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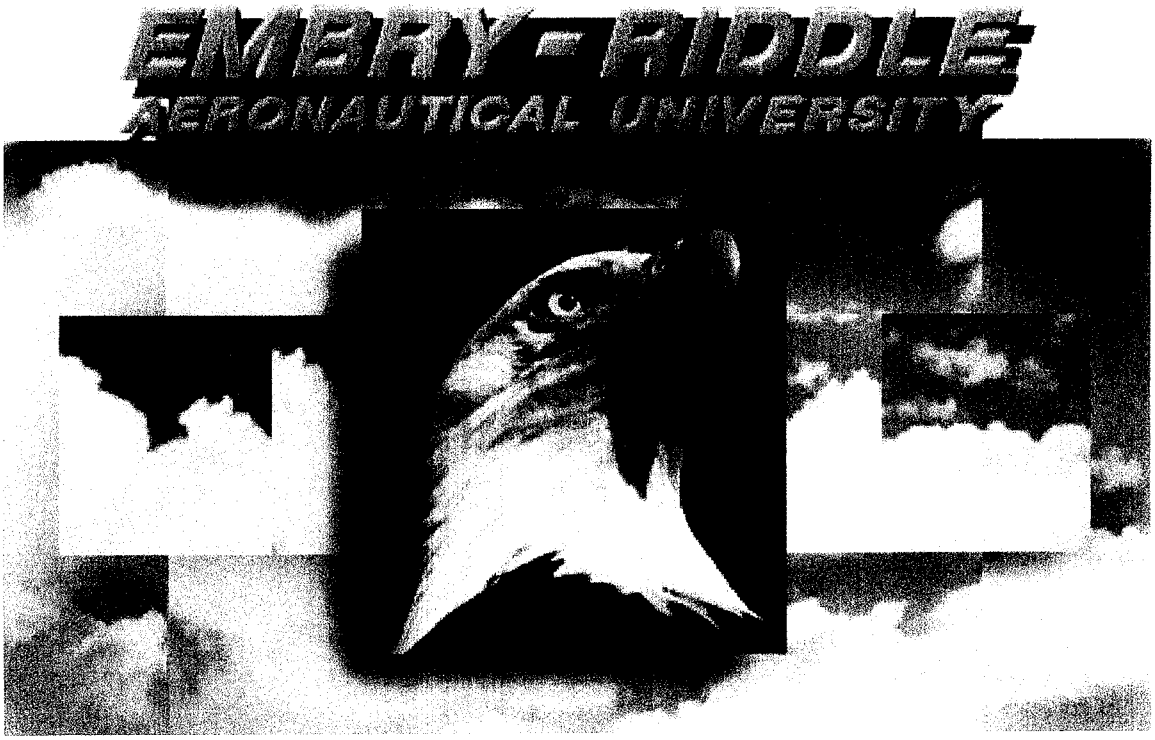
College of Career Education



Seventh Annual Symposium on Teaching Effectiveness

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Introduction

Each year, the faculty of the College of Career Education, Embry-Riddle Aeronautical University solicits and presents research and ideas of colleagues concerning how to better do our jobs—teaching. For our subject this year we sought to explore whether the use of the teachers questioning, challenging, and guiding the intellectual growth of the student is still a viable approach and if so, how we can do these things better.

We hope that you will find these papers informative.

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Extended Campus

Is Socrates Dead? Can Socratic Teachers in Higher Education Remain Alive?

By

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Abstract

The contentions of this paper are quite simple: Socrates has long been dead. Tragically, the teacher in higher education who attempts to emulate him is unlikely to remain alive. Moreover, there are a number of poisonous elements within the higher education environment that are potentially lethal to the Socratic teacher of today. Citations from Apology, Crito, Ion, Meno, Phaedo, Symposium, and The Republic support the above contentions.

Is Socrates Dead? Can Socratic Teachers in Higher Education Remain Alive?

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Seeking the Truth

Socrates, as described by Plato, is renowned as a teacher seeking the truth and virtue through whatever vehicle presented itself. For example in Meno (p.30), Socrates states "I have been looking for one virtue and found a whole swarm of virtues…Do you say there are many different kinds of bees?" However, a teacher's seeking the truth in the modern academic world is largely irrelevant. For example, this characteristic rarely, if ever, appears as a criterion on faculty self-evaluations and evaluations. Moreover, the residua of academic fads, shibboleths, and comical subterfuges such as postmodernism, social construction, deconstruction, subjugating discourses, and the close reading have badly damaged the notion of truth's ontological validity--as a concept and as a goal. The teacher who professes to seek the truth is tolerated only as aberration, anachronism, comedian, or psychiatrically challenged. More often the Socratic teacher is not tolerated without the espousal of a truth that there is no truth.

Daring to Speak the Truth

Socrates taught at a time of crisis for his political state--viz., Athens. Military, political, social, cultural, economic, and psychological challenges were soon to exhaust the Athenian democracy and to lead to an eclipse of a here to fore golden era. Yet through the crisis, Socrates persisted in speaking the truth "like the sound of the flute in the ears of the mystic" (Crito, p.62)--even truth about untruth--regardless of popularity, political correctness, and threats to toe the

political line or be silent. In the modern academic environment, a teacher following Socrates might not face the hemlock but could well face innuendo, loyalty oaths, investigation, set-ups to fail, the "dirty tricks" of academicians, contractual termination, and legal suits.

Daring to Speak the Truth about the Truth

Socrates maintained that telling the truth is not always essential to justice. On the contrary, he maintained that, in a well-ordered society, it is necessary to tell certain untruths to children and adults. As he stated in The Republic (p. 319), "Our rulers will find a considerable dose of falsehood and deceit necessary for the good of their subjects." In the modern academic environment, a teacher promulgating such an orientation might face the ire of a board of trustees and suffer mass-media characterization as the "professor who teaches the young how to lie." This notwithstanding the mass of academic research from the social sciences and the humanities supporting the contention that to lie--to oneself and others--is as human as breathing.

Publications

Socrates had no publications. His forte was the dialogue of the moment, the intoxication of spontaneous conceptual engagement, the bittersweet spice of dialectic--even if he did "in obedience to the dream...compose a few verses before I departed" and "take some fables of Aesop...and turned them into verse" (Phaedo, p.72) for his own pleasure and edification. A teacher in the modern academic world who would attempt to follow this route of "master teacher" to academic tenure would be an unlikely success--even in universities professing to be so-called teaching schools. Without scholarly productivity and university service the Socratic teacher at best might be kept on with the lowly status of lecturer.

Validation by One's Peers

Socrates had a lively following of students. In fact, he was viewed as a peerless teacher by these students and by himself. As Socrates says of

Chaerephon saying of Socrates, "The Pythian prophetess answered that there was no man wiser" (Apology, p. 10). In this context, being peerless is a decided difficulty. Validation is not possible because there are no peers to perform the validating function. Plaudits from students and the like-minded of faculty become quickly cheapened as preaching within the choir, as ritualistic bizarrities within a cult. Other choirs and other cults must pass judgment. Yet these were jealous of Socrates. In fact, many despised him. Thus, a teacher following Socrates is doubly doomed. The reification of external validation in the modern academic world ensures that a teacher truly without peers does not fit into the process of validation. The combinations of adversarial, corrupt, and solipsistic dynamics--as well as an ethnocentricity arising from the ethnos of academia--would surely impede the Socratic teacher's success.

Validation by One's Students

Socrates' students were in awe of him. For example, Phaedo recounts the death of Socrates by stating that "I had a singular feeling at being in his company" (Phaedo, p. 68). Socrates was extremely influential in their lives. Words such as *charismatic* and *mesmerizing* seem to apply to him. But beyond this, he was accused of what today we would call the remaking of minds, personality restructuring, the capturing of souls. In the modern academic environment, the Socratic teacher would be accused of having too-close, unhealthy relationships with students. The university would not long tolerate legal suits and the lamentations of parents and their well-paid cult deprogrammers before the Socratic teacher would be out the door.

Social Relationships with Students

Socrates ate, drank, and had sex with his students. For example, Apollodorus recounts "the speeches in praise of love which were delivered by Socrates, Alcibiades, and others at Agathon's supper" (Symposium, p. 165). Alcibiades complains of Socrates "always lying in wait for me, , and always, as his way is, coming out

at all sorts of places" (Symposium, p. 220) and brags as to Socrates being able to "drink any quantity of wine and be not at all drunk" (Symposium, p. 221). Socrates complains to Agathon that Alcibiades "goes wild with envy and jealousy, and not only abuses me but can hardly keep his hands off me" (Symposium, p. 220). Intellectual unequals, they shared the social pleasures and vices bonded with the centripetal forces of huge power imbalances. In the modern academic environment so politicized with discrimination, harassment, and exploitation issues, many combinations of such behaviors would be academically suicidal--if exposed. On the other hand, some combinations of such pleasures and vices at some academic venues may further the career of teacher and/or student--but calibrating the differences between a pilgrim's progress and an Armageddon-like disaster in an ever-changing political, social, cultural, and psychological space might too closely resemble Russian roulette.

Answering Questions with Questions

A hallmark of the so-called Socratic method is answering a question or commenting on answers with questions. For example, when Ion asks "And what is there that Homer speaks about which I don't know?" Socrates answers "Why does not Homer speak often enough about arts and crafts?" (Ion, p. 21). Avatars of the method cite its induction of creative, insightful, and cogent thought processes as its raison d'etre as well as its telos. In the modern academic environment a teacher renowned for questioning techniques may face letters from irate parents wondering why their hard-earned tuition dollars don't buy "real answers," complaints from students who just want to know what will be on the quiz or test, and poor evaluations and even termination notices from tuition-sensitive administrators. Repeating Socrates' dictum that in the last analysis philosophy is but knowledge of ignorance may not suffice as damage control. Neither would be the rejoinder that Socratic method is not just questioning but often

listening wordlessly and at times letting students engage in discourse without the teacher present at all. To this last point, silence would not be golden.

The Disadvantaged

Socratic dialogues involve only the political elite. Socrates at least implicitly tolerated--if not supported--the notion that knowledge as political power belonged only to the elite and that most people were of a lower intellectual and moral caliber. As Socrates says to Meno, "…man's virtue is to manage public affairs well, and woman's to manage a home…" (Meno, p. 31). Also, "…the first thing will be to establish a censorship of the writers of fiction" (The Republic, p. 254). In the modern academic environment there already is a pathway surfaced with the destroyed careers--if not corpses--of those who have dared posit that there are class, ethnic, and racial differences in intellect and morality. The Socratic teacher would attract the frenzied hordes of the politically correct baying for blood. As well, the Socratic teacher's presence would place public funding for university programs in grave danger.

