and make a report on how and why continued development does or does not support the national interest. Thirty minutes is allotted for each task group to discuss their position and ten minutes is allotted for each group to report results.

Round table. Round table discussions have many uses outside the classroom, such as in professional organizations and citizen interest groups. In these settings there are several interesting approaches, such as organizing several tables with different topics for each, staffed with discussion leaders and allowing participants to "float" among the several round tables. Here the emphasis is confined to the use of the method as a class room exercise.

The round table is relatively unstructured in order to allow free exchange of knowledge and ideas. Structure is maintained only to the extent that common courtesy is maintained - only one person talking at a time, each having adequate opportunity for discussion, and no exclusionary conversations, no yelling, screaming or cursing. If physically possible, participants should be arranged in a circle or semi-circle so that each participant has a face view of every other participant. The instructor's role in the class room round table is to maintain focus and insure courtesy. Round tables are relatively easy to conduct and generally pose low threat to the students. The size limits are a function of physical space, acoustics, and time. They do not appear to be appropriate for less than five participants and become unwieldy for more than 20. A caution for the instructor is to not let the discussion ramble or get stuck on a limited point, nor go on too long to be effective.

Example: *A round table could be used in a meteorology class to explore issues of size, scope, and intensity of mid-latitude cyclones as compared to hurricanes. The effects of the spring, 1993 mid-latitude cyclone could be used as the primary vehicle.*

Tutorial group methods. Tutorial groups usually find their usefulness in helping students who have difficulty in learning some aspect of course material or who are not progressing at a satisfactory rate. Each group should have a leader whose role is threefold: (1) by questioning the student, seek to discover the problem blocking the learning, (2) providing information and assistance by the rest of the group for those having difficulty, and (3) encouraging self-help. In a well functioning tutorial group all benefit, each from being exposed to the way the others approach and solve the problems, and from having to clarify their individual thinking and actions in order to articulate them to the others. For tutorial groups to function well it is necessary that

at least one member of the group have mastered the content and the skills of analyzing work tasks and giving encouragement.

If care is not given to the formation of the groups, it may result in "the blind leading the blind", much time being wasted, and perhaps incorrect methods being reinforced by continued use. Self-selecting into tutorial groups outside the class room is a fact of life, however, self-selecting in the class room can lead to all the weak students grouping together and all the strong students grouping together. While there are some benefits to this sort of arrangement, particularly for the strong students, there are also several significant difficulties. When employing this method as a class room technique it is absolutely necessary that the instructor be aware of what they intend to be accomplished and select groups accordingly. When several tutorial groups are employed in the class, it is necessary for the instructor to monitor the activities of each and to restructure groups when necessary. Another danger in the use of this technique occurs when there are students present who view everything as competition and have a bias against helping others or when there are one or two outsiders in an otherwise heterogeneous group. In these cases the unfavorable outcomes of the unintentional learning in the social realm may outweigh the results in the content realm.

Example: Tutorial groups may be formed in an operations research or quantitative methods class, to work on specific problem sets. The instructor assigns people to groups such that each group contains one or more strong students and one or more students needing help. Each session the instructor varies the composition of the groups while maintaining the balance.

Creative ideation (brainstorming). This method is useful when there exists a desire for a high level of creative ideas to be generated. It should be understood that brainstorming is an initiation process, one for generating ideas, not one for reaching solutions or solving problems. To take the ideas generated to fruition requires other processes. The ideas must be evaluated, selected and implementation plan initiated. This is part of the follow-on processes, not part of the brainstorming.

For the ideas to be retained there should be some efficient method for recording. A person taking notes, unless using stenographic methods, usually holds back the proceedings enough to curtail some ideas. A tape recorder is the recommended means.

The discussion is started by the leader who initiates the session by stating the rules and the problem under discussion. Usual rules for this method are:

1. All ideas except jokes should be acknowledged.
2. Criticism of ideas is unacceptable.
3. Ideas are non-attributable, building on others ideas is strongly encouraged.
4. Silence isn't permitted.

5. Quantity of answers is important, though intelligence and creativity is desired. Evaluation comes later.

Very specific time limits may be used with this method and any number of participants may be involved, time being the only constraint on size. Unless using this method only as a demonstration of the method, follow on processes should be planned to evaluate and utilize the ideas generated.

Example: A marketing class may use this method to generate ideas for increasing market share. A safety class may use this to generate ideas for initiating a safety awareness campaign.

Discursive method. The use of a discursive discussion group permits free, uninhibited discussion of a topic, selected by students led by students. Constraints of time and space determine the permissible size of such groups. While it may initially seem that this is nothing but a gab fest, such is not intended. It is not a time filler, to be used when the under prepared instructor runs out of other ideas. Students should come to the session prepared for meaningful participation. Thus there should some intention on the part of the instructor concerning learning to be accomplished. It is important to evaluate the process of the discursive group, for it may be that more is learned in this case by process than content. Videotaping the discussion for later playback and evaluation can be rewarding.

A perceived danger of this method is that it is non-productive and may go nowhere. By recording and evaluating the session, showing that the group lacked direction and/or attention and ventured into other subjects is highly instructive in and of itself. This method is more difficult to use constructively to the instructor's purposes than it appears. If the instructor has not created a motivating atmosphere for the subject at hand and created an alignment of the instructor's and students' goals and purposes, this is not a method to use.

Example: A class studying current issues in America might choose to use this method to consider the under-representation of females in the aviation field. The learning actually taking place may not be why or if such is the case but what the attitudes about the issue are.

Open group discussion methods

The methods described below are more often used in public and professional meetings, on radio and television talk shows, and other large group settings. They also have usefulness as class room methods, especially when class size is very large, when it is dispersed to remote sites or when the presentation is subject to delayed presentation. As such, the participation of much of the

class will be limited to vicarious action only. These methods also lend themselves to use when visiting experts are available or when selected groups of potential discussants are assembled infrequently.

Lecture/forum. The lecture/forum is a variant of the lecture that provides some relief to several of the handicaps of the lecture. Using this method the expert delivers a planned presentation. Upon completion of the lecture a panel of discussants review and amplify the material and, when the situation warrants, may take questions from the audience. This method is useful as a class room method when the class is very large and size and time limitations do not permit an extensive question and answer period, but the teacher desires to expose the students to other interpretations or clarification.

This method is often preferable to the lecture only method when the presentation is being recorded for later presentation or when it is necessary to adhere to very restrictive time requirements, such as broadcast schedules. Time can be precisely controlled, metering both the lecturer and the amplifications and clarifications of the discussants. For class room use the discussants may be well prepared students or other experts in the field.

Some of the cautions applicable to class room use mentioned here apply to the other open group methods. When you select groups of subject matter experts as discussants or panel members, there appears to sometimes be a tendency for them to try to impress each other with their facility with the topic and very soon exceed the ability of the student to follow their discussion. This often takes the form of name dropping and insider information such as - "...as we are all familiar with what Jones said on the matter, which stands as the definitive treatment of the subject...." - but the students may not have a clue what Jones said, or may be aware of the ideas of Jones but not connect them with the name. In using these methods as class room applications, it is wise to prepare the discussants or panel by providing clear information concerning the experience and education of the audience as it pertains to the topic.

Additionally, good acoustical quality of the class room or a sound amplification is essential if the audience is to derive maximum benefit. The appropriate allocation of time is essential. Unless the discussants are skilled in presentation, two or three well informed but dry experts droning on can be every bit as unexciting as one doing so.

This method is particularly useful when you have access to a renowned scholar or expert for a very limited period of time and you are able to elicit the help of fellow faculty as discussants. In one variation, wherein the primary lecturer is available for

only long enough to provide the lecture, the forum takes place after departure of the lecturer.

Example: An executive of CSX is speaking to the local Chamber of Commerce on the future of inter-modal freight and its impact on the local economy. As a field trip you take your undergraduate transportation principles class to hear the 30 minute talk. You enlist four graduate students who did well in MAS 602 to attend the talk and act as discussants afterward upon return to the classroom.

Dialogue. In the dialogue method, two experts or knowledgeable people discuss an issue or problem in a direct conversational exchange. The discussants may be of the same mind about the issue or may take divergent views. Audience questioning may be used when time and facilities permit. Several television opinion shows, such as Firing Line provide models of this method.

Example: A vocal member of the AOPA (Airplane Owners and Pilots Association) and the chief of staff of your local democratic Congressman agree to attend your economics or current issues in aviation class to discuss the impact of the proposed gasoline tax hikes on aviation. They each can devote only one hour to the class. Setting up a dialogue type exchange would serve as an excellent vehicle to expose the class to their views and to create reflective thought and questioning on the part of the students.

Panel discussion. Use of a panel to discuss a topic permits an orderly, logical presentation of material from several participants with special knowledge or expertise. The primary use of the panel is to utilize some of the advantages of discussion when the audience, the class, is too large for open discussion to be feasible. It is also useful in bringing some of the advantages of discussion into play when a class is presented as a recording or when there is a large audience at remote sites, especially when there is only one way communication with the remote sites. This format then provides the audience with vicarious participation in the discussion.

As with the dialogue method, panelists may have similar or divergent views, or may be selected for their specialized knowledge of one or more aspects of the topic.

It is important that the panelists be well prepared for their role by having sufficient knowledge of the topic to permit informed participation. If this method is used in a recorded or remotely transmitted situation, and students at the transmission site are to be the panelist, students with good facility with the language and subject matter should be selected.

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**UTILIZING WRITING-ACROSS-THE-CURRICULUM PRINCIPLES
IN THE TRADITIONAL CLASSROOM: RETHINKING TEACHING
STRATEGIES AND EVALUATIVE CRITERIA**

by

Jerald E. Goldstein

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Writing-across-the-curriculum (w-a-c) programs have become firmly entrenched in a large number of universities throughout the USA. Many universities, however, still have not adopted the program itself nor the major tenets of this program. Since w-a-c addresses learning and teaching strategies that are applicable "across the curriculum," its adoption, if only by individual teachers in various disciplines, can result in students writing better and learning more about these subject areas, while they are writing. By requiring that students write more while exploring and acquiring the meaning-making strategies of their disciplines, students become more proficient writers while learning more about their respective disciplines. In order to do justice to this innovative approach, teachers must develop evaluative criteria that reflect w-a-c principles.