Advocating Communism

Although bearing views quite different from Marx, Engels, Lenin, Stalin, Mao, their acolytes, and the radical chic, Socrates noted that very few people were able to judge how to best use and experience their assets--be it personal property or family members. A logical consequence of this observation according to Plato's descriptions of Socratic thought is that a pure sort of communism--for personal property, women, and children--would constitute an optimal political state. As Socrates states, "A bad soul needs rule and care badly" (The Republic, p. 154). Also, "Man is a prisoner who has no right to open the door and run away" (Phaedo, p. 73). In the modern academic environment--even in the aftermath of the Cold War--such advocacy would raise a red flag.

Conclusion

Although homage to Socrates as a guidon of outstanding teaching is still prevalent--enough to

form the theme of this very interesting symposium sponsored by The College of Career Education of Embry-Riddle Aeronautical University's Extended Campus--Plato's description of Socrates renders this homage somewhat paradoxical in the modern academic environment. Is this a tribute to Socrates' "extraordinary power of sustaining fatigue" and "(h)is endurance (being) simply marvellous" (Symposium, p. 229)? Or a violation of Socrates' dictum that "(t)he same thing clearly cannot act or be acted upon in the same part or in relation to the same thing at the same time, in contrary ways" (The Republic, p. 288)?

References

Plato. Apology (B. Jowett, Trans.). In J.D. Kaplan (Ed.), Dialogues of Plato (pp. 5-40). NY: Washington Square Press, 1976.

Plato. Crito (B. Jowett, Trans.). In J.D. Kaplan (Ed.), Dialogues of Plato (pp. 45-62). NY: Washington Square Press, 1976.

Plato. Ion. In W.H.D. Rouse (Trans. & Ed.). Great dialogues of Plato (pp. 13-27) NY: Mentor, 1956.

Plato. Meno. In W.H.D. Rouse (Trans. & Ed.). Great dialogues of Plato (pp. 28-68) NY: Mentor, 1956.

Plato. Phaedo (B. Jowett, Trans.). In J.D. Kaplan (Ed.), Dialogues of Plato (pp. 67-160). NY: Washington Square Press, 1976.

Plato. The Republic. In W.H.D. Rouse (Trans. & Ed.). Great dialogues of Plato (pp. 125-422). NY: Mentor, 1956.

Socrates is Alive and Well! The Case for Dialogue and Critical Thinking in Values and Ethics Education

By

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Abstract

This paper underlines the need for teaching morals and values through critical reflection and active genuine dialogue. It promotes the pedagogy of dialogue within educational institutions, the creation of multi-dimensional learning environments for the cultivation and dissemination of intersubjective understandings of diverse moral world views, the use of critical thinking skills and intellectual traits of mind for ethical decision making, and the communication of values and morals through dialogue. An argument is advanced to show how reflective dialogue lays the groundwork for the creation of initial objective relations in the classroom and forms the basis for the pragmatic implementation of an interpersonal connection characterized by feelings of tolerance, empathy, and respect for the dignity of human beings and their way of life.

Issues concerning the pedagogy of values and morals attract considerable attention and substantial debate amongst scholars and practitioners in the field of moral education (see L.E. Raths, M. Harmin, S.B. Simon 1978, M. Bottary 1990, T. Lickoma 1991, J.P. Wheeler 1993, E.A. Wynne & K. Ryan 1997, K. Ryan & K.E. Bohlin 1999). For the most part the controversy revolves around problems and issues of morality and ethics in general, the teaching of values, the cultivation of virtues, and the pursuit of character development.

Though theories advocating either some version of moral relativism or moral objectivism recognize critical thinking and dialogue as crucial to understanding morality and to processes of valuing, little is said about the intricate and complex interrelationships between critical thinking, dialogue, and morality. Moreover, both sides of the debate fail to incorporate any real sense of critical thinking and dialogue in their recommendations for practice. Almost entirely absent is a reliable way of making and evaluating value claims in the context within which such claims are formulated and within which they are open to evaluation and assessment by others. In most cases dialogue and critical thinking are pushed aside in favor of less rigorous approaches to problems of moral education.

As an alternative, this paper presents an argument for the dissemination of moral education through critical thinking and within the context of reflective dialogue on morals and values. The argument is presented in three parts. The first part points out the lack of adequate conceptions of dialogue and critical thinking amongst theories of practical moral education. Here also an emphasis is placed on the significance of reason and rational justification in the domain of the moral. Part two shows that a rigorous interchange of values and morals requires first the adoption of a dialogical attitude as a prerequisite step towards a mutually sympathetic understanding of diverse moral views and ways of life. The third and final part introduces a concept of dialogue along with a dynamic dialogical view of critical thinking as a way of assessing value claims,

moral judgments, and alternative actions when confronted with moral conflicts and dilemmas.

Values Education and Reason

There is a lack of adequate explanation amongst most pedagogical theories of values and morals of the relation between critical thinking and the practical activities and processes prescribed by the theories. For instance, in their popular and widely applied 'theory of values clarification' Raths et al (1978) prescribe a process of valuing as a method for assisting learners to chose, clarify, and act in accordance with their own values, beliefs, goals, and interests. They recommend the following seven valuing processes for teachers and learners.

Free choice - Teacher--encourage students to make choices about values through value indicators (i.e., students' goals, aspirations, attitudes). Student--make free choices whenever possible.

Searching for alternatives - Teacher--assist students to discover alternatives when confronted with a variety of choices. Student--search for alternatives in choice-making situations.

Anticipating consequences - Teacher--help students weigh alternative choices in a thoughtful manner and by reflecting on the consequences of each. Student--weigh the consequences of each available alternative.

Prizing and Cherishing - Teacher--encourage students to think about what they consider valuable. Student--consider what you prize and cherish.

Affirming choice - Teacher--give students opportunities to declare their choices in a positive manner. Student--state or assert positively the things that you value.

Taking action - Teacher--encourage students to act in accordance with their value choices. Student--do something about your choices.

Building patterns in life - Teacher--assist students to be aware of certain repeated patterns in their life. Student--consider and strengthen pattern in your life. (Raths et al 1978, p. 176)

The strength of this approach lies in its emphasis on fostering classroom environments that encourage and stimulate learners to think about

their own values by personally selecting and deliberately reflecting upon their choices. There is nothing really wrong in asking students to become more vital, purposeful, decisive, and active in recognizing and selecting their own values. Values should be neither impersonal nor inconsistent. It would a mistake to think, however, that processes of values selection and realization must remain solely within the limits and boundaries of an inner and highly personable world. In other words, choosing, stating, asserting values is only one part of the process of valuing. The other part is being able to justify one's moral choices, preferences, and moral judgments when confronted with moral conflicts and dilemmas. Choice of values, moral preferences, as well as value judgements bring forth certain claims as to what is valuable through appeal to reason and within the context of social existence. Only upon satisfaction of the conditions entailed by processes of justification and explanation can we claim that personal value choices and judgments are thoughtful, reflective, open-minded, and deliberate. This is to say that, though values may be a product of personal experiences, "values are normally thought to be grounded in reasons, reasons which are accessible to others" (Boyd & Bogdan 1983, p.12).

One main strategy of the values clarification approach is to avoid teacher responses that engage in moralizing, criticizing, or giving values. Instead, a great deal of emphasis is placed on motivating students to chose personal values and morals by considering the consequences of each alternative. Whenever decisions of this sort are made, however, value judgments are always involved. Conspicuously absent from the VC approach are also any criteria or principles of reason that students may appeal to when making value decisions, claims, and judgments. Without any intersubjectively shared standards one would have no way of knowing the relative worth of one's choice i.e., whether one's choice is morally good or bad, better or worse. As such, one's value claims and judgments would fail short in support of reasons convincing to

others or even to oneself. We tend to make judgments by discerning and disclosing certain reasons which may be evaluated by consequences of potential actions and performances. Consequently, in order for students to transcend personal confusion and ambiguity, they need to understand the kinds of relations that exist between decisions and judgments, and that judgment of values is an inescapable activity "because not judging is a form of judgement itself" (Ruggiero 1988, p. 61).

Human Rationality and Judgment

Competence in evaluating and judging is essentially thought to be the cumulative result of learning and following principles that regulate judgement, and the result of practice as it relates to objects of personal experience through which a gradual improvement of the quality of judgments is attained over the course of a lifetime. The assumption here is that human beings posses the capacity for rational reflective thought.

According to Baier (1984), this general ascription of rationality to human beings involves Four different but interconnected capacities. First, we ascribe to ourselves a capacity for being rational and for acting rationally. Second, we ascribe to ourselves an acquired ability to perform the various activities of reason, such as explaining, arguing, proving, deliberating, choosing and so on. Third, the ascription of reason to human beings involves reference to a standard of competence, otherwise known as a minimal standard of acceptability, for evaluating and appraising processes of rationality. This type of activity of human reason requires the use of criteria and standards. Such criteria are the extent to which rational persons make use of available guidelines and of reasons made relevant by these guidelines. In this evaluative sense, rationality is a person's measuring up to at least a minimal standard of acceptability in the way that person acts in accordance with reasons in some problematic activity of reason, such as, overcoming ambiguity and

confusion when choosing values and making moral judgments in situations involving moral conflict. Beyond the rationality version of conformity with reason, there is a pragmatic but, nonetheless, equally acceptable level of compliance with reason. Certain aspects of human interaction, particularly relations that pertain to moral disputes, are not always amenable to analysis through precise criteria and rational standards. Baier uses the following examples to show the fundamental difference between pragmatic compliance with reason and conformity to reason in terms of rationality. He says, "for me to demand of you that you get out of my house by the date on which your lease expires may be quite (that is, minimally) rational but it is also quite unreasonable if you have just had a heart attack and it is dangerous for you to move. Conversely, it may be reasonable of me to expect you to pay the rent on time, but irrational of me to expect you (in a different sense) to pay the rent if I know your desperate financial situation" (Baier 1984, p. 198). The foregoing examples suggest that approximations may be employed for initiating an appropriate and sensible pragmatic compliance with reason, even if it is not strictly speaking a compliance that is motivated by the ideal of rationality. Lastly, rationality involves a dispositional tendency to conform human actions and performances to what is in accordance with the best available reasons.

These ascriptions to rationality show rational reflection to be an intrinsic cognitive function of human decision making capacities as these are implicated in processes of values clarification and justification. To act rationally is to reason in an impartial way for oneself, while at the same time, to acknowledge the reasons presented for the values and moral beliefs of others. Such rational personal judgments have contributed significantly to the evolution and growth of moral world views.

Objectivity as Method of Understanding in Morality

As a common starting ground, human rationality is an inter-subjectively shared belief in the

practical efficacy and effectiveness of reason. Reason guides one's perceptions and understandings in deciding what is morally right or wrong, good or bad, morally worthwhile, obligatory or blameworthy. It is not uncommon, however, for certain situations and contexts to involve eminently reasonable and rational individuals who hold morally conflicting positions or even entirely different moral world views. The reason for moral conflicts and differences amongst human beings is that people do not share, everywhere and at all times, a common way of experiencing and thinking about culture and morality. We do not always and in the same manner acquire the same moral values and beliefs. Conversely, for most people, the acquisition of values and morals appears to be depended, to a large extent, on habits of experiencing and thinking customary to one's social group or society as a whole. This is a way of saying that one's values, moral judgments and actions are considerably determined by societal socialization and the language of one's social group or culture. As such and under most circumstances it is difficult for persons, in spite of their desire and ability to act rationally, to overcome the powerful forces of cultural enculturation. Problems and obstacles emerging due to variation in cultural and moral beliefs are not always insurmountable, however. Individuals, or entire social groups, who truthfully aim for understanding of different moral views can achieve consensus on such matters through processes of critical discussion and reasoned dialogue.

Moral consensus requires the adoption of certain moral dispositions and tendencies as necessary preconditions of the interpersonal phase of dialogue. Such dispositional tendencies of human consciousness entail a particular view of objectivity as method of understanding in morality. The initial phase of dialogue involves the attitude of respect for other persons and their views as a necessary precondition for initiating a mutually empathetic understanding of diverse moral views. This dialogic attitude is also required for initiating a mutual,

open-ended confirmation of one individual or group by another. It is a way of connecting with other peoples' moral views in order to understand their overall orientation and to appreciate, to some extent, the feelings, experiences, and assumptions behind them. As Boyd (1988) points out, the dialogical/dispositional form of human interaction entails a specific mode of objectivity as a methodological process of understanding. He says, "objectivity in morality is a method of understanding that…entails two people (or more) aiming at reflective detaching or decentering together, with respect to each other and self, often at the same time" (Boyd 1988, p. 117).

Feelings of moral empathy emerge through decentering, a process of trying to understand as others understand within their own lived context and understanding of that context (Boyd 1989). Empathetic relations emerge when open-minded subjects receive each other in their present and particular being, a way of turning toward others with the intention of establishing a mutual relation based on respect for persons and their moral views. Activities of decentering and reaching out in an open-minded way produce a kind of mutual reflexivity on moral understandings and claims. Dialogue is also a way of reaching out for a moral, mutually inclusive understanding of other people. Through dialogue one is able to understand others within their particular worldview so that one's values, moral claims, and judgments are also apprehended inter-subjectively, that is, from the perspectival orientation of another's personal moral experience.

Reasoned Dialogue and Intellectual Traits of Mind

The interpersonal preconditions of dialogue are necessary for the creation of an initial, mutually empathetic understanding of moral perspectives and views. They are essential preconditions for sympathetically entering into the moral thinking of others. Moral understanding presupposes a sense of personal responsibility for initiating dialogue through which performative engagement can function. Dialogic inquiry into moral values, claims, and

judgments is the means for engaging in the identification and understanding of the moral views and concerns of others. Dialogue between human beings with diverse natures and beliefs contributes toward the development of our shared humanity.

But what exactly is dialogue? What is it that we do when we engage in dialogue? What kind of intellectual, as opposed to interpersonal, traits of mind are needed to productively and constructively engage in dialogue about morally conflicting issues and concerns? Once the essential interpersonal conditions of the initial phase of dialogue are satisfied, than, what criteria or standards can be applied to assess different value claims, moral judgments, actions, and consequences? How can dialogue, as pedagogical activity, enable the teaching and learning of values and morals in the classroom? Finally, how can dialogue assist and guide us in the resolution of moral conflicts and disputes? In this final part of the paper I point out a path as well as provide some answers to these questions.

There is a variety of forms and approaches to educational dialogue (see Burbules, 1990). I recommend the following definition of 'reasoned dialogue' as a methodological form of dialogical interaction that is contextually relevant to the moral education approach suggested here. Reasoned dialogue is defined as honest; saying what is one is really thinking, reasonable; being agreeable to or acting in accord with reason and sound judgment, and logically acute; that is penetrating in intellect and insight, interaction between human beings which are unconstrained by the emotions of anger, arrogance, and laziness. This form of dialogue enables persons to construct their own moral position vis-à-vis a decentered and detached processual inquiry into other people's moral views. Individuals engaged in this form of dialogue, however, must recognize that it is a critical process that relies heavily on the importance and force of giving and accepting sound, impartial, and consistent reasons for one's moral

beliefs and views. Reasoned dialogue is therefore consistent with rational modes of human thought and understanding. As such, competence in its use in relation to matters of morality and values education presupposes the acquisition and utilization of certain critical thinking skills and traits of mind.

The objective interpersonal level of dialogical interaction must therefore be supplemented by a dynamic, dialogical definition of critical thinking that allows for a more rigorous phase of interaction and exchange while at the same time enables the use of critical human sensibilities. Richard Paul defines critical thinking as fair-minded thinking "which meets epistemological demands irrespective of the vested interests or ideological commitments of the thinker, that is characterized by empathy into diverse opposing points of view and devotion to truth as against self-interest, that is consistent in the application of intellectual standards holding one's self to the same rigorous standards of evidence and proof one holds one's antagonists, that demonstrates the commitment to entertain all viewpoints sympathetically and to asses them with the same intellectual standards" (Paul 1989, pp. 213-14).

The teaching and learning of values and morals in a dialogical and reciprocal way requires first and foremost the ability to clearly distinguish between understanding a particular value, moral belief, or claim from assessing and judging the objective truth and validity of that belief or claim. The discussion so far shows how one can go about to achieve a sufficient understanding of the moral beliefs and views of others within the framework of the initial phase of dialogical interaction. We need to understand further how the internalization and development of a set of critical thinking skills and traits of mind considerably increase human capacity and ability to assess the truth and validity of moral claims and views. The concept of the educated person as critical thinker becomes relevant to this task. Critical thinkers should strive to acquaint themselves with: (a) the

necessary skills for formulating, analyzing, and assessing moral problems, issues, and questions when more than one moral view is involved as in the case of moral conflict and dispute, (b) the frame of reference or points of view involved when one is assessing a moral belief or when one is making a moral claim, (c) the assumptions made behind moral views or ways of life, (d) the central moral concepts and ideas involved in different moral world-views, (e) the moral principles used and the evidence or reasons advanced in support of moral claims, (f) the inferences and line of formulated thought in moral thinking, and (g) the moral implications and consequences involved in moral claims and views.

The fair-minded, dialogical critical thinker strives to be clear, precise, logical, consistent and accurate when assessing moral views and perspectives. Fair-minded teachers and learners critically propose ideas, probe roots, bring subject-matter insights and evidence to bear, test ideas, and move between various points of view (Paul 1989). Dialogue must therefore be objective and that learner, as well as teacher, should make substantial contributions to the discussion at hand. Critical thinking and dialogue enable us to see ourselves, others, and the world consistently, realistically, and pragmatically thereby avoiding, in the process, a variety of cumbersome and unnecessary barriers to communication associated with misrepresentation, distortion, prejudice, and false accusation.

Beyond critical thinking skills we need to develop in ourselves a number of important interdependent intellectual traits of mind. Such traits are defined by Richard Paul of the National Council for Excellence in Critical Thinking Instruction as intellectual humility; sensitivity to bias and prejudice in and limitations of one's viewpoint, intellectual courage; willingness to face and assess fairly different ideas, beliefs, and viewpoints, intellectual empathy; putting oneself in the place of others in order to understand them, intellectual integrity; holding one's self to the same rigorous standards of evidence and proof to which

one holds one's antagonists, intellectual perseverance; willingness and awareness of the need to pursue intellectual insights and truths in spite of difficulties, obstacles, and frustrations, faith in reason; being confident that in time one's higher interests and those of humanity at large will be served best by giving the freest play of reason, and intellectual sense of justice; adhering to intellectual standards without reference to one's interests and advantage (Paul 1989, pp. 219-220).

Dialogue and critical thinking skills and dispositions are necessary ingredients for developing a responsible attitude amongst learners and a sense of personal judgment toward questions, issues, and problems of ethics and values. Learners and teachers ought to engage in critical and skeptical scrutiny of their moral attitudes, orientation, and expectations. Values education should therefore be a critical, dialogical encounter in which no one individual can be regarded as having a monopoly on moral insight. We need to encourage students to think critically about matters of morality and ethics, to develop a high degree of moral awareness and ethical responsibility, to imagine speculatively and to be able to take on the moral perspectives of others. If we are to follow Socrates' example of the self-examined life, than this kind of moral education should be an essential component of every human being's self-realization.

References

Baier, K. (1984). Rationality, Reason, and the Good. In D. Copp & D. Zimmerman (Eds.), Morality, Reason and Truth: New Essays on the Foundations of Ethics. New Jersey: Rowman & Allanhead.

Bottery, M. (1990). The Morality of the School: The Theory and Practice of Values Education. London: Cassell.

Boyd, D. (1989). The Character of Moral Education. In L. Nucci (Ed.), Moral Development and Character Education: A Dialogue. Berkeley: McCutchan.

Boyd, D. (1988). Moral Education, Objectively Speaking. Proceedings of the Forty-Fourth Annual Meeting of the Philosophy of Education Society, USA, 44, 83-100.

Boyd, D., & Bogdan, D. (1983). 'Something' Clarified Nothing of Value: A Rhetorical Critique of Values Clarification. Unpublished manuscript.

Burbules, N.C. (1990). Varieties of Educational Dialogue. Proceedings of the Forty-Sixth Annual Meeting of the Philosophy of Education Society, USA, 46, 126-131.

Lickoma, T. (1991). Educating for Character: How our Schools can Teach Respect and Responsibility. New York: Bantam.

Paul, R. (1989). Critical Thinking in North America: A New Theory of Knowledge, Learning, and Literacy. Argumentation, 3, 197-235.

Raths, L.E., Harmin, M. Simon, S.B. (1978). Values and Teaching (2nd ed.). Columbus, OH: Charles E. Merrill.

Ruggiero, V.R. (1988). Teaching Thinking Across the Curriculum. New York: Harper & Row.

Ryan, K., & Bohlin, K.E. (1999). Building Character in Schools: Practical Ways to Bring Moral Instruction to Life. San Francisco: Jossey-Bass.

Wheeler, J.P. (1993). The Ethical Spectrum: A Survey of Theory and Practice (2nd ed.). New York: McGraw-Hill.

Wynne, E.A., & Ryan, K. (1997). Reclaiming Our Schools: Teaching Character, Academics, and Discipline (2nd ed.) Columbus, OH: Merril-Prentice Hall.