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The New Role of the English Department	4
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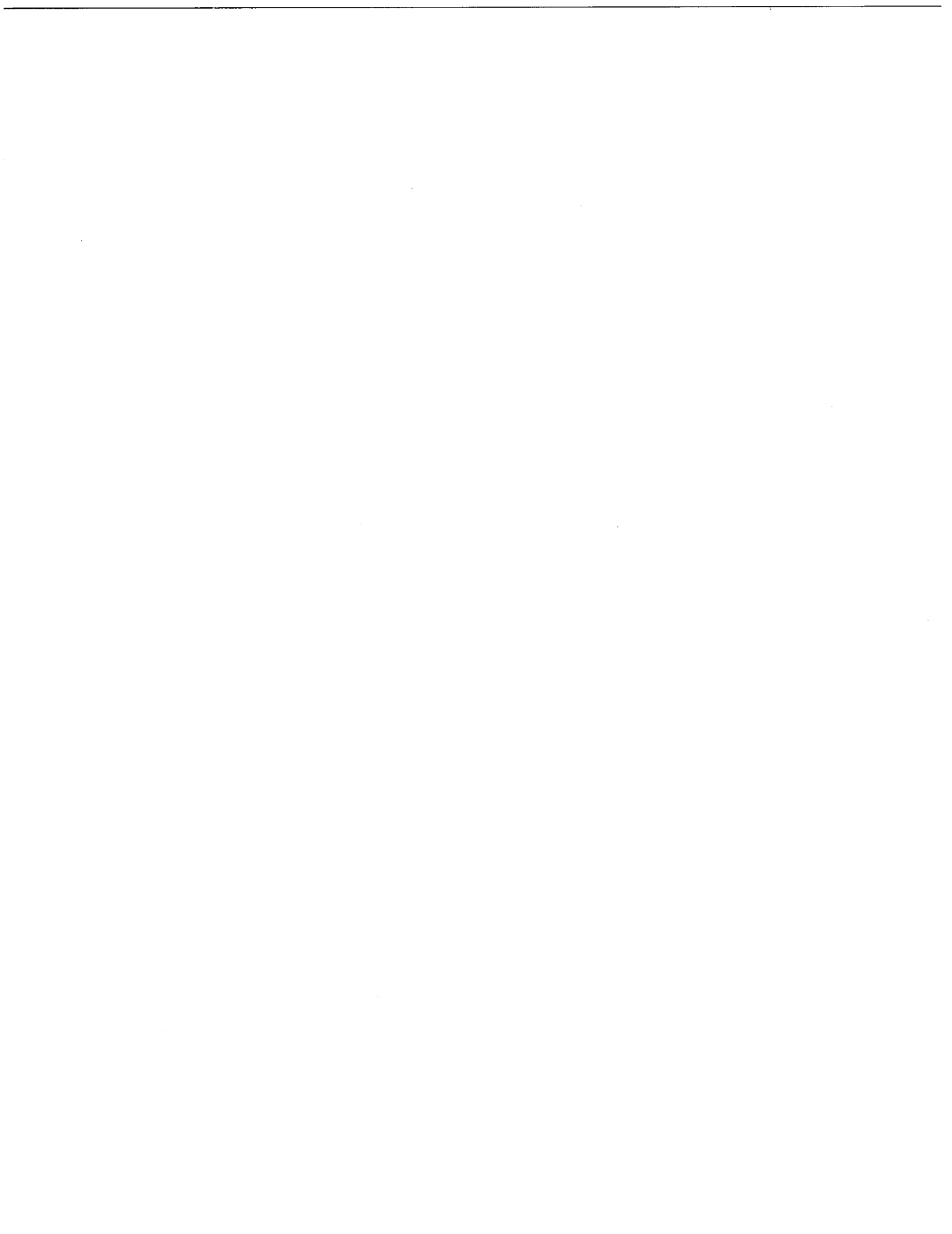
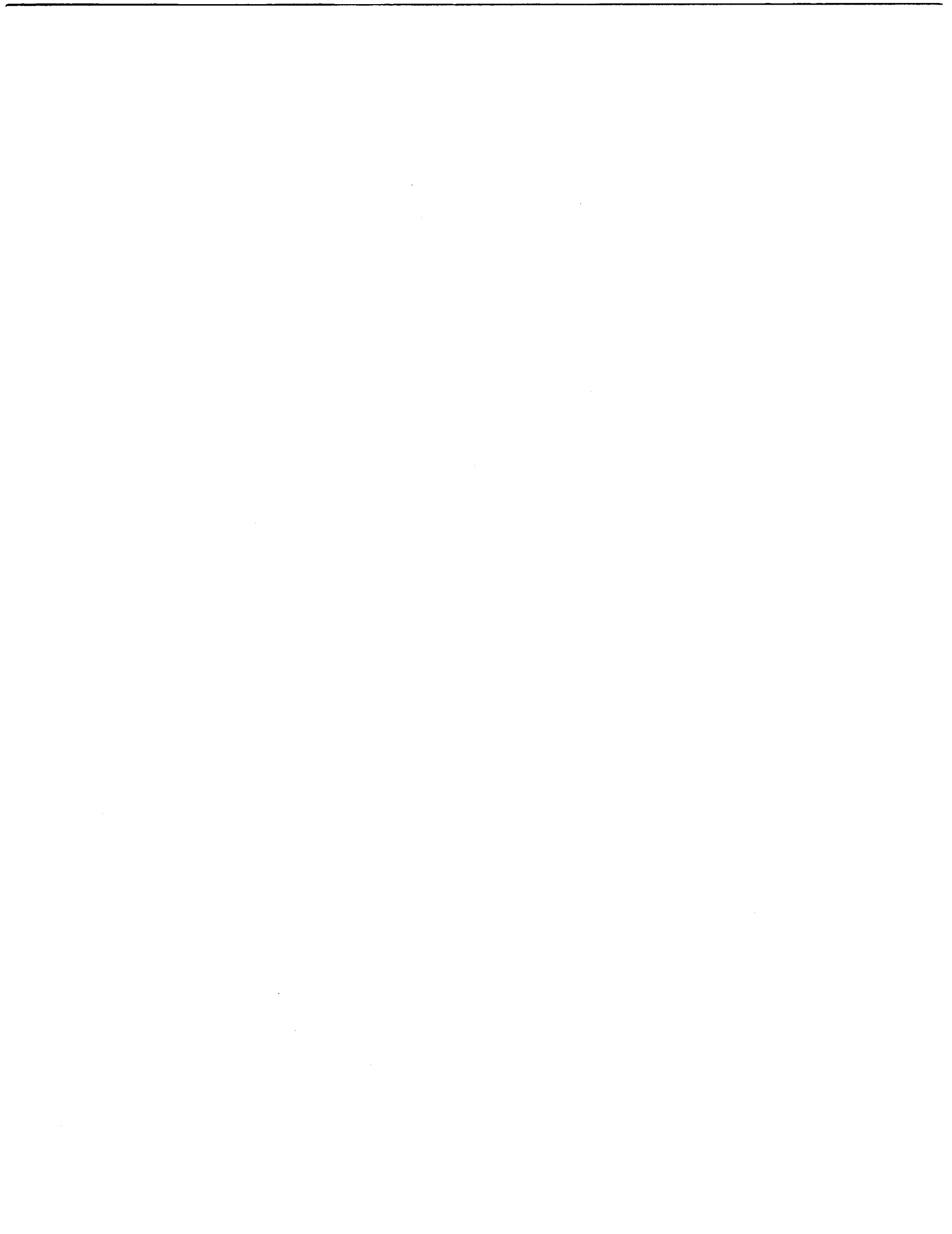


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**Utilizing Writing-Across-the-Curriculum Principles in the
Traditional Classroom: Rethinking Teaching Strategies and
Evaluative Criteria**

Although "writing across the curriculum" (w-a-c) is widespread, its tenets are still not known to all instructors who could benefit from it.¹ Since this approach fosters better writing skills and facilitates more learning on the part of students, I feel that teachers in institutions that have not adopted this program formally should be given (and would want to be given) means by which they can institute themselves some of the major provisions of this innovative approach to foster better writing and enhance learning.

This approach is innovative insofar as it departs radically from the conventional ways "freshman comp" has been taught for so long.

It is innovative, too, in that it fosters learning while imparting writing skills. Instead of writing about the significance of Heather's "scarlet letter" or metaphoric language in a given poem, students write much more than in conventional writing programs and write more about topics in those fields of study that interest them the most: engineering, management, aviation, etc. Writing instruction is no longer the sole province of the English department, but is practiced regularly in each of the disciplines. If the major contention of this theory of writing (and learning) holds true, then students learn by writing and learn to write more effectively while writing more and about topics which interest them the most. "Writing enables us to find out what we know--and what we don't know--about whatever we're trying to learn..." (Zinsser, 1988, p. 16).

By writing we are forced to order those free-floating and random particles which possess--according to modern information theory--a maximum amount of information because they are not ordered or haven't been posited in any perceivable frame of reference. A system with a high degree of randomness possesses the greatest information potential². It is through the act of ordering, which is what the act of writing is all about, that the random bits of information take on contours and assume a hegemonious relationship to each other. By the process of writing, random information takes on meaning, i.e., semiotic relationships are established as random words are posited within meaning-bearing, textual and intertextual contexts. According to Charles Bazerman, "once a rhetorical field is highly developed, individuals find themselves in the middle of intertextual webs within which they can act only by modifying the intertextuality through new statements. [Their] goals and activities influence [their] idiosyncratic placement in and interpretation of that intertextual field... By reconstructing the literature around their ongoing work and then representing their new work within that reconstructed matrix of the literature, individuals make the field over fresh and construct a new place for the self" (1992, p. 67).

Thus students learn by developing meaning-making strategies. Students take part in creating the world (i.e., discipline) that they are exploring through language. Language helps them organize their perception of the world and how they think about it. As a consequence, students' writing reflects not only modes of discourse and manuscript skills, but methods of thinking and ways of knowing, as well. "By understanding how knowledge is constructed, [students] can judge what knowledge it is they wish to construct...Once they become aware that language is one of their most fundamental, and most sensitive, tools of knowledge construction, they cannot escape the conclusion that rhetorical studies are an inevitable part of methodological training, as much as education in statistics, analytical techniques, or laboratory experimentation..." (p. 68).

"Knowledge" in the disciplines has been relativized and in its place has sprouted an active questioning and interpreting rather than an encyclopedic accumulation of facts. "There has been an increasing focus on the tentative nature of "truth" ...Each of the subject areas has shifted away from a belief in a verifiable, constant, and stable body of knowledge toward the view that meaning is fluid and depends on individual interpretation, firsthand evidence, or new information..." (Langer, 1992, p. 72-3).

If we instructors are to facilitate this learning experience, we have to keep in mind those teaching strategies that enable students to benefit from writing programs. In my paper, I have filtered out --from the plethora of teaching tips published in recent years-- those teaching strategies that can be employed by instructors "across the disciplines" even in those institutions that have not formally adopted the tenets of "writing to learn" or "writing across the curriculum" programs. It is up to us to "teach across the curriculum" if "writing -across-the-curriculum" hasn't been implemented in our institutions.

Instructors who adopt and practice the tenets of this philosophy of learning will encourage better writing practices while fostering learning within their respective disciplines.

It gives us all an opportunity to respond to our own gripes about how poorly students write, whereby we usually assume that poor writing on the part of students reflects either poor preparation by the English department, mirrors weaknesses in primary and secondary education, or simply reflects faulty logic and reasoning prowess on the part of the students. But according to a committee study by Ralph Rader, "when student writing is deficient, then it is deficient in ways having to do with the student's real control of the subject matter of his discipline and not in ways having to do with the special disciplines of English or Speech departments..." (1965, pg. 5).

How many instructors continually ask themselves when evaluating a paper whether they should "read between the lines", that is to say, look for argumentation and sound reasoning that simply aren't there, attributing faulty reasoning to a lack of communicative skills, rather than to a lack of knowledge. It is as if we acquiesced to a system that separates knowledge from the ability to express this knowledge in concrete terms in a readily understandable standard language. If a student has acquired knowledge about a certain aspect of economics, aviation, or business

management, should this student not be able to relate in writing "how inflation rates affect investment strategies," or "how an aircraft turns," or perhaps "how sound leadership principles can be employed in a particular workplace environment." Isn't it time to refuse to accept students' pleas that they know the concept, but simply aren't able to express it (at least not in writing)?

Finally, "teaching across the curriculum" requires that we teachers adopt a new mind-set, one that is tolerant of other discourses and one that considers not just teaching but learning and examines ways that students use language to acquire knowledge. We have to admit that "language, learning and teaching are inextricably linked" (Russell, pg. 41).

If we insist that students write in an academic discourse, whose sole purpose is --as Peter Elbow alludes to-- for academicians to write to other academicians, then we have missed the mark. Thus we place our students in double jeopardy: on the one hand, we demand that they express themselves in writing in order to learn; on the other hand, we strait-jacket their attempts at free expression by insisting on their employing a discourse, with which they are not familiar, and that they will most probably (especially at the undergraduate level) never have to use again (Elbow, 1991). Besides, if "teaching across the curriculum" is to be successful, we have to enable students to write in all subject areas. If we insist on their using the special discourse associated with a particular subject area, they would have to learn perhaps a half-dozen different discourses in order to satisfy their professors.

If we take a formalistic "skills" approach to writing instruction, we miss the mark, too. We must concern ourselves with the quality of students' writing output, not with formalistic conventions. A clear and adequate focus on a topic buttressed by a logical, readily transparent structure are more important criteria for evaluating students' writing than are spelling, punctuation, and other potential errors.

We cannot allow ourselves to share "the formalist view that judgments about writing can be divorced from judgments about content. From this perspective, *writing well* means observing conventions of diction, usage, syntax, and organization, conventions that are presumed to apply to all good writing and that can be identified even if one knows little about the subject matter being discussed...." (Odell, 1992, pg. 86-7).

Instead, we have to respect the various meaning-making strategies of our disciplines. The deductive reasoning associated with most expository writing, for example, runs counter to the type of writing (and reasoning) considered essential in the natural sciences. Here, of course, the rigors of the scientific method prevail: induction of hypotheses based on observation, deduction of implications of the hypotheses, testing of the implications, and confirmation or disconfirmation of the hypotheses (Gay, 1992, p. 6).

THE NEW ROLE OF THE ENGLISH DEPARTMENT

In traditional university programs it has been the sole province of the English department to teach writing. Although multifarious in their individual attempts to teach writing as a skill, still those English instructors tasked with teaching writing have customarily equated learning to write in a traditional English department with learning mechanical aspects of error-avoidance, learning organizing schemes, and learning with equal intensity various approaches to literary criticism.

Although recent articles espouse the equal, but not superior, role of the English department in w-a-c programs, and emphasize that the English department is but one of many varied voices to be heard in establishing and administering w-a-c programs (Russell, 1992 & Blair, 1988), still I feel that this attitude causes more problems than it solves. For one, freshmen do not possess, for the most part, adequate writing skills. Only in rare instances do beginning students possess writing skills that could enable them to deal propitiously with expository writing as required in most departments. If not the English department, who is to teach these rhetorical skills? The chemistry department? Physics profs? Should these instructors seek help from their colleagues in other disciplines? If this is the case, then wouldn't help be sought from the colleagues in the English department anyway? The problems encountered in attempting to enlist help from and to train colleagues in departments other than the English department are described in Fulwiler (1984).

Doesn't it make more sense to require that all freshman take writing instruction from those instructors who have been trained in rhetorical skills instruction? If a program were developed to accommodate most aspects of modern writing theory to include, but not limited to: writing as process; developing adequate focus and structure; various modes of written communication; various methods of development; writing about literature; basic research methodology (to include annotating sources, etc.); and identifying and avoiding common errors, then freshmen could benefit from exposure to and the practice of sound writing skills. Even if these freshmen are required later on in their studies to assume another writing style or academic discourse unique to their major, they will still have benefitted from learning the basics of written communication in an academic setting. One can violate a norm only after one has learned it.

Besides, practicing expository writing in a freshman comp class allows students to write about subjects with which they are familiar and that they choose to write about. It is a chance to focus on the nuances created by altering--if ever so slightly--a thesis statement. It is a chance to see the need for valid argumentation and a sound structure to support the thesis statement. It is a chance to practice rhetorical devices such as the linguistic devices associated with coherence while again writing about a topic of their own choosing. It is a chance to learn to identify and avoid logical fallacies.

Just which skills students assimilate for future use when writing in the disciplines becomes a personal choice, but a choice based on sound practices developed while experimenting in freshman comp or its equivalent. Later, adjusting to new standards becomes much easier due to the experience gained in a beginning general writing course.

The physical make-up and size of the university will determine whether basic writing instruction takes place in the English department, communications department or the school of rhetoric. That basic writing instruction should take place in a department which houses "qualified resources" should be a *sine qua non* of any w-a-c program.

Even if basic writing instruction, however, should once again be the primary domain of the English department, this does not absolve colleagues in the other disciplines from their responsibility for using writing as a means to learn. It is the purpose of this paper to address how all instructors can incorporate basic tenets of a w-a-c program into their teaching strategies and how this can result in improved writing, enhanced learning, and a better overall product.

ADAPTING TEACHING STRATEGIES TO W-A-C GUIDELINES

What can we instructors in other disciplines, and in institutions that have not adopted w-a-c guidelines, do to help our students springboard from basic writing instruction they might receive in the English department to the "writing [and thinking]...[that] become a primary and necessary vehicle for practicing the ways of organizing and presenting ideas that are most appropriate to a particular subject area...[in which] writing becomes a major vehicle of instruction in all the academic disciplines" (Langer, 1992, pg. 71).

What teaching strategies (and evaluative criteria) can we employ to give students the opportunity to write more and to learn more from their writing? To what extent does the nature of the writing assignment affect what the students write and how they write it?

Do we encourage our students to take a stand--to delve into critical inquiry challenging their own slowly evolving positions as well as the established "authorities?"

If we accept the contention that writing reflects methods of thinking and ways of knowing (an epistemic process), we teachers should be forced to reflect on pedagogical choices, teaching strategies, the role language plays, and evaluative criteria, in order to do justice to students' attempts at expressing themselves while making sense of the discipline they are exploring and the world of discourse within which this field is posited.

Making sense of the teaching experience means understanding learning. Once we understand how learning takes place --especially through writing and language-- we can develop "learning strategies" that make good use of w-a-c guidelines. This intentional twist in

pedagogical "logic" illustrates a changed view of teaching, stressing instead the "passive" acquisition of knowledge rather than the conscious "learning" associated with more conventional approaches (Dhority, 1984).

The teaching strategies that follow reflect the pedagogical principles discussed above. They are intended as guidelines on how we can better adjust our teaching tactics to elicit more learning through writing. These strategies are culled from numerous sources, from personal experience as a writing instructor³ as well as from professional tips shared with colleagues and gleaned from numerous publications. They reflect most of all how I have been able to assess how students enter and participate in the epistemic process while writing. They are teaching tips that can be employed by instructors in all disciplines.

In order to establish writing as a means for learning, it is imperative that we give the students more opportunities to write. This means weekly, if not daily, writing assignments. This also means assigning research papers and other longer and more extensive assignments. It also means having students write in non-formal contexts without subsequent formal evaluation, but with well-intended, worthwhile feedback from us or from their peers.

One viable suggestion is to have students engage in *exploratory writing*. This type of writing has several manifestations. The simplest is journal writing.

Students are required to keep journals making several (un)assigned entries on a regular basis. This type of exploratory writing should be the core of any w-a-c program. Since students are writing under the premise "that anything goes", they are free to express themselves, their doubts, and their discoveries without penalty of failure, or fear of a poor grade or revealing their "inadequacies." Abbott, Bartelt, Fishman, and Honda call "journals...personal excursions in self-expression...." (1992, pg. 113). Journal writing remains personal or public on a sliding scale determined by the student. S/he can share insights with the instructor or with classmates during cooperative learning exercises.

The major advantage of this type of writing is its spontaneity of expression and its freedom from convention. Students write without any formal constraints for the free expression of ideas on paper. They are able to vent their feelings, views, attitudes, and insights and discover how these take shape during the transmogrification from isolated idea to context-related written utterance. This is student-centered and -determined writing. Regular, but brief, journal-writing sessions reinforce course content and provide opportunities for reflecting personal ideas and feelings regarding the course material. (Abbott, et al.)

Journal writing is non-threatening. It enables us to suspend judgment on how something is written and concentrate instead on what is being said. Students' journal entries can help us determine where we need to be clearer, what material needs to be reviewed, and when we should introduce new ideas (pg. 108-09).

It is the type of writing that has an analogous multimedia form **hypertext**, the computer-based technology that enables users to explore using random searches that are enhanced with multimedia applications. In discovering what they know (and don't) by concretizing their ideas on paper, students explore beyond any boundaries artificially imposed by an instructor's tasking. An attempt to explore the molecular properties of a substance, for example, might result in a student exploring the legal implications of in vitro fertilization. Within the branching environment of hypertext --or dialogic journal writing-- students transcend disciplinary boundaries, heightening their awareness of interdisciplinary connections and contexts.

This type of writing results in multiple voices. It is our responsibility to respect these multiple voices and not to discard those that do not reflect the official view without first weighing these multiple voices [including the official one(s)] against each other and determining their relative soundness.

"...If we judge a text--a journal entry, an early draft, or a final draft--to be well or poorly thought out, we can base our judgment, at least in part, on the extent to which that text reflects the use of patterns of thought that are appropriate for the context at hand. If we devote class time to helping students understand these meaning-making strategies, they should be able to function more effectively as members of a particular intellectual community" (Odell, 1992, pg. 89).

These informal writing exercises serve other purposes, too. Students can be asked to put on paper (journal entry) prior to a day's lesson what they have learned from the reading assignment. Within 5 minutes' time, students will have anchored their thoughts to the lesson at hand, will have assessed how much they can recall from their reading, where the uncertainty lies, and the instructor can use these "thoughts" as a catalyst to start the day's lesson. As an intermediary step (which will be discussed in more detail under **cooperative learning** below), students can discuss their "insights" in small cooperative learning groups prior to classroom discussion.

One strategy that we all can employ is borrowed from the theorists in the rhetorical disciplines, namely *writing as process*. Writing as process is a label for a way to view the efforts of any individual engaging in putting his thoughts on paper. The writer enters into a series of steps, which, for the most part, are never considered totally complete until s/he is forced ---probably due to a deadline-- to turn in a finished product. This is a non-linear process, other than a recipe that requires following sequentially a series of steps until a finished product results. In the recursive process of writing, the writer triggers an idea, focuses it somewhat, gathers data in order to support this central idea (the purpose for writing), perhaps modifies the main idea to reflect insights gained while gathering supporting data, shapes these according to the central idea and relative to what information has been gathered, and, perhaps, reformulates the thesis statement (main idea) in order to reflect supporting material, the structure and other ordering constraints and to reflect gaps in the writer's own knowledge discovered while engaged in this process.

This strategy is more than a rhetorical tactic. It is the way most of us write *nolens volens*. It is seldom that we sit down and allow an outpouring of thoughts to trickle from our fingers through a keyboard or writing implement to paper and then try to sell this as a finished product. The care we take and the insights we gain as writers and communicators (=teachers) can be shared with our students if we allow them to enter this process prodded and guided by us.⁴

We can ask the students, for example, to formulate a thesis statement, a purpose statement to indicate how they perceive a given written assignment, and then evaluate these (cooperatively or one-on-one) without asking first for the finished product. Especially beginning students with little writing experience can profit from this well-meaning direction given to writing assignments. We don't need to allow students to lead themselves astray and thus be corrected *ex negativo*, for their failures. Isn't it conceivable to guide our students through one or two developmental writing assignments, step by step, so that they see the light and without risk of major failure?

The same strategies can be employed throughout the process of writing, from thesis statement to supporting data, from structuring to drafting and revising.

We can give meaningful assignments to students to allow them to acquire new and synthesize existent knowledge. In so doing we use *writing to foster understanding*.

Such assignments enable students to grasp issues at deeper levels. Depending on the formulation of the assignment, students can be urged to explore areas that might otherwise remain out of reach for them. If we take pains in how we formulate written assignments, we can nudge students into areas of our disciplines not readily known or accessible, but nevertheless important, to the uninformed novice scholar.

While exploring these otherwise inaccessible, but significant, areas, students become aware of gaps in their own knowledge. Without exploring, students are not aware of the extent and number of these gaps.

In fostering understanding, writing can also be seen as *an explanatory tool*. By writing about how a given mechanism operates, or by simply describing this very same mechanism, students learn. This applies not only to these engineering applications, but to biology, chemistry, and the humanities, too. "Learn what pollination is by attempting to describe it in your own words!" "Explain (in writing) the chemical processes in play by the vulcanization of rubber!" "What is so significant about a red wheelbarrow?"⁵ "What role does compressibility play in rotor-wing aircraft approaching transonic speeds?" By entering, exploring and completing these assignments, students learn. They acquire new knowledge, "reposit" old knowledge into new contexts, and discover gaps in their knowledge base, which prohibit them, perhaps, from readily absorbing the material they are exploring.

It is the same process that we enter when we prepare and execute material for a given class. As such, can't we have students emulate us in "playing teacher?" In one class I taught

for the first time, in a field with which I was not intimately familiar (history of aviation regulation), and on short notice, I decided to "deputize" my students, to have them explore the various "Acts" and report back to the class on their findings. I provided the frame of reference, the reporting criteria (developed in unison with my deputies); they did most of the foot- and brain-work. They benefitted from this experience because they were forced to survey the available data, make connections and make these findings understandable to others in the class.

When we write to explore, understand, or explain (if only to ourselves), we are using a tool that enables us to *make use of the decision-making process*. Whether as teacher, scholar, budding novice scholar (student), manager, or senior officer, we require knowledge in order to make an informed decision. This is the reason why managers and supervisors at all levels of command require their subordinates to write. By writing, we are exploring options. The individual with access to (an analysis of) the most options, can make theoretically the most-informed decision.

Students enter this process, too. They are constantly confronted with options --and thus decisions to be made-- when narrowing down a topic, determining research strategies, and developing a viable structure. They make decisions when including or discarding information.

By sorting and weighing information, students learn to refine not only their knowledge base, but their opinions about the subject matter, as well.

By giving students in our disciplines meaningful assignments, we can have them enter the decision-making process without first ascending the corporate ladder. We can challenge them to explain their interpretation or definition or to examine evidence on which they base their conclusions. Are they summarizing pre-masticated information and points-of-view or are they exploring new avenues?

We can employ *cooperative learning* techniques in order for students to learn by their writing efforts. By entering small, personally defined discussion groups consisting of their peers, students have the chance to take an intermediary step before sharing their insights with the entire class and with the instructor. They have the opportunity to exercise self-control, to try to get the message across, to refine the message to ensure comprehension within the group, to receive feedback, and to learn from the error-correction processes they enter into with others in the group.

DEVELOPING EVALUATIVE CRITERIA

Akin to developing adequate teaching strategies to encourage students to write more and learn by writing, we must develop adequate and fair evaluative criteria to do justice to students' attempts at written expression.

We must be creative and open to new ideas about "gauging" evaluative criteria. As Odell maintains, "...different ways of knowing have heuristic and epistemic significance: each can be a useful strategy for reflecting on one's subject matter..." (1992, pg. 92).

"It [is] important to establish evaluation as part of a larger epistemic process. If teachers in any discipline want students to engage in meaning making, the students will surely benefit from evaluations that help them understand that process more fully...if the writing-across-the-curriculum movement is to flourish, we must persuade both colleagues and students that judgments about the quality of writing cannot be separated from judgments about the quality of meaning making reflected in that writing...If we persist in separating ways of writing from ways of knowing, we shouldn't be surprised if students persist in writing well about nothing" (98).

Instead of seeking particular information in students' papers, we should explore the ways in which students have presented their ideas. The focus should be on a student's ability to formulate ideas and defend them.

Our flexibility must include using other sources to help evaluate students' writing: we can use colleagues within and without our department; we can solicit the help of students and graduate assistants to make a "first pass" evaluation; we can under the cover of anonymity conduct group evaluations of papers during classroom sessions; we can use newly developed software that allows an electronic interchange to provide immediate feedback while "blue-penciling" corrections.

One way to evaluate student writing fairly is to practice *multiple evaluative readings*. This entails our reading first for substance or content, before concerning ourselves with sentence structure, grammatical errors, punctuation, orthography, etc. This enables us to concentrate on essentials without becoming lost in the deluge of errors often encountered while evaluating student compositions. Subsequently, we can read for sound structure and organization. A third reading would concern itself with style; the final evaluative reading would focus on correctness.

When we read for *content* or substance, we are looking for more than just the information presented; we have to focus on the thinking that is evidenced in the student's writing. We cannot fall prey to the "formalist view of writing [that makes] a distinction between writing and content that separates the evaluation of writing from students' understanding of the subject...." Instead, we have to take "...an epistemic approach to evaluation that begins by identifying the ways of knowing that are valued for particular writing tasks" (Herrington and Moran, 1992, pg. 46).