3000 YEARS OF EDUCATIONAL TECHNOLOGY

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ABSTRACT

This paper contains a very broad history and survey of teaching. Important teachers or leaders are used as examples. The application Psychology, History, and Experience are discussed. This discussion includes a model or "ideal" teaching and aids such as computers. A summary includes suggestions as to how the ideas presented can be used to make learning experiences more effective and valuable. Specific suggestions are made that live teachers are part of appropriate educational technology. The teachers should use lectures, illustrations, "visual aids", and various techniques to make presentations more interesting and memorable. New electronic equipment such as video and computer hardware and software should be used to present repetitive instruction more effectively than live professors. Class members must be appropriately involved in the learning process. In general, effective teaching approaches EXPERIENCE as closely as possible.

Introduction

There have been great or effective teachers throughout history, and surely before recorded history. It is difficult to imagine people having the skills of hunting, gathering, and growing things without being taught the necessary survival skills. In one sense, that has not changed to this day. The necessary survival skills have changed a great deal. This leads us to the issue of the proper use of modern technology.

Among the earliest records is the book of Genesis in the Old Testament by an unknown author. Krsna's lectures to Prince Arjuna are a primary source of Hindu theology and philosophy. (Bhaktivedevanta, 1972) Moses was apparently a good teacher, using lectures and demonstrations. The parting of the Red Sea was very effective, according to The Old Testament and recent accounts. "Aristotle (b. 384 BC), more than any one thinker, determined the orientation and the content of Western intellectual history." (EBCD) He taught by lecture and writings.

Socrates (b. BC 470) "wrote nothing" during his life and is known primarily by what others wrote about him. We gather from these writings that he was a great questioner. (EBCD) The value of questions in teaching and learning was verified by Psychologists centuries later.

In the Book of Mormon, a King Benjamin called his subjects together for a lecture that apparently lasted for hours. (Mosiah, 1-4) The lecture seemed to be well received then and is highly regarded by many after 2100 years.

Jesus Christ is highly regarded as a great teacher. He used demonstrations such as raising the dead, according to the several writers. There is no record that he "published" anything in his lifetime. The records indicate that he taught in words and ideas that the people could understand well. Some of these reported words are still teaching millions of people.

Mohammed and Gautama, the Buddha presented lectures that have influenced many millions of people. They seem to have written nothing personally, but were widely reported.

George Washington, Abraham Lincoln, John Kennedy, and Martin Luther King, Jr. are widely regarded as important teachers. Kennedy and King

worked in the age of radio and television, as well as being able to write and publish books and documents.

Other modern teachers who have affected the world, or parts of it, include Chief Sitting Bull, Geronimo, Vladimir Lenin, Adolf Hitler, and Alexander Kerensky. They show that many effective teachers were not teaching what much of the world would call truth. The contest of ideas of Kerensky and Lenin determined much of the 20th Century and the lives of billions of people. It seems clear that speaking and writing have been important parts of teaching technology for millennia.

Methods

Comments have already been made about the value of lectures. It is the simplest and "least powerful" method. It is also the most adaptive. It can be changed to suit each time, learner, and situation. It was powerful enough for Hitler to talk to millions of people simultaneously by radio. There are pictures of him lecturing to thousands at public events. We now get lectures by television from President Clinton and many, many others

Demonstrations have always been effective. Psychologists have explanations for this effectiveness. It is very effective to part the Red Sea or raise the dead. But we must generally settle for much less dramatic demonstrations. It is very important to SHOW what we want to teach. There are many kinds of demonstrations.

Questions may be as effective now as they were 2500 years ago in directing learners' attention to things or matters that help students to better understand. If a class has been given the assignment to find out about United Airlines' financial position, a reasonable question is: How profitable is UAL? Answers are likely to range from wild guesses and evasions to well-thought-out correct answers.

If the question is directed toward the group, eager and well-prepared members will quickly answer and take the heat from the rest of the group. Such answers also identify the members who are well prepared.

If the question is directed toward a specific member, the preparedness will show up quickly. If the answer is evasive, probing is appropriate.

Such probing will generally reveal whether the member did not understand the assignment, did not understand the material, or has some other reason for the inability to answer.

Non answers or wrong answers present the professor with an opportunity to destroy the member and demonstrate the professor's superior knowledge. BUT IT ALSO PRESENTS AN OPPORTUNITY TO DIRECT THE ATTENTION OF THE GROUP AND INDIVIDUALS TO SPECIFIC ISSUES OR SUBJECTS. The writer has seen class members needlessly abused and driven from the class and even the program by such attacks.

The most likely outcome is that group members will prepare for meetings more carefully and more completely. Another outcome is that the professor gains a much clearer idea of what the members need to know and do to succeed in the class and program.

The recommended way to handle answers is to try to make ANY answer valuable. A beginning is to compliment members for good answers. Another approach is to find some merit, somewhere, in the answer. Such responses include: "Many people think that your answer is the right answer." Another is: "That is a good answer, but we can improve on it. Fred, can you see how to make the explanation more complete?" Still another is: "It is very good that you brought out that point of view." etc.

THE OBJECTIVE OF ALL OF THIS IS TO FIND OUT WHERE THE GROUP MEMBERS ARE AND TO INVOLVE THEM IN MOVING FORWARD TO BETTER UNDERSTANDING. It is good to use the quick members to help the slower ones (keeping them all involved)

One of the most successful classes the writer saw in decades was a Business Law class at Antioch College. The faculty had developed the following method: Students were given the assignment to read the legal principles involved and then to read specific cases When the class met, each member was asked to explain one of the assigned cases. Two points were awarded for correctly explaining the law. Two more points were awarded for correctly explaining the facts of the case. One point was awarded for the student's decision of the case.

As anyone familiar with law knows, THE ONLY CASES THAT GO TO COURT ARE THOSE WITH TWO GOOD ANSWERS. The members of the class conveniently chose different decisions.

Each student was sure that his/her answer was better than the opposite side. The meetings were very productive and a lot of fun. The class members learned a lot of law and had some fine debates. Their textbooks were generally worn out by the end of the term.

Psychologists would say that such sessions got the members highly involved in the learning and that the discussion, issues, end meetings were very memorable and vivid. Professor Theodore Beckman used this method primarily in his doctoral seminars in Marketing at Ohio State. Such issues as the Northwest Airlines snowstorm in Detroit are opportunities for Embry-Riddle classes.

The Psychological Environment of Learning

Dr Rudolf Pintner quotes Edward L. Thorndike's 3 major laws of learning as:
1. Readiness. When a bond (learning) is ready to act, to act gives satisfaction, and not to act gives annoyance.
2. The more a given response is connected with a certain situation, the more likely it is to be made to that situation.
3. Satisfying results strengthen and discomfort weakens the bond between situation and response.

Thorndike formulated five minor or secondary laws which amplify and extend his major laws of learning:
1. the law of multiple response to the same external situations (consider alternative possibilities).
2. the law of attitude, set, or disposition (how the learner feels about the situation).
3. the law of partial activity (the learner selects responses to situations).
4. the law of assimilation or analogy (responses to one situation may also be valuable in other situations).
5. the law of associative shifting (which operates much like 4 above).
(Pintner, 1970)

The Encyclopedia Britannica CD1998 articles about Perception contain a great deal of recent and early research results. The educational Psychology books neglected PERCEPTION. In the classroom (of any sort), perception is one of the most important factors in learning. A survey of the articles produced the following valuable suggestions:

1. "Perception or perceiving refers to the process whereby sensory stimulation is translated into organized experiences."
2. "Perception is contextual". Vivid contrasts are more obvious and memorable.
3. "The discovery thesis is reflected in Eleanor Gibson's view that perceptual learning is a process of discovering how to transform previously overlooked potentials of sensory stimulation into effective information. Enrichment theories depict perceptual learning as enriching sensory experience with specific association and with rules for its interpretation that derive from past experience."
4. "Concurrent visual stimulation may modify one's acuity in detecting auditory stimuli… The brain does not function as a collection of entirely independent channels."
5. "…It is evident that there are clear differences in perceptual functioning among individuals, among classes of individuals, and within the same individual from one occasion to another".
6. "The burden of much research is to show that the type of physical environment people construct for themselves or choose to inhabit influence their style of perceiving."

Objectives

After an explanation of Taylor's Scientific Management, B. R. Bugelski wrote:

> The assumption of "the better way" requires that one face any current human operation with the attitude that, while it may be reasonably satisfactory now, sooner or later the task will change, methods will be improved, and the improvements might be better attempted deliberately (as they are in industry through Research and Development departments) than left to chance. (Bugelski, 1964)

It is proposed here that Embry-Riddle Aeronautical University welcome any better way to provide learning opportunities if such a way is shown to be effective. It is also essential to find the best ways to help the learner to deal with the flood of information that seems to be increasing at an increasing rate. It

is our job to help learners to sort out the valuable new knowledge from the mass of opinion, speculation, and rumor that abounds.

Our Faculty Manual states that we should be making our classes "Challenging. Demanding. Worthwhile." It says that Embry-Riddle wants students to gain more than a factual understanding of Aviation/Space. We also want students to build their skills in speaking before groups, professional writing, and using software applications. (6)

The Manual also contains a paper presented at the Fourth Annual College Career Education Faculty Symposium On Teaching Effectiveness, that states:

Accelerated learning tends to:

emphasize wholeness
welcome diversity
exalt the individual
nurture creativity
be BOTH/AND
be purposefully eclectic
be collaborative
liberate
release human energy
be dynamic & flexible
be geodesic & mutual
be multipathed
feel natural
be multisensory
be joyful
be a state of mind

It also states that we are to:

1. Create a classroom setting that is colorful, comfortable, and naturally stimulating.

2. Create an environment to get the fun and (success) back into learning rather than the seriousness.

3. Create an environment which helps students to eliminate or reduce any fears, stress, or learning barriers they might have.

4. Create an environment which is collaborative and mutually supportive rather than driven by traditional parent-child assumptions about instruction. (ibid.)

Our Graduate Catalog states that:

> It is the purpose of Embry-Riddle to provide a comprehensive education that prepares graduates for productive careers and responsible citizenship to support the needs of aviation, aerospace engineering, ad related fields." (p. 7)

Now the question must be asked; How does all of the

above apply to a classroom? There are many answers. These are formidable objectives and challenges.

Our Classrooms

WE WANT TO MAKE THE EXPERIENCE VALUABLE. In order to do that, the experience must be remembered and contain valuable and accurate information. We professors must learn what is useful, valuable, and accurate, and then help members of the class to see and understand these things.

THEY ARE ALL DIFFERENT ALL OF THE TIME. One presentation, to a group, is a risky method of "teaching". Everyone in the room will have a slightly (or greatly) different understanding of what is said (or shown, etc.).

THEY RECEIVE "GESTALTS", or collections of information. Straight lecture is generally the least effective presentation. It involves only one sense, hearing. If the professor moves around, the effect is more vivid and/or memorable. Pictures, diagrams, etc. convey more information more vividly. If the pictures move or change, they are more "important" and memorable. If touch, smell, and taste are used, THE EXPERIENCE INVOLVES ALL OF THE SENSES AND IS MOST VIVID AND MEMORABLE.