We are evaluating whether the purpose for writing has been clearly expressed in the student's composition; we are controlling to what extent the paper is focused on a single, controlling idea. We are determining whether there is enough information and evidence to support the initial contention.

At the same time, we are interested in discovering gaps or missing material or even unnecessary repetition or extraneous material.

We are questioning whether the body and terminal sections of the paper keep the promise made to the reader in the introduction.

When reading through for information, we are also checking to see whether a biased attitude has been allowed to creep into a student's paper through the use of opinionated adjectives.

A second reading should concern itself with *organization*, or structure. We have to determine whether the composition has an introduction, a body, a conclusion. We ascertain whether the introduction states the controlling idea and announces, when necessary, the major parts.

We discover whether paragraphs are in a logical order and whether each paragraph develops completely its topic. We discern whether transitions and summaries are used to aid the reader, where appropriate. We question the conclusion's validity: does it return to the controlling idea and summarize, when necessary, the major parts?

These considerations are not exhaustive. They are intended as guidelines to follow when analyzing students' writing in multiple evaluative readings.

After determining the validity of the content and organization of a paper, we can direct our attention to stylistic matters. We can explore, for example, whether the student has used coherence to bind the individual sentences within paragraphs and from paragraph to paragraph. Has the student used coordination, parallelism, subordination, emphasis and variety in building sentences?

We can establish whether the language level is suited to the reader. We can look at sentence and paragraph length. We can examine word choice and see if active verbs predominate.

Only after we have subjected the composition to these first three consecutive readings, should we pay attention to problems of grammar, spelling, punctuation, and format.

By evaluating these elements last, there is a manifold positive effect: first, we are not immediately swayed to give a student a poor grade based on what we perceive initially as poor work due to spelling and other errors without first evaluating the paper according to the more

significant criteria outlined above; second, we force ourselves to weigh the merit of a composition by determining how well it communicates and delivers on its promise to explain; and third, we are able to assess a grade based primarily on how well a student reveals to us s/he has grasped the assignment and has been able to put his or her individual response into written communicable language.

If we determine a partial grade after each evaluative reading, we are perhaps doing more justice to the total achievement of the student. At the same time, by separating the grade into 2-3 parts, we can provide positive motivation by first indicating to the student what s/he has achieved without regard to manuscript mechanics, and, secondly, by indicating to what extent the student has jeopardized an otherwise good grade by not paying attention to spelling, punctuation, etc.

For these errors, I would establish a system by which an initial grade would be established. From this, I would deduct points respectively for major deviations in each of the categories discussed above. Thus, a student who received an A- (90-93) for content might have 1-2 points deducted for serious stylistic errors within the range of an A-, i.e., s/he might receive a "91" instead of a "93." If that same student were docked 5 or more points for numerous spelling, punctuation, and grammatical errors, that "91" could easily turn into a grade between "80" and "85" or even lower.

It would become clear to a student that s/he could compromise an otherwise good grade by not paying attention to these areas of manuscript mechanics, with which we teachers are so concerned. At the same time, we are still focusing on development of ideas and sound structure, both of which should reflect sound thinking and a critical mind.

In any event, we should not view our concepts of writing as a recipe to be religiously followed by our students. We shouldn't look for replication rather than reasoning in students' writing, but we should foster critical thinking and making connections, on their part. (Langer, 1992, pg. 82ff.)

Preliminary, non-binding grades could be assessed by peer groups, as well. Students who would have to assess a grade based on what s/he considered valid argumentation, proper focus, etc. would be more apt to think about good writing principles and meaning-making strategies when composing his or her own paper. Of course, this could only work if we required that these peer groups substantiate why they assessed a given grade.

If our evaluative criteria for student writing are to do justice to the tenets of the writing programs we are establishing, then we must give the students more opportunity to write. This holds true for tests. We must abandon multiple-choice and true-false tests and, in their place, institute testing procedures that require students to give extensive responses to questions we pose. We must test not only their ability to think on paper; we must be able to assess, as well, how they are able to synthesize knowledge and express the resultant product.

FINAL REMARKS

This type of questioning (and testing) can have far-reaching implications in the classroom. If we expect responses that demonstrate sound thinking processes on tests, then we must not demand encyclopedic knowledge of students in class. Names and numbers, dates and biographical data should be relegated to the status of appendages to true knowledge. This kind of information is often given a false emphasis by the fledgling writer; yet, it is readily accessible to anyone versed in how to look it up. The knowledge we seek and transmit to our students requires students entering and delving into heuristic processes.

Students will learn new ways of knowing and methods of thinking which result from their writing about these topics. They will become in time accomplished writers if they write often and are given meaningful assignments. They will be able to assume the discourse of their discipline once they've passed their initial flight tests, from fledgling novice to accomplished ace.

And lest we lose track of how we fit into the process of teaching across the curriculum and into our roles as teachers but also into our roles as professional communicators, let us remember that we are engaging --if on a meta-level-- in the same learning process when we prepare and deliver our lessons and when we write for publication in professional forums.

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1. According to Herrington & Moran (1992), writing across the curriculum has been implemented in one-third of institutions surveyed.
2. Shannon's well known postulation equates systems with the maximum amount of unordered particles as having the greatest potential information. (Shannon & Weaver, 1964).
3. I base my observations on experience I've gained teaching second language acquisition (English and German), comparative literature, and rhetorical skills classes.
4. It is certainly worthwhile to allow students insight into how you put your ideas on paper. It could help debunk the prevailing myth that experienced writers produce publishable finished products from the start if we shared our "messy work" with the students from time to time.
5. This question alludes to "The Red Wheelbarrow," a poem by William Carlos Williams. My underlining.



Plagiarism: "Why Didn't Anyone Tell Me . . . ?"

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Abstract

Plagiarism, the use of the work of another author without proper credit is prevalent throughout society. In some instances a double standard exists: in academia students and educators alike are severely censured if there is the slightest indication of plagiarism. But in other areas of society, the use of compensated ghostwriters is the accepted norm. How educators must explore this dichotomy with their students, and help them to internalize their own value system, is a topic of discussion in this paper. Along with the issue of intentional plagiarism, unintentional plagiarism, due primarily to the author's lack of knowledge on how to document properly, is also covered by way of documentation guidelines. As educators, it is our responsibility to ensure that our students are provided with sufficient knowledge on the concept of plagiarism, and its correlation, proper documentation. By failing to provide this information we expose our students to possible lawsuits and embarrassment, as well as the possibility of the loss of a job or promotion.



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Plagiarism: "Why Didn't Anyone Tell Me . . . ?"

Plagiarism is the appropriation or imitation of the language, ideas and thoughts of another author, and representation of them as one's original work.

If this paper were to continue without referencing with the use of quotation marks and proper citation, stating that the above definition had been taken verbatim from the Unabridged edition of the Random House College Dictionary, 1980 (revised edition), page 1014, the author would be guilty of plagiarism. If a paraphrased version of the definition was used, and the proper credit was not subsequently referenced to the source, it would also be considered plagiarism. However, if the identical concept, and even some of the same words found in the definition were used, but this information is readily available in many other sources without citation, or if it is considered a known fact, or if the author actually knew the information in his/her own right, then this 'common body of knowledge', as it is frequently known, would not necessitate citation. Unfortunately, for us as faculty members, these concepts are not fully comprehended by many of our students.

While the term itself sends chills down the spine of educators, professionals and researchers alike, plagiarism is more commonplace than most professionals realize. Frequently, the use of others' work without proper credit may be unintentional, formally endorsed, or even due to one's ignorance regarding the specific rules of documentation. Familiar justification and rationalization attempts often include: 'everyone does it'; I didn't know it was plagiarism; I just borrowed a small portion of the article; financial compensation was provided; no one important will ever see the paper; the professors never read the papers anyway; it will not be discovered so no one gets hurt; substantial time deadlines led me to plagiarize; even though it may sound like the original work--the words were arranged or paraphrased so it is not exactly copying the original source; or but why didn't anyone tell me! This paper reviews the issue of plagiarism and how educators can assist students and educators on how to avoid its pitfalls. Considering the actions of some of our national political, business, and even academic leaders, it is clear how rationalizing may ensue.

Society, in part, must shoulder some blame for the prevalence of plagiarism. In some professional circles 'borrowing', enhancing', developing' or 'building' on the work of others is encouraged. The existence of a staff of writers or leg-work people particularly in political and corporate sectors suggest that paid positions are created for the express purpose of developing creative ideas which, in turn, are stamped with approval and utilized by someone else with little or no credit given to the actual author or authors. However, the presence of more lenient standards in other segments of society need not be reason for accepting those standards as our

own. Perhaps a question to form our approach to this issue is what guidance does our university offer concerning plagiarism to assist our faculty in guiding the professional careers of our students. Let's begin by identifying plagiarism and discussing how it has been defined by various groups representative of our society.

Plagiarism, in plain and simple terms, is using someone else's work, words, concepts or ideas without acknowledging that one is doing so. Any form of deception, where an individual assumes the authorship or ownership of the efforts of another, is plagiarism, regardless if there is an exchange of money. The question is not monetary compensation, but rather giving credit where credit is due. Working with another author is acceptable, just as is the incorporation of someone's work, but in both circumstances one must grant credit to the authors involved. Citing the work of others is not difficult or cumbersome, unless of course the mainstay of the paper was written by someone other than the writer. One can use the writings of another in diversified ways, including lending support to ideas and to help substantiate a specific point, but it always must be cited.

Whether in politics, the academia, the media or the business sector, plagiarism has been both popularized and justified time and again. Whether it is journalists incorporating the works of others into their articles, politicians relying on compensated ghostwriters for their speeches, or students utilizing ideas and statements from various authors and sources, all are incidents of plagiarism.

Chaney and Duncan (1985) conducted surveys of journalism schools/ departments and news media organizations soliciting their plagiarism policies. Their study found vast disagreement between educators and editors as to whether the borrowing of ideas, and/or graphics should be identified as plagiary. Opposing views were held when questioned on the issue of editorials which were "not written by management". While reported disciplinary actions ran the full gamut from mild warnings to excommunication, the major discrepancy was the inability to reach a consensus on what constituted plagiarism. As faculty within a multi-campused university, we must insure that our organization reaches a clear consensus on what constitutes plagiarism. Backed by a stated consensus, the faculty will be better able to teach our students not only what plagiarism is and how to avoid it, but why it is to their benefit to do so.

An astounding list of political reliance on the works of others, although 'financially compensated', is described in Posner's (1988) article, *The Culture of Plagiarism*. Many surprising yet common examples of plagiarism, also known as ghostwriting, are found to emanate from Washington, D. C., the power center of our nation. In a location where our leaders make the vital decisions which impact not only our society, but the future of mankind as well, plagiarism appears to be sanctioned as an accepted norm. Surprised? Probably not! Posner (1988) highlights some interesting examples of plagiarism including Martin Luther King Jr.'s, *Why We Can't Wait* (written by Al Duckett), George Washington's Farewell Address (written by Thomas Jefferson) and Kennedy's *Profiles in Courage* (authored by Theodore Sorenson). Additionally, the article references two letters which were printed in *The San Diego*

Union newspaper. Both were in defense of former U.S. Attorney General Ed Meese, who had experienced a significant amount of criticism during his tenure in the Reagan administration. One letter was signed by the Assistant to the President, and the other signed by the Assistant Attorney General were identical, word for word! It could be almost laughable, except that this kind of behavior by political role models conveys a distinct message--it's OK to claim someone else's work as your own (as long as you don't get caught and embarrassed). In the case of the Meese letter, it is highly probable that neither of these individuals wrote the letter.

The corporate sector also has its share of ghostwriters and plagiarism. Chrysler's "Director for Executive Communication" coordinated the drafts, prior to their final approval, for Iacocca's column in the Los Angeles Times; John Sherman authored much of the work of James D. Robinson, Chairman of American Express; Carl Rowan's diversity of activities is accomplished through his staff's 'leg work'; Evans and Novak's also rely heavily on their staff; and Richard Cohen et al's work for Dan Rather.

Similar situations exist in the scientific community. According to Posner (1988), if the actual research is transacted at another's geographical location, or under the guise of another's grant program, then allowances are made for all to be associated with the research, regardless of the amount of actual contact. The judicial system also has its own system of plagiarism. Many judicial opinions credited to various judges are, in reality, drafted or even totally written by their legal clerks. There are definite mixed signals bombarding the students that are being educated in today's classrooms. The existence of differing norms in different sections of our society needs to be noted. Perhaps more important to our students, the norms for their academic and professional writing need to be clearly stated in university publications and covered in detail by their faculty during their coursework.

In the academic community, the surprising revelation of Martin Luther King Jr's apparent plagiarism in his doctoral dissertation has led to questions regarding his beliefs, image, and the value placed on his impact on society. An article on Martin Luther King Jr's plagiarism (Raymond, 1991) which surfaced in the Chronicle of Higher Education, highlights the problems and a nearly three year delay which arose while King's writings were being compiled for publication. Raymond (1991) further wrote that Boston University, after appointing a committee to review the works found itself in a predicament as to how to handle their findings. There were even suggestions of revoking King's degree and substituting it with an honorary degree. There were subsequent charges that delays in presenting the findings were in direct response to expressed concerns about tarnishing King's image. The article further cites a researcher's suggestion that a positive value should be derived from the realization that we can learn a great deal from the very fact that Martin Luther King Jr. was less than perfect, and yet accomplished so much. Undoubtedly, the visible role models in society are also subject to misconduct or unethical mistakes. However, whether the use of someone else's words and/or ideas is intentional, or due to ethical misjudgment on the writers part, it is still identified as plagiarism.

Dr. King's actions as a doctoral student would have seriously affected his present-day

activities had he lived. A somewhat similar example occurred at Harvard University. It affected the career of a faculty member who had a long period of distinguished service. A Faculty Conduct Committee concluded that a renowned psychiatrist and head of Harvard's teaching hospitals had plagiarized portions of papers he had published some twenty years earlier. That faculty member was asked to resign, an action which raised rather intense emotions along with a number of questions also raised about Dr. King's plagiarism. Harvard officials replied that "Although the institution's Faculty Conduct Committee had never before reviewed a case of plagiarism by a faculty member, Dr. Frazier's resignation was consistent with the university's policy toward students who are required to withdraw if found guilty of plagiarism" (Noted Harvard Psychiatrist, 1988, Pg A-6). In spite of the well publicized severe reactions to Dr. King's and Dr. Frazier's cases of academic plagiarism, and other popularized instances in the political and corporate arenas, students entering degree programs bring with them both incomplete knowledge of what constitutes plagiarism and developing value systems which have yet to place relative importance on proper use of another's ideas.

Beginning a dialogue with students concerning plagiarism early in any degree seeking program is very important. One English instructor in a California high school reported on involving his students in an exploration of plagiarism. The exercise began with defining plagiarism and extended through studies of recent popularized cases, and discussions of plagiarism within their classes. The exploration of this subject incited much more interest and took much more time than the instructor had expected. Two outcomes important to those of us who teach at the college level were reported. There were, first, the development of various simple and practical tests for students to tell if their writing approach was appropriate and, second, self-authored reports of the students coming to grips with previously misunderstood or deliberately avoided concepts regarding plagiarism. One particularly revealing student input was, "It was painful for me, but I understand now what I've been doing and how to avoid it, and I'm just glad we did this before I got to college. Why didn't anybody tell me this earlier?" (Sterling, 1992, Pg. 66)

Clear definitive guidance concerning an organization's definition of plagiarism, along with guidance for faculty in establishing explicit direction for students on this issue is relatively rare and is certainly needed. When the subject of plagiarism is introduced by an instructor along with knowledge of proper ways to give credit to the contributions of others, values are being introduced. The ability to assist the student in internalizing ethical standards by demonstrating that the value of ownership is in itself the higher reward is no easy task.

A behavioral training method which is found to be helpful incorporates the "RAID" concept. RAID is an acronym that stands for Rating, Ability, Identity and Documentation. (1) Rating refers to an evaluation rating in which students learn to distinguish between the separate categories of the practitioner, versus the idealistic realm of academia. There can be no doubt that the "borrowing" which is so prevalent is the easier route, but by no means is it a credit to the individual who travels that road. The student must be able to distinguish between what, by definition is really acceptable, versus what is acceptable as normal behavior only because society tends to ignore the facts. (2) Ability refers to the enhancement of the student's confidence level

in their own ability to write quality material. The educator should assist the student to override the dependence factor while moving toward assertive creativity. (3) Identity refers to the educator's role in instructing the student in the skill of recognizing the parameters of plagiarism. The student should establish standards of personal performance. (4) Documentation refers to the hands-on skills necessary for the students in the process of citation and documentation. Brownhill (1987) pointed out that the greater difficulty for faculty is to convey to the student a need for "precision and accuracy" in the bigger picture.

Educators today are competing with many subliminal messages, prevalent in our society which imply that: "It's not so wrong to act illegally or unethically, just don't get caught." The further implication is that if you do get caught, the penalty will be shortlived and minimal. Within this suggested value system the threat of punishment becomes an ineffective deterrent to plagiarism. Today's educator must help the student rethink their values and recognize the incorrect assessment of values that has apparently gone unchallenged. The internalization of higher standards of performance is the foundation on which faculty must continue to shape the students' personal goals.

To assist faculty in dealing with the issue of plagiarism, standards need to be clearly outlined in university documents easily available to both faculty and students. Our faculty through its constituent bodies must have a clear consensus on what constitutes plagiarism within our institution. Then they will be more able to teach their students not only what plagiarism is and how to avoid it, but why it is more important to the student to develop their own writing ability than improperly borrowing the ideas of others.

While this paper has to this point addressed mostly intentional and premeditated plagiarism, there are numerous instances when a student's plagiarism is unintentional and occurs only because of a lack of knowledge on how to document correctly. The following guide offers suggestions on how to avoid plagiarism and when to document.

Criteria for Proper Documentation

When the decision to use the exact terminology of the original author is made, then full attention must be paid to the detail of the statement so as to maintain the original source's words as well as its punctuation (Teetotaler, 1989). "The only time you can use a source without formal acknowledgement is when you refer to a specific phrase, statement or passage that you have used and acknowledged earlier in the same paper." (Heft and Lincoln, 1982, p. 458)

As suggested in *A Practical Guide for Writing* (Hacker & Reins, 1982), a common body of information exists which does not necessarily require citations with its use. When you are unsure which category your information may fall into, then document. Hacker & Renowned (1982) further suggest that if the concept or idea appears in other written words without citation, or if you are sure that you already know the information, it is most likely common information which does not require footnotes. However, if there is any uncertainty or doubt - DOCUMENT!

The different means of incorporating materials from other sources include direct quotations, paraphrasing and any combination thereof.

Direct Quotations

When to use:

When you cannot improve upon the authors phraseology without altering its meaning. There are definite circumstances when the verbatim comments are vital for the sake of meaning or preservation of the original author's flair. Excessive quoting regardless of proper documentation renders the piece ineffective. It conveys a message that the writer lacks sufficient knowledge to convey his/her own thoughts on the particular subject. Outside sources are for support, not intended to be the mainstay of a paper. When direct quoting, everything must be preserved, that is, capitalization, grammar, punctuation and spelling. Any omission from within a direct quote should be replaced by *Eliot* (APACE Manual, 1983) (three periods--spaces between) also known as *Eliot*. Four spaced periods would be used in instances where a sentence has ended within a quote in line with the removed portion of the quote. Any additional corrections or points of clarification for the quote should be put in brackets rather than parentheses. The word [sic] may be used judiciously following acknowledgements of the original author's mistake. Any point of emphasis to be made by the writer regarding the original author within a quote should be followed by brackets containing the words [*italics mine*].

Be sure to review the rules regarding punctuation placement, surrounding quotes i.e., periods and commas within quotation marks, semicolons and question marks which are contingent upon the situation.

Example:

"To gain knowledge of self, one must have the courage to seek it and the humility to accept what one may find" (Jersild, 1955, p. 83). The statement could also be presented in the manuscript in the following manner: Jersild stated, "To gain knowledge of self, one must have the courage to seek it and the humility to accept what one may find" (1955, p. 83). Obviously, this statement conveys stronger more concise meaning if used as a quote. However, if paraphrasing were to be the mechanism chosen, then the author would need to be as brief as possible and still provide documentation as to its source.

Paraphrasing

When to use:

When the word-for-word accounting of the author's words is not vital to its meaning, then the author may restate the concept in his/her own words. The paraphrase should be used as long as the meaning of the original source is not changed. If the original author's exact words, in part or in total, cannot be restated or paraphrased without compromising the meaning, then quotes should be selected over paraphrasing. Avoid repetition of the sentence by simply replacing key words with synonyms.

Quote:

In the school there are countless opportunities for helping the child in his search to find himself. He can be helped to discover his aptitudes and abilities, to face some of his inner difficulties, and to realize his limits. What the teacher does strongly affects. . . Everything in the relation between a teacher and a student has or might have a significant effect on what a child thinks and feels about himself.
(Jersild, 1955, p. 82)

Paraphrased example:

The classroom teacher is in a key position to impact the students life, to help him to overcome obstacles and appreciate himself as a person (Jersild, 1955).

Quote:

"To gain knowledge of self, one must have the courage to seek it and the humility to accept what one may find" (Jersild, 1955, p. 83).

Paraphrased example:

Jersild's (1955) comments suggest that if you sincerely want to learn as much as possible about yourself then be sure you can take what you find out.

Utilizing the writer's own terminology to present someone else's ideas and concepts still requires that credit, through the use of a reference citation, be given to the original source. The writer should make an effort to limit the number of direct quotes placed within the text of the paper. Keep in mind that the underlying purpose for using other sources is to solicit support for your paper and your ideas. Generally, outside sources lend support to the direction or focus of the paper. The following are guidelines pertaining to documentation:

8

1. Document as a direct quotation when the exact terminology of the original author is utilized.
2. Verbatim comments should maintain the same grammar, punctuation and spelling (even if it is incorrect).
3. Indications of emphasis or needed corrections to quotes are indicated through the use of [italics mine] or [sic], respectively.
4. Document the paraphrasing of the work of others with the use of a reference citation.
5. Documentation is not required if the passage or statement was previously used and cited earlier in the same paper.
6. Documentation is not required for a common body of knowledge.
7. Documentation is not required if words or ideas appear in other sources without being documented.
8. Documentation is not required if the author already possesses the information without having to go to an outside source.
9. Excessive use of direct quotes is discouraged.
10. Direct quotes of more than 40 words should be indented, blocked, and set off from the text without the use of quotation marks.
11. When the writer is unsure of whether a citation is needed, then CITE!

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**TEACHING EFFECTIVENESS: INTEGRATING THE
ADJUNCT CAMPUS, THE MILITARY STUDENT
AND THE HOST COMMUNITY**

By

Richard O. Keen

A Presentation at the First Annual
Embry-Riddle Aeronautical University
College of Continuing Education
Faculty Symposium on Teaching Effectiveness
Daytona Beach, FL

April 28, 1993



ABSTRACT

This is a presentation dealing with integrating Embry-Riddle's adjunct campus, the transient active-duty military student and a "host" community through the use of MAS 640, Supply and Distribution in the Aviation/Aerospace Industry. A traditional problem for programs such as Embry-Riddle's adjunct campus program is visibility in the local host community. This is the same problem many military members face as they move from base to base throughout their military career. This can be an unfortunate situation as all three participants in the process have much to offer and without a process to integrate them they may never become aware of the contributions each can make.

One way to develop an integration process is through the use of MAS 640, Supply and Distribution in the Aviation/Aerospace Industry. MAS 640 is designed to study the elements of physical distribution that include the structure of supply organizations, priority systems, cost categories, inventory control, and the applications of electronic data processing. Case studies are employed to present issues, problems, and analyses of supply systems in terms of customer satisfaction relative to costs incurred.

As part of the course I require that each student select a business in the host community to study. I have pre-determined the boundaries of their selection by limiting their choices to businesses that represent a cross section of the host community's business complex to include features such as size, industry and complexity of distribution system. The student is required to meet with the business' leadership and learn about the business to include analyzing its supply and distribution system. The businesses selected range from a pet store to the city's daily newspaper.

The student is required to present a 10 minute oral report to the class and a written end-of-course paper. The oral report exposes all of the students in the class to a broad view of the city's distribution system. The individual student's efforts are complimented by class tours of the state-wide Federal Express Regional Center, including it major in-state customer, and the distribution center of a major regional retail foodchain.

As a method of providing feedback to the business a copy of the student's written report is provided to the business. I encourage the student to include an evaluation of the good things they observe as well as suggestions for improvement.

By using MAS 640 in this manner not only does the student learn about his business in much greater depth, but they also learn about the workings of an entire city's distribution system. The city and the businesses also learn about the military members living in their city and the role Embry-Riddle plays.