THEY ADD OUR PRESENTATIONS TO WHAT THEY ALREADY KNOW OR BELIEVE. And each one of them is unique.

"Socratic" Teaching

Asking the right questions correctly can be very valuable in class meetings and individual interviews or counseling. From a psychological point of view, the question directs the attention of the listener, away from whatever current thinking, toward a specific idea or subject. This subject tends to be pulled out of the total environment of the listener, for special attention.

Such a question serves several purposes. One purpose is to isolate or highlight a particular idea. A second purpose is an assessment of their readiness to consider and answer such a question. Such questions will often reveal that one or more members of the class have not done reading assignments or are otherwise not prepared with correct answers. Such questions serve as a

warning as to what the professor expects from the class and what the professor thinks is important.

Sometimes our "classroom" is watching a videotape. Sometimes it is operating a computer program. Sometimes it is a field trip to an important site related to the subject.
The author has been and continues to be a strong proponent of "experiential learning" wherever possible.

The Ideal Lesson

The ideal "lesson" will involve as many senses as possible. It will add to whatever each person already knows or believes. It will stand out vividly from the environment or life of each class member.

Straight lecture is the least vivid and memorable thing to do. BUT IT IS ALSO THE MOST VERSATILE. It, alone, can include the news of the day or events that are unique and important to the group AT THE TIME OF THE MEETING.

Illustrated lectures are more interesting and vivid. But they generally require "props" and planning. A NOTABLE EXCEPTION TO THIS RULE IS THE GROUP MEMBERS THEMSELVES. This is the great value of student participation and participation. An occasional student testimony or story is often more valuable than anything the professor can say or do.

Illustrations that move or are properly colored are generally more vivid and memorable than black and white and motionless. If stationary black and white stimuli are a sharp contrast to the busy and colorful environment, they may be very memorable.

THE MOST VIVID AND MEMORABLE LESSON IS **EXPERIENCE.** It may be in a classroom where a person or group discovery is made. It may be in a factory where airplanes or missiles are made. It may be in a military unit where a decision is made and orders are issued.

An example is teaching International Business. One approach is to talk about it. A better presentation is pictures, "artifacts" and other evidence. Moving and colored pictures and items are better. BUT THE BEST WAY TO LEARN ABOUT ANOTHER NATION OR CULTURE IS TO GO THERE AND SEE IT, FEEL IT, SMELL IT, TASTE IT, AND LISTEN TO IT.

Classroom (or other activity) participation is one method of involving group members in life, discussion, or discovery. This is actually EXPERIENCING what is happening. The great value of INTERNSHIPS AND FIELD TRIPS IS THAT THEY ARE EXPERIENCE.

We all know that international travel, wars, internships, and other experience can be very expensive and difficult to arrange. So we must usually settle for simpler and less expensive models or simulations of reality.

Hardware

The most versatile piece of "hardware" is the professor. But the typical classroom situation becomes less vivid and memorable as the hours (or even minutes) go on. Chalk boards are a welcome relief. Demonstrations and physical models have important places in learning. This traditional progression of instructional techniques always includes colored slides, then motion pictures, and then ACTUAL EXPERIENCE, which has been explained.

But there is a relatively new part of learning that needs more attention now. IT CAN BE CALLED ELECTRONIC INSTRUCTION. It began as radio and then various kinds of recordings. Then came television and an entire new world of experience. Then the tube became colored and tapes were possible. These media were generally sequentially accessible, meaning that everyone was "forced" to go through the same process, often at the same rate.

For decades, computers were only for engineers and some "nerds" who were skilled in the use of computers. BUT NOW WE HAVE A GENERATION THAT IS GROWING UP WITH COMPUTERS AS SOME OF US GREW UP WITH RADIO, TELEPHONES, AIRPLANES, AND BOOKS. COMPUTERS HAVE ALWAYS BEEN A PART OF THIS GENERATION'S LIVES.

Computer Learning

Some of us recall "programmed learning", which began as a Pavlovian machine that gave us questions with a few canned answers. The early versions were less exciting than a pinball machine and only marginally more informative.

Now we have computer programs that are much more exciting than a pinball machine and which can be more informative than professors often are. The

early attempts by computer technicians produced much excitement along with some learning. A current example is enclosed of 1998 computer teaching/learning by Encyclopedia Britannica.

WHEN VIDEO TECHNOLOGY IS COMBINED WITH COMPUTER TECHNOLOGY, ELECTRONIC LEARNING CAN BECOME AN APPROXIMATION OR GOOD MODEL OF REALITY AND EXPERIENCE. So far, we do not have the smell or taste. The new generation transfers much of the proprioceptive (touch) stimuli From the keyboard or joystick to "reality". WHEN THE INTERNET IS ADDED TO THE ABOVE, WE HAVE SOME OF THE MOST POWERFUL INSTRUCTIONAL CAPABILITIES THAT HAVE EVER EXISTED. Both of these media permit random access to information. The good part of random access is that well-qualified learners may cover any given subject much more quickly. The bad news is that random access permits students to skip over introductory or basic information and not understand what they are reading or doing. An example of internet capabilities is added to this paper.

SUMMARY

1. Information that is unique to the specific meeting should generally be presented in a lecture.
2. The lecture will be more effective if it is illustrated with a chalk board or other writing.
3. Personal interaction, such as counseling or explaining ideas to specific groups or individuals should generally be done in person, by a professor, including telephone, e-mail, or other communication.
4. When the same material is presented by the same person in the same way to each class, it should be recorded in print or electronic media and should be as interesting as possible.
5. Recorded messages can be reviewed by class members at will.
6. Nearly all electronic communication is more effective if it is colored and moves.
7. One of the great advantages of computers is that they can interact with the learner.
8. Computers can interact through local software or by internet.
9. Videotape information is generally sequentially stored. (and accessed)
10. Much computer software is stored as randomly accessible.
11. **Individual and class business should be**

conducted live or electronically with persons individually or in groups.
12. Repetitive information should be presented mechanically, on tape, disks, or other electronic media, books, or analog (photos, etc,) records.
13. Learners should interact with information sources electronically and by physical (books, people, "artifacts", etc.) means.
14. Learners must practice evaluating and comparing information sources.
15. The internet should supplement "physical" information sources, and they should supplement the internet.
16. THE MOST EFFICIENT LEARNING IS TO USE MACHINES TO DO WHAT THEY DO BEST, USE PROFESSORS FOR WHAT NOTHING ELSE CAN DO; AND USE STUDENTS FOR INTERACTION, EXAMPLES, AND THEIR OWN SPEAKING, WRITING, AND USE OF SOFTWARE.

REFERENCES

Bhaktivedanta, A.C., Bhagavad-gita As It Is, New York: Collier Books., 1972, Chapter 1.

Book of Mormon, The Salt Lake City, Utah: The Church of Jesus Christ of Latter-Day Saints, 1991,

Bugelski, B. R., The Psychology of Learning Applied to Teaching: New York The Bobbs Merrill Company, Inc. 1964, p.8.

Embry-Riddle Aeronautical University, F.E. Warren AFB Resident Center Faculty Manual p. A-2.

Encyclopedia Britannica CD1998, Aristotle, Socrates, Kerensky, and other articles.

Holy Bible, Authorized King James Version: Cleveland and New York, The World Publishing Company, no date.

Pintner, Rudolph, (ed.) Educational Psychology, New York: Barnes and Noble Books, 1870 6th ed. p.102.

BIBLIOGRAPHY

Beiles, Nancy, "CommonPlaces' CollegeBytes.com Site Aims to Be Students' Web Destination", The Wall Street Journal, May 10, 1999.

Burt, E. A. , The Teachings of the Compassionate Buddha, New York: Mentor Books, 1955.

Dawood, N. J., The Koran, Harmondsworth, Middlesex, England: Penguin Books, Ltd., 1986

Lenin, V. I. State and Revolution, New York: International Publishers, 1968.

Thompson, J. A. K., The Ethics of Aristotle, Baltimore: Penguin Books, 1966.

Wysocki, Bernard, Jr., "Corporate Caveat: Dell or Be Delled", The Wall Street Journal, May 10, 1999.

VITA

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Socrates Is Not Dead!
The Role of the Teacher in Higher Education Now and for the Next Ten Years

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ABSTRACT

This paper addresses the ongoing transformation in academe from traditional tutorial teaching methods to the use of new technology tools that enable a modern university to compete successfully with the increasing popularity of distance learning programs, sometimes known as the "electronic classroom." In particular, the paper maintains that teaching techniques must be expanded to include interactive methods that bring students into a more participative role. From the examples provided by the Greek philosopher and teacher Socrates 2,400 years ago, higher education has an excellent role model from which to develop these skills. Based on the comments of concerned authors, the paper holds that the transformation must be accomplished within the next ten years.

Among the challenges to successfully learning Socratic teaching methods, the paper cites several, including knowing how to ask the right questions in the classroom, how to ask those questions the right way, and how to select the students to ask without seemingly "picking on" someone. Additionally, the paper discusses the major challenge that confronts the teacher when dealing with the wrong answers that students provide.

The discussion suggests that the new technology tools available to the modern classroom, including video projectors and presentation programs like PowerPoint, enable any teacher to create interactive lectures quickly and easily. With the addition of interactive simulation software programs, a teacher can extend the Socratic method directly to the students, who will be able to develop new techniques for proposing and testing theories in simulations of real-world environments but without any risk of damage caused by "learning errors."

An additional benefit of using a Socratic teaching method is that the teacher causes students to arrive at logical conclusions about complex circumstances. Since the students actually discover or invent knowledge, they are likely to buy into their discoveries, eliminating the need for the teacher to persuade them about it.

The paper suggests the need for a balanced approach—all the teaching methods teachers already know how to use, plus the addition of a Socratic classroom style when appropriate. Effective Socratic teaching requires knowing when to show and when to tell, when to ask and when to allow students to ask questions themselves. The paper also holds that developing more interactive teaching skills can be a progressive experience, and that with the use of better tools, any teacher can learn to teach Socratically.

The final comment addresses social trends that seem to suggest an environment that is antagonistic to teachers who ask questions. But the paper concludes that these trends reflect a turning point in the intellectual lives of students, wherein they will welcome the teacher asking them what they know and think, and that more Socratic teaching methods will give students something they know deep-down that they need: a challenge to think and begin to ask questions.

Socrates Is Not Dead! The Role of the Teacher in Higher Education Now and for the Next Ten Years

INTRODUCTION

No one can ignore the presence of new technology tools in many of today's college classrooms. But despite the effort schools have made to bring these tools into common usage by teachers, and despite the willingness of most teachers to learn how to use these tools effectively, something more is needed to complete the relationship between student and teacher that these tools are intended to facilitate.