DICK KEEN

**INSTRUCTOR OF AERONAUTICAL SCIENCE
MALMSTROM AIR FORCE BASE
ADJUNCT CAMPUS
GREAT FALLS, MONTANA**

TEACHING EFFECTIVENESS

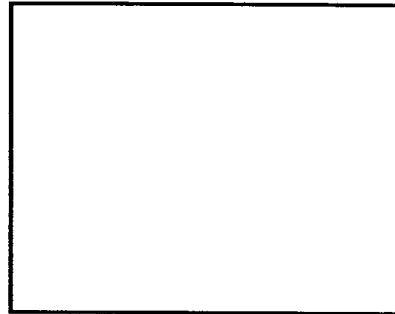
- INTEGRATING THE ADJUNCT
CAMPUS, THE MILITARY
STUDENT AND THE HOST
COMMUNITY**

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THE PROBLEM

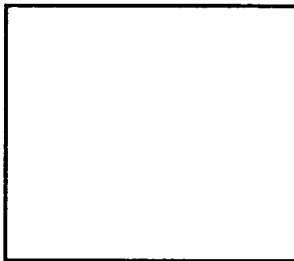
- VISIBILITY IN THE COMMUNITY



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THE CONCEPT

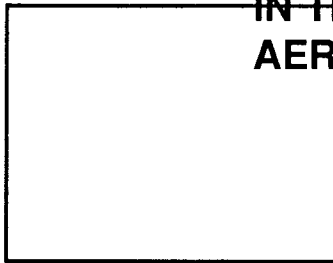
- USE MAS 640
TO TIE ALL
THREE TOGETHER



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MAS 640

- SUPPLY AND DISTRIBUTION
IN THE AVIATION/
AEROSPACE INDUSTRY



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MAS 640 DESCRIPTION

- ELEMENTS
OF DISTRIBUTION
- CASE STUDIES

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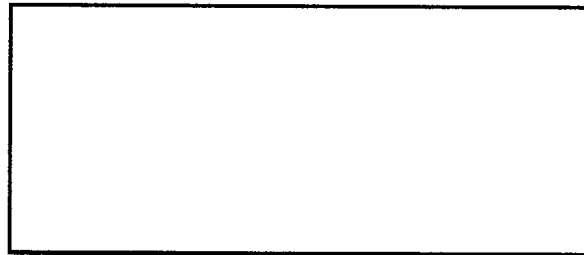
MAS 640 GOALS

- HOW PARTS ARE CONTROLLED AND DISTRIBUTED
- THE CONCEPT OF PHYSICAL DISTRIBUTION
- COMPONENTS AND INTERRELATIONSHIPS

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BACKGROUND

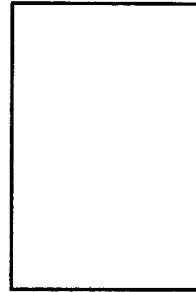
- THE Embry-Riddle STUDENT



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BACKGROUND

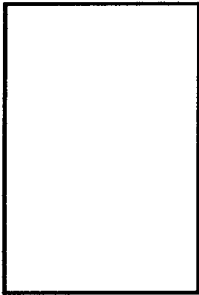
- **MALMSTROM
AIR FORCE BASE**



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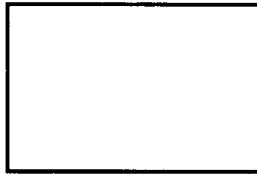
BACKGROUND

- **GREAT FALLS,
MONTANA**



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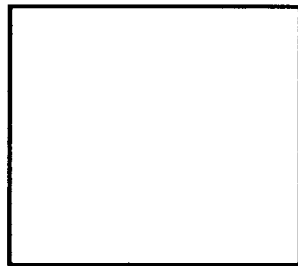
BUSINESS SELECTION



- PRESELECT LIST
- CROSS-SECTION

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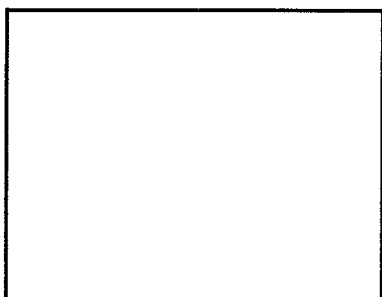
OUTPUT



- PAPER
- CLASS PRESENTATION

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THE COMPANIES



- AMERICAN RED CROSS
- BASE COMMISSARY
- BRUCE WATKINS DISTRIBUTORS
- CARMIKE CINEMAS
- CENTRAL GLASS AND PAINT
- DEACONESS HOSPITAL
- DELTA AIRLINES

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THE COMPANIES

- EDDY BAKERIES
- ELECTRIC CITY CONSERVATORY
- FIRST BANK
- GENERAL DISTRIBUTING CO.
- GENERAL MILLS
- GREAT FALLS TRIBUNE

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THE COMPANIES

- HASTINGS
- HERBERGERS
- HOLMAN AVIATION
- McDONALDS
- MONTANA REFINERY
- NAPA AUTO PARTS

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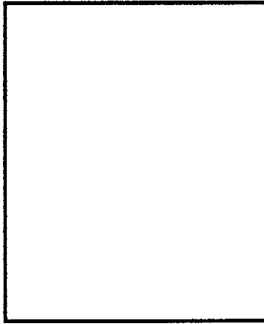
THE COMPANIES



- PACIFIC HIDE AND FUR
- PETCETERA
- PICKWICKS OFFICE WORKS
- RUTH JOY
- SEARS ROEBUCK AND CO.
- UNIVERSAL SEMEN SALES

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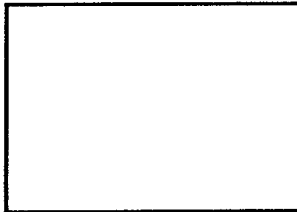
THE INTEGRATION PROCESS



- STUDENT
- COMPANY LEADERSHIP
- SHORT REPORT

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WHAT TO LOOK FOR

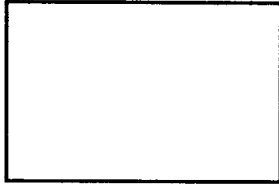


- WHAT PRODUCT
- THE DISTRIBUTION
SYSTEM
- SPECIAL NEEDS
- WHY

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FIELD TRIPS

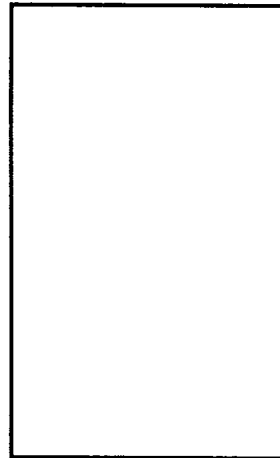
- NORTH COUNTRY MEDIA
- FEDERAL EXPRESS
- BUTTREY FOOD AND DRUG



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LESSONS LEARNED

- GREAT FALLS TRIBUNE
- HOLMAN AVIATION
- SEARS ROEBUCK AND CO.
- HASTINGS
- BUTTREY FOOD AND DRUG
- EDDY BAKERIES



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RESULTS

- FOR THE BUSINESS
- FOR Embry-Riddle
- FOR THE STUDENT

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CONCLUSION

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Teaching Characteristics, Learning Styles and the
Adult Learner: A Keesler Perspective

Anthony J. Russo

Embry-Riddle Aeronautical University
Keesler Resident Center

A paper presented at the
Faculty Symposium on Teaching Effectiveness

April 1993



TEACHING CHARACTERISTICS, LEARNING STYLES AND THE
ADULT LEARNER: A KEESLER PERSPECTIVE

Anthony J. Russo

Embry-Riddle Aeronautical University
Keesler Resident Center

INTRODUCTION

This study emerged as a natural outgrowth of quarterly faculty meetings conducted in accordance with suggestions contained in the Faculty Academic Orientation Manual (FOAM). On a routine basis topics of interest would be discussed regarding the institution and the latest administrative changes in general to an area of specific concern in particular. These special interest areas would cover such topics as assessment and grading policies, faculty responsibilities, course evaluation and teaching techniques.

In time it became readily apparent that student input reflecting their attitudes on some of these teaching characteristics would give clearer meaning and importance to these dimensions. It was also believed that we needed to discover what learning styles were dominant to these adult learners at this military training complex. Accordingly, a relatively straightforward inventory of learning style was incorporated in a survey questionnaire investigating a cluster of learning components, instructor characteristics and student preferences for both teaching method and learning mode. The survey was distributed to all active students enrolled at the Keesler Resident Center during the February - March 1993 time frame.

With the aforementioned purpose and considerations in mind, four major goals, or phases, for the study were outlined:

1. Phase 1 of the study involved the development of a survey questionnaire to provide information concerning the instructional system with selected aspects of the system investigated from a student point of view. This questionnaire was designed to obtain respondents' ratings of (a) some relevant learning components and instructor characteristics specified in the FOAM and (b) student preferences for designated learning methods and teaching methods. In addition, the questionnaire sought certain biographical information, as well as information pertaining to perceptual learning styles and opinions about disparate instructor traits.

2. Phase 2 involved the collection of survey responses from the totally active ERAU Keesler population determined to have informed awareness of areas under investigation.

3. Phase 3 consisted of descriptive statistical analyses of the questionnaire response data.

4. And Phase 4 called for an initial comparative analysis of findings within each part of the survey and some selective analysis from the composite ratings of the survey.

INSTRUMENT DEVELOPMENT

The data-gathering instrument in this study was entitled the "Instructional System Audit" (ISA). This questionnaire was divided into eight parts. Table 1 portrays the overall composition of the Instructional System Audit by explaining the contents in each of the seven separate parts, all variables involved and the number of items and type scale loading on each segment.

Part I: Biographical Data

Part I was designed to provide background information on such factors as the respondent's rank, age, sex, marital status, flying status and specialty area. The nine items in this section were selected based on their potential usefulness in organizing and understanding the data obtained in the remainder of the questionnaire. Item seven in this part was used to isolate those respondents who had at least two or more course offerings from this institution.

Part II: Learning Components

Part II of the ISA was designed to obtain information on six selected learning components drawn partially from the ERAU Student Survey Form and partially from the FOAM. The respondents rated (on a Likert scale) in degree of importance, the course syllabus, handouts and supplemental material, test and/or quizzes, text used, pace of material covered and special efforts they put into the course.

Part III: Instructor Characteristics

Part III of the ISA sought feedback on nine items from a time perspective using the Likert scale; i.e., considering all ERAU instructors how often were they...available for consultation, mode objectives clear, helped on progress, sensed needs, used class time well, were well prepared for class, were enthusiastic, made you think and made you work.

Part IV: Preferred Learning Mode

Part IV of the ISA was designed to have the respondent prioritize five methods of presenting instructional information. These five learning modes were drawn from the FOAM and the ERAU student was asked to place them in increasing order of importance.

Selections included lecture methods, dialogue, teaching interview, panel discussion and dramatization.

Part V: Teaching Methods

This part of the ISA asked the respondent to rate on a Likert scale of relative importance of ability to learn eight teaching methods; i.e., programmed or computer assisted instruction; slides, films or video cassettes; audio cassettes or tapes; questioning methods; guided discussion methods; practical exercises; simulations and case study methods.

Part VI: Perceptual Learning Style Inventory

Part VI was incorporated in the survey to attain a measure of a major component in the learning process. The Perceptual Learning Style Inventory was used because of its straightforward approach and ease of administration. It was adapted from the work of James and Galbraith (1985) with respondents asked to check a list of thirty-four strategies or techniques that help them to learn. The meaning and specification of these learning styles is at Table 3. The inventory was modified slightly to update terminology such as records with compact disc and to add several strategies such that each learning style was supported by an equal number of learning techniques. This approach was consistent for all learning styles with the exception of the olfactory style which had only four learning techniques in support of its orientation.

Parts VII and VIII: Opinion...Instructor Teaching Methods - Positive/Negative Traits

Parts VII and VIII, the last portion of the ISA questionnaire asked the respondents for their personal opinions concerning instructor teaching methods they liked the most about their best ERAU instructors and the traits they disliked the most about their less effective ERAU instructor's teaching methods. The final research question on the ISA asked for student opinions regarding instructor actions that could maximize student learning.

PROCEDURES AND RESULTS

The ISA questionnaire was administered to all actively enrolled enlisted and officer personnel at the Keesler Air Force Base Resident Center of Embry-Riddle Aeronautical University during the period 23 February to 19 March 93. All participants were assured anonymity in their responses. Of the questionnaire returns received, a total of 38 (81.%) contained usable data falling within the scope of this study. However, due to a reproduction error associated with most blank questionnaires, elements "b" and "d" in Part V: (Importance of Teaching Methods) were deemed unusable and were not incorporated in the data analysis phase of the ISA survey.

Descriptive statistical information concerning Part I: Biographical Data and related population characteristics can be found in Table 2. From a total population of 38 students, it can be seen that 23 are in the graduate program and 15 are in the undergraduate program. While all undergraduate students are in the enlisted grade only 4 (17%) of them are in the graduate program. The mean age for all students was 29.1 years with most (68%) being married and equal proportions (16%) being single and divorced respectively. Thirteen percent of this group were female and 21 % were rated. The average overall GPA for this population was 3.7 and since there was a restrictive range among scores, this variable as well as the sex and flying status variables were not employed in any follow-on data comparative analyses. Also, there were many diverse Air Force Specialty Codes (AFSCs) represented in this population.

Learning Components

Chi Square statistical analysis was performed on composite ratings assigned by respondents to the six items in Part II of the ISA. When comparing the actual distribution with the expected distribution at the .05 level there was no significant difference (see Table 6). So we fail to reject the claim that actual response frequencies agree with the expected rates. However, when the importance of course syllabus data were treated by means of a Kruskal-Wallis nonparametric analysis of variance by ranks, the statistic $H = 8.89$ compared to the critical value of chi-square of 7.82 (.05 level) indicated a clear rejection at the .05 level of the hypothesis of equality of mean course syllabus importance for the four groups of military grades. Groups were differentiated into the following military grades - senior airmen/staff sergeants, technical/master sergeants, lieutenants and captains/majors. It appears these separate groups of military grades view the importance of the course syllabus independently. Enlisted grades tend to put more importance in the course syllabus than officer grade personnel. Table 7 reflects a summary of composite ratings and shows interestingly that "course syllabus" ranked as the most important learning component while "test/quizzes" were judged the least important items in this category.

Instructor Characteristics

Part III of the ISA contained nine instructor characteristics which were rated on a timeliness or responsiveness basis. A chi-square test was done on composite scores in this segment. The differences between the actual observed values and the theoretically expected values were tested at the .05 level with no statistically significant result. The factual data are found in Table 6. A summary of composite ratings found in Table 7 shows that respondents valued most highly the instructor characteristic - "available for consultation" followed by their being "well

prepared for each class". Oddly, the least responsive characteristics in this segment were instructor's relative lack of sensitivity in "sensing when students needed help" and in "making them work".

Preferred Teaching Method

Respondents were asked to rank five methods of presenting information in Part IV of the ISA. When these rankings were tested by chi-square, it was found that these methods were not uniformly distributed ($\alpha=.05$). Remarkably, the $\chi^2=42.61$ is significant at the .001 level (see Table 6). It strongly appears that respondents prefer one learning method over another. Table 7 summary data tends to indicate that the preferred teaching method among the five given is the dialogue approach - "interaction between two persons (one may be instructor)". It is directly related to and consistent with a learning style finding in Part VI.

Importance of Teaching Methods

Another chi-square test was applied to data contained in Part V of the ISA. This was a measure of relative importance of different teaching methods in terms of student ability to learn. The test statistic here was well beyond the critical value needed to show significance at the .001 level (see Table 6). Here again the teaching method choices do not appear to be selected with equal frequencies by respondents. From Table 7 summary data it is appropriate to indicate that the most important teaching method chosen was the case study approach while the least important respondent selection was programmed or the computer assisted instruction teaching method.

Learning Style

Part VI of the ISA involved respondent choice of learning strategies related to learning style. A chi-square analysis was performed on composite ratings to the six separate learning styles within this section. The resultant ratings are not equally distributed among the different learning styles and this was significant at the .001 level (see Table 6). The summary of composite ratings manifest in Table 7 shows that the dominant learning styles deemed most important to respondents in this setting are the interactive mode followed by the print learning style. After ruling out the haptic and olfactory styles for cause (see Table 7), the least important dominant learning styles were aural and kinesthetic.

Opinions...Instructor Teaching Methods

The final set of analyses in this study was performed on respondents' responses to the questions about their likes and dislikes concerning past ERAU instructor teaching methods. A

summary of their opinions in Parts VII and VIII are presented (see Table 8). Since the results gained in the last section were, for the most part, duplicative in nature, they were subsumed under Part VII and partialled-out as most effective and least effective instructor teaching methods by graduate and under graduate program. The top three responses for results obtained in each category are summarized in Table 8.

Among the graduate respondents, over half (61%) felt that the most effective teaching method was the use of real-world examples and current events to support learning objectives. The second most effective method (43%) was the use of the classroom as an open forum for continuous "interaction" with the student followed by the third most effective method (30%) which indicated a need for the instructor to be accessible and possessing a sensibility to students who needed additional review and clarification of learning outcomes. The least effective methods highlighted by graduate respondents were (a) boring lecturers with no "interaction", a one-way communicative process (26%), (b) limited real-world scenarios (17%), and (c) a failure to explain lesson objectives (13%). Thus, graduate students appear to prefer teaching methods that are practical, interactive and diagnostic/remedial in order to assure attainment of desired learning outcomes.

Not surprisingly, undergraduate opinion was relatively congruent with graduate opinion. The most effective teaching methods were (a) teachers that demonstrated their competency and subject matter expertise (40%), (b) teachers that used practical applications (33%), and (c) teachers that were genuinely concerned about the student and help with learning (26%).

The least effective instructor teaching methods for the undergraduates were (a) teaching over the heads of students (26%), (b) teachers who are too demanding (20%), and (c) teacher lack of ability to communicate learning on an understandable level (13%). Therefore, the undergraduate students appear to prefer teaching methods that are competently presented, practically oriented and focused in a way that students understand outcomes by a teacher who helps them learn.

It thus would appear that both graduate and undergraduate students essentially share the same general characteristics regarding instructor teaching methods. They both favor strongly an "interaction" component in terms of a two-way communication process that clarifies learning outcomes and they share a keen interest in using practical, real-world examples to support learning objectives. To an extent they share a desire for frequent and facilitative teacher accessibility with undergraduates demanding more structure in the classroom while graduates seek more dialogue.

SOME INITIAL CONCLUSIONS

Several initial conclusions were drawn based on these preliminary analyses. These conclusions are presented as tentative recommendations and are meant to be suggestive of the potential policy implications of the data.

The first conclusion is that different military grades place different emphases on the degree of importance of the course syllabus in their training program. Enlisted grades tend to put much more importance in the course syllabus which reflects course goals and expected course outcomes. Officer personnel are not as much in need of the structure intrinsic to the course syllabus as enlisted ranks are. Since all of the officers are in the graduate program, the finding can be stated as a fundamental difference between graduate and undergraduate learning -- one gets clearly more structure than the other.

A second possible conclusion is that considered as a group, Keesler students prefer the dialogue method of presenting instructional information. The ISA defined the dialogue method as the interaction between two persons, one of whom may be an instructor. It is important to note that this conclusion is directly related to the most dominant learning style found at Keesler - the interactive style.

The third conclusion is in the area of preferred teaching methods in terms of student ability to learn. Here, the case study method was the clear choice. As a learning experience from a real-life situation, the case study method was also related to other important findings in learning style and in the opinions deemed significant at the end of the ISA.

Closely connected to our second and third conclusions is a fourth conclusion that the dominant perceptual learning style of Keesler students is the interactive style marked by the strong perceptual elements of students who like to use other people as sounding boards and who enjoy question/answer sessions or small group discussions. The print learning style and the visual learning style are worth mentioning because they account for 26% and 20% of all student responses to the Perceptual Learning Style Inventory (PLSI). When the print style and visual style are placed in combination with the interactive style for all Keesler respondents, they account for 76% of all learning strategies in the inventory. Therefore, teaching methods at Keesler ought to employ the learning strategies that make up the interactive, print and visual learning styles reflected in the PLSI.

The fifth conclusion comes from student opinions on instructor teaching methods and are clearly related to the aforementioned results. Graduate students appear to prefer teaching methods that are real-world based, interactive in style and diagnostic for

remediation in order to attain learning outcomes. Undergraduates appear to prefer teaching methods that reflect instructor subject matter mastery, the use of practical applications and techniques genuinely helpful to student attainment of learning objectives.

The last and most obvious conclusion is that continued use should be made of the database obtained in this study and means developed to compare the results locally over time as well as with other sites and regions within the greater Embry-Riddle community. The analyses performed in this study were of necessity primarily descriptive and limited in scope. A number and variety of additional analyses are needed to provide greater insight into classroom effectiveness methods and techniques for the adult learner.

Discussion

The results of this study suggest that the ERAU faculty at Keesler should seriously consider student feedback gathered from the ISA and summarized in the initial conclusions section of this report. Despite the fact that some instructors and researchers question the reliability of student ratings, there seems to be real value in placing credibility in what the recipient of the learning process has to say relevant to learning components and teaching aspects of graduate and undergraduate programs.

Several characteristics have been consistently identified as compromising effective teaching, at least in terms of approach or style. The findings in this study were comparable to those summarized over 20 years ago by Hildebrand and Wilson (1970) and Evel (1970). Effective teaching attributes were: (1) clarity of organization, interpretation and explanation; (2) encouragement of class discussion and presentation of diverse points of view; (3) stimulation of students' interest, motivation and thinking; (4) manifestation of attentiveness to and interest in students; and (5) manifestation of enthusiasm.

Action strategies, teaching activities in which the learners are physically as intellectually active, have been recognized as effective with adult learners. The ISA included such techniques as case studies, simulations and practical exercises. After assessing many reports on the effectiveness of these strategies, McKeachie (1974) and Knowles (1970) concluded that, systematically applied, they are superior to passive approaches.

McKeachie (1974) and Knowles (1970) also relate the positive effects occurring from an interaction strategy for adult learners and learning style. Adults differ widely in learning style and interactive strategies ((??can??)) capitalize on the strengths of many learning styles (Seamon and Fallenz, 1989), and Hoffer (1986).

James and Galbraith (1985) and see the implications of perceptual learning styles to be numerous and diverse. Learning styles can be seen as providing a means for possibly reaching every learner and for making the quality of the instructional learning process more effective and efficient. Also, practitioners can find learning style knowledge useful in program planning, counseling, and instructing process.

Conclusion

1. Enlisted grades place greater importance than officer grades in the course syllabus which reflects course goals and expected course outcomes. (Structures of subject matter, objects and learning hierarchies are much more important to enlisted ranks.)
2. As a group, Keesler students' preferred learning mode was the dialogue method. (ISA definition...the interaction between two persons, one of whom may be an instructor.)
3. In terms of ability to learn, students' preferred teaching method was the case study method. (ISA...real-life situation.)
4. The dominant perceptual learning style of Keesler students is the interactive style marked by strong perceptual elements of students who liked to use other people as sounding boards and who enjoy question/answer sessions or small group discussion.
5. Graduate students prefer teaching methods that are real-world based, interactive in style and diagnostic/remedial. Undergraduate students prefer teaching methods that reflect teacher subject-matter mastery, the use of practical applications and techniques helpful to attainment of learning outcomes.
6. Data base should be used on a continuing basis. Results compared over time both locally and possibly with other sites/regions within greater Embry-Riddle Community.

The author wishes to express his sincere appreciation to Mr. Randy Verret for his invaluable contribution to word processing and survey administration efforts associated with this report.

**TABLE 1
COMPOSITION OF THE
INSTRUCTIONAL SYSTEM AUDIT**

PART I	<u>Student Biographical Data</u>	<u>[9 Items]</u>	
	Name (optional) Rank, Age, Sex Program of Study	Marital Status Flying Status Occupational Specialty	
PART II	<u>Learning Components</u>	<u>[6 Items/7 - pt Scale]</u>	
	Course Syllabus Supplemental Material	Test/Quizzes Text Used	Student Effort Course Pace
PART III	<u>Instructional Characteristics</u>	<u>[9 Items/7 - pt Scale]</u>	
	Availability for Consultation Clarifying Course Objectives Actively Helpful	Sensed Student Needs Used Class Time Prepared for Class	Enthusiasm Made Students Think Made Students Work
PART IV	<u>Preferred Learning Mode</u>	<u>[5 Items/prioritize]</u>	
	Lecture Method Dialogue	Teaching Interview Panel Discussion	Dramatization
PART V	<u>Teaching Methods</u>	<u>[8 Items/7 - pt Scale]</u>	
	Programmed Instruction and CAI Slides, Films & Video Tapes & Audio Questioning	Guided Discussion Practice Exercises Simulations Case Study	
PART VI	<u>Perceptual Learning Style Inventory</u>	<u>[34 Items/7 - styles]</u>	
	Visual Aural Print	Interactive Kinesthetic	Haptic (Touch) Olfactory (Taste/Smell)
PART VII	<u>Opinion...Instructor Teaching Methods</u>		
	Positive/Negative Traits		
PART VIII	<u>Opinion...Instructor Actions That Maximize Student Learning</u>		

TABLE 2
SPECIFICATION OF LEARNING STYLE

<u>STRONG PERCEPTUAL COMPONENTS</u>	<u>WEAK PERCEPTUAL COMPONENTS</u>
<u>INTERACTIVE</u>	
<ul style="list-style-type: none"> - Others are used as sounding boards - Enjoys question/answer sessions or small group discussions 	<ul style="list-style-type: none"> - Prefers to work alone - Small group/discussion activity not helpful
<u>PRINT</u>	
<ul style="list-style-type: none"> - Easily remembers what is read - Learning is better after seeing it or writing it 	<ul style="list-style-type: none"> - Important concepts grasped only after several readings - Words on the page seem to run together
<u>VISUAL</u>	
<ul style="list-style-type: none"> - Needs a "picture" in mind to "see" what others are communicating - Creates visual images while thinking 	<ul style="list-style-type: none"> - Difficult to "picture" things as displays change - Visual representations as graphs/tables are confusing
<u>AURAL</u>	
<ul style="list-style-type: none"> - "Hears" what others say - Remembers ideas that are verbalized 	<ul style="list-style-type: none"> - Audio information requires printed work comprehension - Difficult to remember information from lecturer
<u>KINESTHETIC</u>	
<ul style="list-style-type: none"> - Learns better when moving while learning 	<ul style="list-style-type: none"> - Movement is distracting while learning
<u>HAPTIC</u>	
<ul style="list-style-type: none"> - "Hands on" or touching experiences important to learning 	<ul style="list-style-type: none"> - Difficult to distinguish the feel of different items
<u>OLFACTORY</u>	
<ul style="list-style-type: none"> - Able to associate/identify smells with a mental image 	<ul style="list-style-type: none"> - Hard to distinguish smells which detract from learning

Note: Adapted from "Perceptual Learning Styles: Implications and Techniques for the Practitioner", by W.B. James and M.W. Galbraith, Lifelong Learning (January 1985).