A Transformation in Progress

The fact is that more and mores colleges and universities provide new technology tools including video projectors, presentation programs and interactive simulation software that give students a "hands on" learning experience. However, these wonderful new teaching tools were not just discovered recently and automatically adopted by schools and teachers. Much of their implementation is in response to an ominous specter on the academic horizon—a specter that is a genuine threat to the survival of the traditional college classroom as we know it—with or without these new tools.

Most schools have begun transforming their classrooms into something more than a place where teachers read unchanged old material from dog-eared lecture notes about topics that are in constant change. Today's classrooms are much more alive than they were just ten years ago, thanks in part to the use of these new technology tools. But more strategically, traditional academe has begun to recognize the competitive challenges presented by the "electronic classroom" that offers online, video tape and cablevision courses leading to college degrees.

Through the use of technology, the basic college classroom now provides a learning environment that generates new currencies in the repertoires of teachers and the enhanced access to new knowledge sources for students and teachers alike. However, there is

one facet of this transformation that is still underdeveloped. The new tools of teaching and learning and the new knowledge sources finding their way into the classroom environment cannot be truly effective unless the teacher knows how to use them educationally. The problem is not learning how to turn them on and deliver good audiovisual presentations; most teachers have already learned this much. The problem lies in the need for teachers to maintain an interactive learning relationship with students while using them. The tools are intended to help bring students and teachers together, not keep them apart; using them must not compromise the student-teacher relationship.

A Great Need

There is still a great need for teachers who know how to maintain a steady, dynamic flow of dialogue in the classroom—teachers who can cause students to think, respond and express their ideas. In other words, it is important--critically important—that teachers not allow impressive presentations to cause them to "step aside" and simply cycle through attractive slide presentations augmented by printed handouts. Teachers must remain intellectual masters of their classrooms. Teachers must be able to conduct classroom sessions in which they **cause** each student to feel that s/he is "one-on-one" with the teacher, and not simply a note-taking spectator. To do this, teachers must be able to use interactive verbal techniques that create an ongoing personal dialogue with each student-- and all of them--at the same time. This is the single unique advantage that traditional classroom teaching has over the "electronic classroom."

A number of persons concerned about future trends in higher education have expressed concern that traditional colleges have about ten years in which to fully recognize the inherent advantage of in-person classroom teaching and fully develop the potential to educate people and teach them how to think.

Fortunately, we have an excellent role model for doing so--a man whose name is synonymous with academe as we know it today--who lived 2,400 years ago: Socrates.

SOCRATES: ALIVE AND WELL

Socrates lived in ancient Greece from 469 B.C. to 399 B.C. He wrote nothing. All that we know of him is what we read from Plato, Xenophon and others who knew him. He was a philosopher and teacher. In his later years, he devoted himself entirely to discussing ethical questions. His method of inquiry was to cross-examine people about their beliefs, and in particular, about ethics, since for a Greek, "wisdom" had a strong ethical meaning.

Socrates' questions would usually involve asking people the meaning of ethical concepts such as self-control, justice or courage. He found that they did not really know, or could not give a satisfactory answer. To that extent he was wiser than they—he was aware of his ignorance and they were not. If we knew what justice was, then, he argued, the problems of being just would be relatively simple. In quest of that knowledge, he never ceased his constant examination of himself and others.

Being cross-examined with the penetrating thoroughness of Socrates was not an experience which everyone enjoyed. With all of his uncompromising honesty, Socrates was hardly an orthodox character, and Athens at that time had had enough of unorthodoxy. Socrates was linked in the minds of many Athenians with the skepticism and questioning of accepted beliefs which they blamed for their many misfortunes. Many regarded him as an undesirable political influence, and he was condemned to death on a charge of impiety and corrupting the young.

Socrates is still alive. His method of inquiry by asking questions and proposing hypotheses to arrive at logical cause-and-effect analysis forms the basis for most academic and theological research today. Mostly through the dialogues of Plato, who was Socrates' student, we see the "Socratic" method of teaching used very effectively to cause others to discover or invent valid answers and solutions. Plato stands with Socrates and Aristotle as one of the shapers of the whole intellectual tradition of the West. He founded in Athens the Academy, the first permanent institution devoted to research and

teaching, and the prototype of all western universities.

Plato's *Republic* was written after he founded the Academy. Much of this work involves Socrates' discussions with others about ethics as well as education. The *Republic* starts with a moral and political question: what is justice? But its overall thrust is, in short, a statement of the aims which the Academy set itself to achieve. Its method is a series of dialogues in which Socrates leads others to discovery of knowledge by asking questions.

Consider these passages from *The Republic*. Socrates is questioning Adeimantus in a dialogue about justice:

> "Justice can be a characteristic of an individual or of a community, can it not?"
>
> "Yes."
>
> "And a community is larger than in individual?"
>
> "It is."
>
> "We may therefore find justice on a larger scale in the larger entity, and so easier to recognize.
>
> I accordingly propose that we start our inquiry with the community, and then proceed to the individual and see if we can find in the conformation of the smaller entity anything similar to what we have found in the larger."
>
> "That sounds like a good suggestion," he agreed.
>
> "Well then, if we were to look at a community coming into existence, we might be able to see how justice and injustice originate in it."
>
> "We might."
>
> "This would, we may hope, make it easier to find what we are looking for."
>
> "Much easier."
>
> "Do you think, then, that we should attempt such a survey? For it is, I assure you, too big a task to undertake without thought."
>
> "We know what we are in for," returned Adeimantus; "go on."
>
> "Society originates, then," said Socrates, "so far as I can see, because the individual is not self-sufficient, but has many needs which he can't supply himself. Or can you

suggest any other origin for it?"

"No, I can't."

In the same manner, Socrates deals with a variety of topics, ranging from education and politics to morality, women, art and music. In each of the dialogues, the "Socratic method" of drawing knowledge from people causes them to assemble knowledge in a true cause-and-effect discovery that they were unaware of beforehand.

In reality, modern academic research is an extension of the "Socratic method," wherein a series of questions are formulated, a hypothesis is constructed and tested, and from which additional questions arise and are examined. As this process continues, both logic and knowledge are integrated to form new answers and new questions. Socrates' issues may not have been those of the modern academic world, but through his method of inquiry, he has shaped subsequent academic thought more than any other person in history.

A Method for Surviving

Socrates was indeed master of "how to ask the right questions." His method may well provide traditional higher education with a way to survive the onslaught of the electronic classroom, which now has over 500,000 students enrolled in distance learning degree programs without benefit of classroom. True interactive Socratic teaching is two-way real-time communication that enables teachers to actually see their students and distinguish a "glow" from a "glaze" in their eyes.

THE SOCRATIC METHOD--TODAY

Try teaching a child how to ride a bicycle—without physically touching the bicycle and picking the child up when s/he falls. Or try describing a trombone—without using your hands. These tasks can be successful only when they achieve their purposes. It is not important that the teacher knows how to ride a bicycle or play a trombone; the student needn't even know whether s/he can! What is important is that the child/student **discovers** or **invents** the right answer

to the question implied: "How do I ride this bicycle?" or "What is a trombone?"

Shouting at the child when s/he falls off the bicycle is no solution. Simply telling students the current answer to a question is no guarantee that they will understand what is meant, or that they will believe it. It is not possible to obtain understanding, creativity or belief by simply being an assertive leader in the classroom. The students may remember the words and recall enough to pass an exam, but they still must be persuaded that what they remember is truthful and useful. Even when the teacher is an accepted authority in the subject area, learning does not entirely occur until the students perceive the meaning of the answer as it applies usefully to their own lives and under their own assumptions. "Crest" to some is the top of a wave; to others it's the feathers on a bird's head. To still others it's toothpaste.

Simply "telling" the students something is no better than having them view a video tape; perhaps worse, since the students can rewind and rerun the tape until they "get it."

Consider a series of cause-and-effect relationships that a teacher wants the students to trace logically and make conclusions about. Perhaps it's about something that starts with an observable business effect, such as poor goal achievement (low profit), and seeks to identify the root causes thereto. The teacher might ask, "Why are XYZ's profits down?"

The students could easily just say "profits are down because sales are down."

"But why are sales down?" the teacher asks (as Socrates might have asked). Many different conditions are capable of causing a sales decline. Choosing any one might give a plausible answer, but what's needed is the real reason—the right answer. Too often, students choose a scenario that might account for the problem, while never really finding the true root cause. This is particularly common with the "case study method;" students often develop solutions that are intended to give the teacher what they think s/he wants to hear. When this occurs, the teacher has obviously

failed to bring the students to knowledge they understand and believe. It is certainly not "Socratic" teaching. The same thing happens when someone "surfs" and downloads an item from the internet just because it has the right words in the title.

Thus, Socratic teaching is much more than an attitude or a better teacher-student relationship; it's a learnable technique that causes students to discover the real root causes of real problems, and then invent good solutions to these problems.

Good News and Bad News

The good news is that all humans are born with the ability to recognize common sense when they see and hear it. The bad news is that constructing and communicating common sense requires skills that must be learned. To learn how to teach as Socrates taught—to ask the right questions and cause students to discover and invent knowledge—is a somewhat challenging assignment for most teachers.

THE CHALLENGES

One obvious challenge lies in our ability to bring college teachers to an operational level of competence in using an interactive Socratic teaching technique. It's more than asking questions in the classroom like "Are you with me—yes or no?" or "Is it understood?"

Asking the Right Questions

Teaching Socratically requires direct questions to either the entire class or to individual students. The teacher must know how to select the questions to ask so that the information falls into place step-by-step, like a row of dominos, causing the students to see the sequence of cause-and-effect relationships that describe complex real-world situations. Each "domino" brings the students a step closer to the root causes of the phenomena they are examining. One step at a time, they discover the real causal relationships that are not automatically apparent to them. Observable effects are usually separated from the root causes by a number of intermediate logic steps ("dominos"); the teacher

must lead the discussion through these steps, otherwise the students will never really understand what causes what.

Asking the Questions--the Right Way

Even more challenging for the Socratic teacher is developing a smooth technique for asking questions of individual students in the classroom.

It's one thing to propose a question to the entire class; still another to aim a question at one student without that student feeling as if s/he is being singled out or is being "picked on." In addition to establishing the proper setting for doing so, the teacher must make the selection appear to be a random process. Many teachers have already mastered the ability to do this, and it becomes even more important when a teacher wants to conduct an ongoing dialogue in the classroom and not lose continuity. With any group of students, some are very eager to participate, some are rather reticent and shy, and still others either don't know or don't care about the material being covered. A successful Socratic approach means making each student aware of the possibility that s/he may be randomly selected at some time during the session—a thought that may actually promote better preparation!