TABLE 3
SPECIFICATION OF LEARNING STYLE
(N=38)

<u>Dominant Learning Style [84.2%]*</u>			
1.	Interactive	N	%
	Graduates	9	
	Undergraduates	$\frac{5}{14}$	36.8
2.	Print		
	Graduates	4	
	Undergraduates	$\frac{6}{10}$	26.3
3.	Visual		
	Graduates	4	
	Undergraduates	$\frac{1}{5}$	13.2
4.	Kinesthetic		
	Graduates	1	
	Undergraduates	$\frac{1}{2}$	5.3
5.	Aural		
	Graduates	1	
	Undergraduates	$\frac{0}{1}$	2.6
<u>Dual-Dominant Learning Style [13.2%]*</u>			
6.	Interactive/Print		
	Graduates	3	
	Undergraduates	$\frac{0}{3}$	7.9
7.	Print/Visual		
	Graduates	1	
	Undergraduates	$\frac{0}{1}$	2.6
8.	Print/Kinesthetic		
	Graduates	0	
	Undergraduates	$\frac{1}{1}$	2.6
<u>Non-Dominant Learning Style [2.2%]*</u>			
6.	No Preference		
	Graduates	0	
	Undergraduates	$\frac{1}{1}$	2.6

*[] Categorical Totals

TABLE 4
POPULATION CHARACTERISTICS
(N=38)

Graduate Students (N=23)

Officer Rank		(N=19)
02	-	6
03	-	11
04	-	2

Enlisted Rank		(N=4)
E4	-	1
E5	-	1
E6	-	1
E7	-	1

Undergraduate Students (N=15)

E4	-	6
E5	-	3
E6	-	5
E7	-	1

Marital Status (N)

Single	6
Divorced	6
Married	26

Sex (N)

Female	5
Male	33

Flying Status (N)

Rated	8
Non-Rated	30

GPA

Undergraduate	3.64
Graduate	3.74

TABLE 5
PERCENTAGE OF STUDENT RESPONSES TO
LEARNING STRATEGIES RELATED TO LEARNING STYLES
ON THE PERCEPTUAL LEARNING STYLE INVENTORY

Learning Styles Strategies Total to Learning Styles	Responses %	Total %	Learning Styles Strategies to Learning Styles	Responses %	%
A. <u>Interactive Style</u>			D. <u>Aural Style</u>		
3. Group discussion	10	30	2. Information type lecture	7	9
10. Panel discussion	3		9. Audiocassettes	*	
17. Question and answer sets	10		16. Compact discs	0	
24. Interviews	3		23. Recitation by others	2	
31. Debating	4		30. Radio programs	*	
B. <u>Print Style</u>			E. <u>Kinesthetic Style (Motion)</u>		
4. Reading assignments	6	26	5. Role-play	4	8
11. Written reports	5		12. Body movement	1	
18. Independent reading	4		19. Physical motion	*	
25. Writing	4		26. Physical games	1	
32. Taking notes	7		33. Non-verbal gestures	2	
C. <u>Visual Style</u>			F. <u>Haptic Style (Touch)</u>		
1. Films/video cassettes	6	20	6. Project construction	2	5
8. Television programs	4		13. Draw/paint	*	
15. Slides	2		20. Model building	3	
22. Graphs/tables/charts	5		27. Touching	*	
29. Photographs	3		34. Sculpturing	0	
			G. <u>Olfactory Style (Taste/Smell)</u>		
			7. Odor discrimination	*	*
			14. Tasting	*	
			21. Sense of smell	0	
			28. Aroma	0	

* Less than 1%

TABLE 6
COMPARISON OF ACTUAL RESPONDENT DISTRIBUTION WITH EXPECTED
DISTRIBUTION COMPOSITE RATINGS AMONG VARIABLES IN SEPARATE PARTS
OF ISA

	Part II ²	Part III	Part IV	Part V ³	Part VI ⁴
Chi-Square	Learning Components	Instructor Characteristics	Preferred Teaching Methods	Importance of Teaching Methods	Learning Style
Test Static	3.28	5.46	42.61	23.20	29.13
Critical Value ¹	11.07	15.51	9.48	11.07	11.07
Degrees of Freedom	5	8	4	5	5
Level of Significance p<.001	p>.05	p>.05	p<.001	p<.001	-

¹ Significant at .05 level.

² Kruskal-Wallis Test on course syllabus ($H = 8.89$, $\chi^2 = 7.82$, $df = 3$) $p < .05$

³ Elements b and d removed - data deemed unusable.

⁴ Olfactory Learning Style removed - inadequate cell size.

TABLE 7
SUMMARY OF STUDENT ASSIGNED PRIORITIES FROM COMPOSITE RATINGS IN
SEPARATE PARTS OF THE INSTRUCTIONAL SYSTEM AUDIT

<u>Part II</u>	<u>Part III</u>	<u>Part IV</u>	<u>Part V</u>	<u>Part VI</u>
Learning Components	Instructional Characteristic	Preferred Teaching Methods	Importance of Teaching Method	Learning Style
<u>Most Important</u>	<u>Most Important</u>	<u>Most Important</u>	<u>Most Important</u>	<u>Most Important</u>
- Course Syllabus - Putting special effort into course	- Were available for consultation when they said they would be - Were well prepared for each class	- Dialogue	- Case Study - Simulation	- Interactive - Print
<u>Least Important</u> <u>Important^a</u>	<u>Least Important</u>	<u>Least Important</u>	<u>Least Important</u>	<u>Least</u>
- Test and quizzes - Test used	- Sensed when students needed help - Made me work	- Dramatization	- Tapes and audiocassette - Programmed or computer assisted instruction	- Aural - Kinesthetic

^a Haptic and Olfactory Styles were removed as possibilities since no student selected them as a dominant learning style.

TABLE 8
SUMMARY OF RESPONDENT'S OPINIONS IN PART VII AND PART VIII¹ - TOP
THREE

GRADUATES

Most Effective Instructor Teaching Methods

1. Uses real-world examples and current events to support learning objectives.
2. Classroom in an open forum for continuous "intervention" with students.
3. Accessible and willing to answer questions, review and clarify outcomes.

Least Effective Instructor Teaching

1. Boring lectures with one-way communications and no interaction.
 2. Limited real-world scenarios.
 3. Fail to explain lesson objective, "...continuing on when a point was lost."
-

UNDERGRADUATES

Most Effective Instructor Teaching Methods

1. Competent and knowledgeable in subject area
2. Teaches by using practical applications
3. Students interest are at heart
 - set them at ease
 - speaks at their level
 - genuinely helpful to them

Least Effective Instructor Teaching

1. Teacher over the heads of students. "Teachers that talk and do not teach."
 2. Unrealistic expectations - too demanding
 3. Lack of communication skills, knows theory but not application; repeats text.
-

¹ Since Part VIII resulted in duplicate entries with Part VII, elements were subsumed under the two categories stated above.

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Teaching Characteristics

APPENDIX

INSTRUCTIONAL SYSTEM AUDIT

INSTRUCTIONAL SYSTEM AUDIT

INSTRUCTIONAL SYSTEM AUDIT

Please take a few minutes to complete this survey and answer the following questions as honestly and accurately as you can.

Your input will be used to assess the effectiveness of our instructional delivery system, the learning styles of the adult learner, and also serve as a means to continually improve our undergraduate and graduate course offerings.

Thank you for your cooperation. Feel free to add any other helpful comments regarding any issue not covered in the instrument on the last page herein.

INSTRUCTIONAL SYSTEM AUDIT
 EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
 KEESLER RESIDENT POPULATION

PART I

1. Name(optional): _____ 2. Rank: _____
E1-05)
3. Program: Graduate _____
 Undergraduate _____ 4. Age: _____
5. Married: Yes ___ No ___ 6. Sex: M ___ F ___
 Divorced: Yes ___ No ___
 Separated: Yes ___ No ___ 8. Rated: _____
 Number of Children: _____ Nonrated: _____
7. Is this your first course at ERAU? Yes ___ No ___.
 If so, answer with respect to previous experience
 with other than ERAU instructors.
9. AFSC: _____

PART II

HOW IMPORTANT IS EACH OF THE FOLLOWING LEARNING COMPONENTS...?

MODERATELY IMPORTANT
OR LESS

QUITE IMPORTANT

EXTREMELY IMPORTANT

- | | | | | | | | | |
|----|--|-----|-----|-----|-----|-----|-----|-----|
| a. | Course syllabus
(Course goals and expected course outcome)..... | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| b. | Handouts and supplemental material..... | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| c. | Test and/or quizzes..... | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| d. | Text used..... | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| e. | Putting special effort into a course..... | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| f. | Pace of material covered..... | (1) | (2) | (3) | (4) | (5) | (6) | (7) |

PART III

ALL THINGS CONSIDERED, HOW OFTEN IS IT TRUE THAT YOUR ERAU INSTRUCTORS...?

NEVER SOMETIMES OFTEN ALWAYS

- a. Were available for consultation when they said they would be.....(1) (2) (3) (4) (5) (6) (7)
- b. Made course objectives clear.....(1) (2) (3) (4) (5) (6) (7)
- c. Were actively helpful about your progress... (1) (2) (3) (4) (5) (6) (7)
- d. Sensed when students needed help.....(1) (2) (3) (4) (5) (6) (7)
- e. Used class time well.....(1) (2) (3) (4) (5) (6) (7)
- f. Were well prepared for each class.....(1) (2) (3) (4) (5) (6) (7)
- g. Were enthusiastic about the subject.....(1) (2) (3) (4) (5) (6) (7)
- h. Made me really think about the subject.....(1) (2) (3) (4) (5) (6) (7)
- i. Made me work.....(1) (2) (3) (4) (5) (6) (7)

PART IV

AS A LEARNING MODE, HOW WOULD YOU RANK THE FOLLOWING METHODS OF PRESENTING INSTRUCTIONAL INFORMATION. PUT IN ORDER OF PRIORITY 1 --> 5 WITH 1 BEING OF GREATEST VALUE.

- _____ LECTURE METHODS...formal/semiformal presentation by instructor.
- _____ DIALOGUE...Interaction between two persons(one may be instructor).
- _____ TEACHING INTERVIEW...Question and answer session between instructor and a visiting "expert."
- _____ PANEL DISCUSSION...Interaction between two or more "experts."
- _____ DRAMATIZATION...Skits, short plays, role-playing on part of instructor.

PART V

HOW IMPORTANT IS EACH OF THE FOLLOWING TEACHING METHODS IN TERMS OF YOUR ABILITY TO LEARN...?

INDIFFERENTLY IMPORTANT OR LESS QUITE IMPORTANT EXTREMELY IMPORTANT

- a. Programmed instruction or computer assisted instruction.....(1) (2) (3) (4) (5) (6) (7)
- b. Slides, films and video cassettes (1) (2) (3) (4) (5) (6) (7)
- c. Tapes and audio cassettes.....(1) (2) (3) (4) (5) (6) (7)
- d. Questioning (Instructor lead) (1) (2) (3) (4) (5) (6) (7)
- e. Guided Discussion.....(1) (2) (3) (4) (5) (6) (7)
(Instructor controlled interaction with student)
- f. Practical Exercises.....(1) (2) (3) (4) (5) (6) (7)
(To attain learning objectives)
- g. Simulations.....(1) (2) (3) (4) (5) (6) (7)
(Student role playing, interacting with actual equipment)
- h. Case Study.....(1) (2) (3) (4) (5) (6) (7)
(Learning experience from a real-life situation)

PART VI

Perceptual Learning Style Inventory*

INVENTORY. Check those strategies or techniques that you think help you learn the best.

- | | |
|---|---|
| 1. ___films/videocassettes | 18. ___independent reading |
| 2. ___information-type lecture | 19. ___physical motion activities |
| 3. ___group discussion | 20. ___model building |
| 4. ___reading assignments | 21. ___scented materials
(scratch & sniff) |
| 5. ___participation in role-playing
activities | 22. ___graphs, tables and
charts |
| 6. ___project consultant | 23. ___recitations by others |
| 7. ___odor discrimination | 24. ___interviews |
| 8. ___television programs | 25. ___writing |
| 9. ___audiocassettes | 26. ___participant in
physical games |
| 10. ___part of panel discussion | 27. ___touching objects |
| 11. ___written reports | 28. ___environmental aromas |
| 12. ___body movements | 29. ___photographs |
| 13. ___drawing or painting | 30. ___radio programs |
| 14. ___tasting | 31. ___debating |
| 15. ___slides | 32. ___taking notes |
| 16. ___compact discs | 33. ___non-verbal gestures |
| 17. ___questions and answer sessions | 34. ___sculpturing |

PART VII

PLEASE LIST THREE THINGS YOU LIKED MOST ABOUT YOUR BEST INSTRUCTOR'S TEACHING METHODS...

LIKES

1. _____
2. _____
3. _____

PLEASE LIST THREE THINGS YOU DISLIKED MOST ABOUT YOUR LESS EFFECTIVE INSTRUCTOR'S TEACHING METHODS...

DISLIKES

1. _____
2. _____
3. _____

PART VIII

WHAT COULD AN INSTRUCTOR DO TO HELP YOU EXPAND YOUR LEARNING EFFECTIVENESS?

THANK YOU FOR THE FEEDBACK