Once this participative setting has been established, the teacher must then use a selection technique that involves three mandatory events: speak, point and look. The important distinction in this technique is that after the teacher asks a question, s/he points to one of the students with an arm or hand **before** actually looking at the student selected. In so doing, the teacher creates a "random" selection event (pointing), and only afterward creates a visual linkup with whomever the hand finds. (For cultural reasons, it's a good idea to avoid using a finger for this action.) This helps students feel comfortable as well as keeps them on their toes in case they might be among the next called upon.

USING THE NEW TECHNOLOGY TOOLS SOCRATICALLY

Socratic teaching methods are greatly enhanced through the use of new

technology audiovisual tools. Displays that don't present all the answers in one view enable a teacher to create Socratic dialogue beforehand—to actually put the questions into the course materials and present them at exactly the right time. With good display tools—video projectors and PowerPoint programs, the teacher can unfold the material line-by-line, asking the class to supply the material that is to come next--before it appears.

Hardware and Software

Today's presentation hardware and software enable a teacher to prepare interactive lectures, even more easily than s/he once assembled overhead slides--but what a difference! The teacher can print out a set of speaking notes that contains the questions and the desired answers—and even hints about how to draw out the desired responses—that the students do not see. This method gives the teacher total command of the discussion as it leads the students through logical discovery and invention.

A Major Challenge: Dealing with the Wrong Answers

Another major challenge confronts the teacher when the question asked only brings out wrong answers.

Actually, it is at this point that the teacher either "makes it or breaks it." Undoubtedly, the teacher's ability to continue a Socratic dialogue during a class session hinges on knowing how to respond to students' wrong answers. One cannot assume that a properly-asked question, however well-phrased and delivered as Socrates might have done, will inevitably bring a correct response from a student or from a room full of students!

How does a teacher continue to inspire students to continue to respond after having told even one of them that s/he was "wrong?" In truth, a teacher cannot expect students to keep answering after having intimidated one of them by saying or inferring that a response was totally incorrect. Again, this is the make-it-or-break-it point in maintaining a continuing dialogue. Of course, a wrong answer is a wrong answer. But it is certainly not useless; if

nothing else, a wrong answer, properly treated, helps lead to a correct answer. Many times, a "wrong" answer is actually partially correct, providing a stepping stone to a more thorough response. The manner in which a teacher deals with less-than-perfect responses determines whether s/he will be able to continue the dialogue.

In this situation, the teacher's individual style makes a big difference. It doesn't take long to learn how to use encouraging responses like "you're on the right track," "that's part of it," or "can you expand on that?" Socrates often used terms like "you may be right," and "what are we to do then?" to cause students to examine their own responses and improve on them.

SOCRATIC SIMULATION PROGRAMS

Socrates often used simple examples to lead people to an understanding of something very complex. He conducted many of his dialogues in *The Republic* to examine morality and ethics by getting people to describe the basic ingredients of a city-state (republic) and the relationships between various disciplines therein. Socrates sought to expose his view of morality as something more than social approval. To make his point, he elicited a series of responses to simple questions that would describe a complex physical entity (the "republic"), showing the meaning of morality for both the individual and the society. In effect, describing the "republic" was a kind of simulation in which the notion of morality could be explored without having to examine an entire system. Today, modern academe has simulation tools that can describe physical entities (business organizations) and explore the effectiveness of various management decisions without having to actually run a real business.

Interactive Software

A number of interactive simulation software programs are now available for a variety of academic disciplines. Courses in Production Operations Management, Operations Research, Project Management, Logistics, Finance, and Marketing have ready access to new software programs that give

the teacher enormous versatility in the classroom. The teacher can lead students through a series of simulation exercises designed to develop their skills step-by-step, one level of complexity at a time, until they can manage a simulated business with levels of complexity and uncertainty very much like real-world organizations.

Some Interesting Advantages

Simulation programs offer tremendous advantages over the simplistic models found in many textbooks. Simulations can be used as progressive learning tools, starting with fairly simple models and progressing to very complex examples and even models of complete real-world organizations. With proper interactive leadership by the teacher, students can develop true understanding of both the theories and processes involved in managing complex organizations.

Like flight simulators, business simulators can emulate the real world without the unfortunate effects of "learning errors" or the uncertainty caused by widespread process variability. Although simulations can model real-world situations, they provide the teacher and students with a way to examine the effects of changing a single parameter while holding all others constant—something the real world never offers. Moreover, interactive simulations run at higher clock speeds—a year of operations can be observed in a matter of minutes, to show not only the result of specific decisions, but the flow of activity and materials through the period. Students get to "watch what happens."

Teaching With Simulators

Simulations are excellent teaching tools when used with a video projector and a large screen in the classroom. With proper preparation exercises provided by the teacher, students can run simulation programs on their own PCs and develop skills by trying different decisions, one by one, to discover how changing theories affect the flows and outcomes. While the teacher leads the students to develop the theories, the simulators permit them to actually observe how well their theories and decisions work.

There is one overwhelming caution to be observed with interactive simulations, however. They are not video games; the student is not simply aiming laser weapons at Japanese monsters that jump out of endless castle corridors. Video games are toys in which the "goal" is killing monsters as they emerge; there is usually an endless supply of bullets, and the user learns only better hand-eye coordination skills.

To achieve the purpose of interactive simulation programs, the student must be aware of why s/he is using the simulation—not so much to get optimum results at the end of the simulated period--but to discover how various operational decisions affect those results. Consider, for example, the production management student who decides to reduce unit production cost in a simulated factory by manufacturing more units than the market demands. In static calculations, the student sees only cost savings, but in a simulation exercise, s/he sees how the extra units flow into inventory, day-by-day, without a corresponding increase in sales revenue and cash flow.

A Very Important Point

It takes only a few simulation exercises for the student to realize that s/he is in effect being Socratic by proposing changes for the simulated environment and getting prompt responses in both flow and outcome. This is a very important point to recognize: when the student experiences Socratic learning in the classroom, s/he actually begins to think Socratically as well. The more often this occurs, the more the student develops the habit of asking questions—of others and of oneself—in the search for true cause-and-effect knowledge. The same thing occurs as the student gains confidence in the use of simulation programs, provided the teacher has done the job of leading the student to think Socratically.

Like Grade School?

Are we actually only describing how a third grade teacher leads children in learning basics like reading and arithmetic? A good grade school teacher knows the

power of frequently asking simple questions in the classroom. S/he knows that to keep children attentive, one has to constantly ask questions to maintain their level of interest. Even so, some of the children, especially the brighter ones, are likely to lose interest as the teacher aims the discussion at the slower children. Such is not the case in higher education; the college teacher is far more concerned with developing student understanding than just remembering specific facts. Interest alone does not guarantee this outcome; the teacher must lead the student to discovery. It isn't easy, at first.

"Don't ask me . . . "

A college teacher attempting Socratic methods for the first time is likely to hear (or see on students' faces) something like "don't ask me; just tell me so I can go home." When students are accustomed to traditional lecture methods and textbooks intended to make up for the lack of dynamic presentations, a new approach comes as somewhat of a shock for them—at first. A Socratic teaching style doesn't just begin by asking questions and pointing to people to answer them. The teacher is wise to explain what s/he is going to do, why s/he will be asking questions and pointing, and assuring the students that the selection process is random. The teacher must also explain that there are no really "wrong" answers, but that s/he will be asking a number of questions designed to lead students to a more thorough understanding. The best thing to tell students, and tell them often, is: "the answers will all change in time; what we're here to do is learn how to ask the right questions." This leads to the ultimate benefit of the Socratic teaching approach.

The Ultimate Benefit

Nothing a teacher says is guaranteed to persuade students about anything. But when students come up with the right series of answers to a teacher's questions, something very important occurs. When the students discover or invent knowledge themselves, they actually take ownership of the answers. No persuasion is necessary when students think of something themselves. Even when only

one student responds and provides something useful, the others are likely to agree; they don't have to admit being persuaded because they are allowed to regard new knowledge as either something they already knew, or that they once knew and were just reminded of. This is a truly powerful teaching tool!

To those teachers who might claim that Socratic teaching takes too long, there is a good answer. It may take a little longer to develop the students' responses and arrive at knowledge they truly understand, but the time not spent repeating and emphasizing just to get agreement and acceptance more than makes up for it.

WHY AREN'T WE USING IT ALL THE TIME?

If Socratic teaching really leads students to better understanding, belief and accountability, and if academe is truly aware of the importance of using the one true advantage it has over the electronic classroom, then why aren't all teachers using it all the time? Why aren't all our class sessions based on the models provided in Plato's *Republic*?

A Balanced Approach

Realistically, not every moment of every session should be an interactive, Socratic experience. There are many times when the teacher must explain things, draw the pictures, write the formulas, solve the equations and present audiovisual examples using the chalkboard, video tapes and verbal accounts of real-world experiences. Students must be directed toward researching outside sources—magazines, books, articles, and even internet references. The fact is that the teacher usually knows more than any one student about a topic, even though collectively the students in a class may have more anecdotal information about it. It is therefore a teacher's duty to set the stage and perhaps open the door to Socratic discussion by first developing interest, suggesting outside research and inviting students to mentally enter the environment of the topic. Socratic teaching is not a constant barrage of questions and pointing; it is a balanced use of all the teaching tools available.

A balanced approach involves all the teaching

methods we already know how to use. That's good news; we don't have to relearn everything we know to become more Socratic! Effective Socratic teaching requires knowing when to switch from one method to another; when to show and when to tell, when to ask and when to allow students to ask questions themselves. A balanced approach is measured in terms of actual knowledge gained by the students (and the teacher learns a lot, too) through interactive, in-class sessions.

We already have some Socratic teaching ability; it's not an archaic idea recently discovered in a cave in Greece. It's not a fad likely to disappear once the students get used to it. As teachers become more familiar and more comfortable with interactive sessions and the tools that enhance them, students will increase their interest as well. But the teachers have to do it first. It's like the lecture the airline flight attendant gives passengers before takeoff: "put your own oxygen mask on first; then assist another person." We cannot wait for the students to prompt us to add Socratic dialogue to our lectures. It's up to each of us to learn how to do it, try it, develop it and make it one of our tools.

It won't be an instantaneous conversion. We may find that we do not have the wisdom of Solomon; he knew how to solve a problem without compromise—without cutting a crying baby in half while two women were screaming at him and everyone else doubting how wise he really was. Our challenge is to begin to develop our Socratic skills by actually doing it. We have the tools to make it a lot easier than it used to be. We have interactive simulation programs, presentation software, video projectors and a variety of audiovisual devices that, along with interactive teaching methods, can produce a balanced, effective learning experience that the "electronic classroom" cannot duplicate.

A balanced method is in no way a compromise. It's not a question of how intensely Socratic to be, but when to use this approach in a class. The best part of it is that it's easy for any teacher to start becoming more interactive, at a rate that

s/he can determine and apply fittingly to the class being conducted.

The Final Challenge

There is still one final challenge to becoming more Socratic in the classroom. American social trends are not moving in the same direction as higher education ought to go. It's not just the lament of senior citizens that describes our younger generations as "an angry gang in search of nothing." The ongoing cultural trend is seriously lacking in questions about anything. Music and other art forms are too often distortions and perversions of reality designed more to create shock than to inspire thought. The assertive music of today is completely devoid of questions about anything. Gone are the ballads of the past, asking questions like "Why do I love You?" or "Where is Your Heart?" The old song books are full of titles asking questions. But no more; there are no new songs asking about life and love, wondering about something, or exploring hopes and dreams. There are no new songs with verse before chorus to set the theme, to ask the listener to envision the environment to be described. Today's music screams in anger and rage, demanding that listeners hear how someone feels; chanting one's feelings out loud, "in your face." Along with the emotional reactions to such a barrage of outspoken frustration, consider how thinking patterns are shaped in students' minds. There are two possible ways to react to this dilemma.

Maybe it's just going to get worse, and if so, then we're going to find it more and more difficult to ask questions in the classroom, especially "why?" If this is how the future is bound to unfold, then the only question in the mind of the student will be "is this going to be on the test?"

On the other hand, perhaps these students are finally at a turning point in their intellectual lives, wherein they will truly welcome the teacher asking them what they know and think.
Perhaps the introduction of more Socratic teaching methods will give students something they know deep-down that they need: a challenge to think and begin to ask questions. But only if we teach them how to ask. The next ten

years will tell whether we can.

The latter is not only a better view; it is the hope and promise of the future of higher education.

BIBLIOGRAPHY
With Brief Descriptions

Books:

Dettmer, H. William. *Breaking the Constraints to World-Class Performance.* Milwaukee, Wisconsin: ASQ Quality Press, 1998. The author presents a systematic method for solving problems by identifying the obstacles to goal achievement.

Goldratt, Eliyahu M. *Critical Chain.* Great Barrington, Massachusetts: The North River Press, 1997. A challenging view of higher education in the 1990s that describes many of the problems addressed in this paper.

Perelman, Lewis. *School's Out.* New York: William Morrow, 1992. This author offers some controversial opinions about the survivability of traditional institutions of higher learning in the new "electronic classroom" environment.

Plato. *The Republic.* Translation and introduction by Desmond Lee. New York: Penguin Books, 1987. The best-known of twenty Socratic dialogues, this work presents a method of inquiry that has dominated academe for over twenty-four centuries.

Articles and Papers:

Max Hitchens, "Taking Control with Software Modeling; Simulation, Emulation and Monitoring." *APICS Magazine,* December 1996. A powerful support for interactive simulation software as an effective learning tool.

Robert Lenzner and Stephen S. Johnson. "Seeing Things as They Really Are--College Education as we Know it is Threatened (Peter Drucker)." *Forbes Magazine,* March 10, 1997. A strong warning that higher education faces formidable challenges to its survival.

Michael Prowse, "Endangered Species. Modern electronic technology could mean that the days of academics at higher-

education institutions are numbered." *Financial Times,* November 20, 1995. A hard-hitting discussion about the changing academic environment and the threat that the electronic classroom presents to higher education.

David Rothenberg, "How the Web Destroys the Quality of Students' Research Papers." *The Chronicle of Higher Education,* August 15, 1997. A sobering view of today's learning tools.

Alison Schneider, "Insubordination and Intimidation Signal the End of Decorum in Many Classrooms." *Chronicle of Higher Education, March 27, 1998.* An alarming warning about the conduct of classes in traditional academe and the importance of using teaching techniques that promote greater student involvement.

Toward a Future Adult Learning Community:

If Socrates had a PC…

By

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ABSTRACT

The integration of educational technologies in adult learning environments is viewed from three distinct perspectives. The three perspectives are the structuralist, the means-end, and finally, a view of technology as an extension of oneself based in the situatedness of an experiential-type learning environment.

The various constructs of adult learning are reviewed and a framework for future adult learning communities is proposed that identifies the learner and educator provided components needed for an effective adult learning experience.

A Socratic notion of the integration of technology is explored to parallel the notion of the invisible integration of technology into future adult learning communities.

There is only one good,
knowledge,
And one evil, ignorance.
Socrates

Introduction

The infusion of technology in business as a necessity in global competitiveness goes without saying and needs no further explanation. However, the utilization of educational technology, when introduced in adult learning environments may be viewed from three distinct perspectives (Pickett, 1997).

The first notion being the "structuralist" school of thought, utilizing Bolman and Deal's (1997) structural frame espoused with Frederick Taylor's "scientific management". This extension of job-related skills is developed to enhance employee job competence and proficiency to achieve overall corporate goal attainment. With this approach, any or all personal and motivational benefits gained from the technology integration become a secondary, or serendipitous achievement (Pickett, 1997).

A second perspective utilizes the technology component as a means-end, process or integration of skills. This notion is typically demonstrated in the K-12 classrooms in ways such that either the lesson is "enhanced" through the use of multi-media, Internet or any means of technology interaction between the individual(s) and the technology media. This approach, while introducing the technology component, views technology as a separate entity in the setting (Pickett, 1997).

The third view integrates current technology to achieve an extension of the self, in other words, learning theories (e.g., distributed learning, constructivism and collaboration) and educational technology principles (e.g., newsgroups, chat rooms, etc.) are integrated with introspection, mentoring and life experience to cultivate a learning environment that provides the experiential-type of learning environments more closely aligned with current adult learning theory research (Pickett, 1997).

To clarify the above view, a definition of some general terms in adult learning theory is in order.

Definition of Terms

Cooperative Learning

"Cooperative learning tends to be more structured in its approach to small-group instruction, to be more detailed in advice to practitioners, and to advocate more direct training of students to function in groups than does collaborative learning" (Matthews & Cooper, On-line).

Collaborative Learning

"Collaborative learning practitioners are inclined to assume students are responsible participants who already use social skills in undertaking and completing tasks. Therefore students receive less instruction in group skills and roles and perform less structured reflection on group interaction than in cooperative-learning classrooms" (Matthews & Cooper, On-line).

Constructivist Learning Theory

Constructivist theory posits that learning is constructed by a student through two processes: the resolution of conflict and reflection about theory. In essence, the students are "...self-structured..." and, "...self-motivated..." (Strommen & Lincoln, On-line).

Socio-Cultural Theory - Zone of Proximal Development

Socio-cultural theory focuses on the causal relationship between social interaction and the individual's cognitive development. The zone of proximal development (ZPD) is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under the guidance or in collaboration with more capable peers (Vygotsky, 1978).

Situated Learning/Knowledge

According to Brown, Collins and Duguid (On-line) there is an assumption of a separation of knowledge between "knowing" and "doing". Knowledge is assumed to be self-sufficient and independent of the situation in which they are learned. Situated learning posits that the situation in which knowledge is learned is an integral part of what is learned i.e., "Learning and cognition, it is now possible to argue, are fundamentally situated" (Brown, Collins & Duguid, On-line).

Constructs of Adult Learning

Johnson and Johnson's (1993) meta-analysis of studies using college students as subjects found that of the 120 studies that have been completed since 1924, 70% have been completed since 1970. Some of the outcomes other than greater individual achievement were that cooperative learning builds positive relationships, increases self-esteem and leads to greater intrinsic motivation to learners. It is beyond the scope of this paper to include all studies, however, Johnson and Johnson's meta-analysis does bring focus to the derived benefits of cooperative learning in general.

Adult Learning

Malcolm Knowles pioneered adult learning and identified several characteristics of the adult learner to include autonomy, self-direction, accumulation of life experiences and knowledge, goal-orientated, relevancy-oriented, practical and a need to be shown respect (Lieb, On-line).

Experiential Learning

Dewey (1916), as an advocate of educational reform, not only viewed education as a condition of growth, but also saw experience as a biological and social transaction. Kurt Lewin's influence in the field of social psychology led to the development of 12 principles of experiential learning (Sherman, 1996):

1. Effective experiential learning will affect the learner's cognitive structures (action theories), attitudes and values, perceptions and behavioral patterns.
2. People will believe more in knowledge they have discovered themselves than in knowledge presented by others.
3. Learning is more effective when it is an active rather than a passive process.
4. Acceptance of new action theories, attitudes, and behavioral patterns cannot be brought about by a

piecemeal approach - one's whole cognitive-affective-behavioral system has to change.

5. It takes more than information to change action theories, attitudes, and behavioral patterns.
6. It takes more than firsthand experience to generate valid knowledge. Besides experience, there needs to be a theoretical system that the experience tests out, and reflection on the meaning of experience.
7. Behavior changes will be temporary unless the action theories and attitudes underlying them are changed.
8. Changes in perceptions of oneself and one's social environment are necessary before changes in action theories, attitudes, and behavior will take place.
9. The more supportive, accepting, and caring the social environment, the freer a person is to experiment with new behaviors, attitudes, and action theories.
10. In order for changes in behavior patterns, attitudes and action theories to be permanent, both the person and the social environment have to change.
11. It is easier to change a person's action theories, attitudes, and behavioral patterns in a group context than in an individual context.
12. A person accepts a new system of action theories, attitudes, and behavioral patterns when he or she accepts

membership in a new group.

Socio-Cultural Development

Vygotsky's (1978) socio-cultural development theory, to include the zone of proximal development (ZPD), provides the tools through which the social mind develops in which learners mediate through an activity. Vygotsky sees the mind as "...unlimited in the sense that its development is inseparable from the tools of mediation, which themselves are often corporeal things..." (Smagorinsky, On-line).

Similarities and Differences in Cooperative and Collaborative Learning

According to Matthews and Cooper (On-line), the areas in which cooperation and collaboration differ are, 1) the style, function, and the degree of involvement of the teacher, 2) the issue of authority and power relationships between the teacher and the students, 3) the extent to which the students need to be trained to work together in groups, 4) how knowledge is assimilated and constructed, and 5) a variety of implementation concerns.

Matthews and Cooper (On-line) also posit similarities between the two schools of thought such as 1) active learning is more effective than passive learning, 2) teacher's roles as facilitators and coaches, 3) balancing of lecture and small group activities, 4) development of higher order thinking skills, 5) intellectual development is enhanced as students share in the responsibilities of learning, 6) increased abilities to reflect on assumptions and thought processes, 7) the development of social and team skills, 8) increased retention and student success, and 9) the appreciation of diversity.

An Educator's Challenge for the Future

Paul Hersey, when asked at a recent Academy of Management meeting, "How did Situational Leadership come to be?" Hersey's response was, "By standing on the shoulders of giants, you are able to see farther" (P. Hersey, personal communication, August 9 & 10, 1998). Indeed, a very powerful metaphor which respectfully acknowledges the great works of previous scholars. Of the many giants that contributed to the evolution of Situational

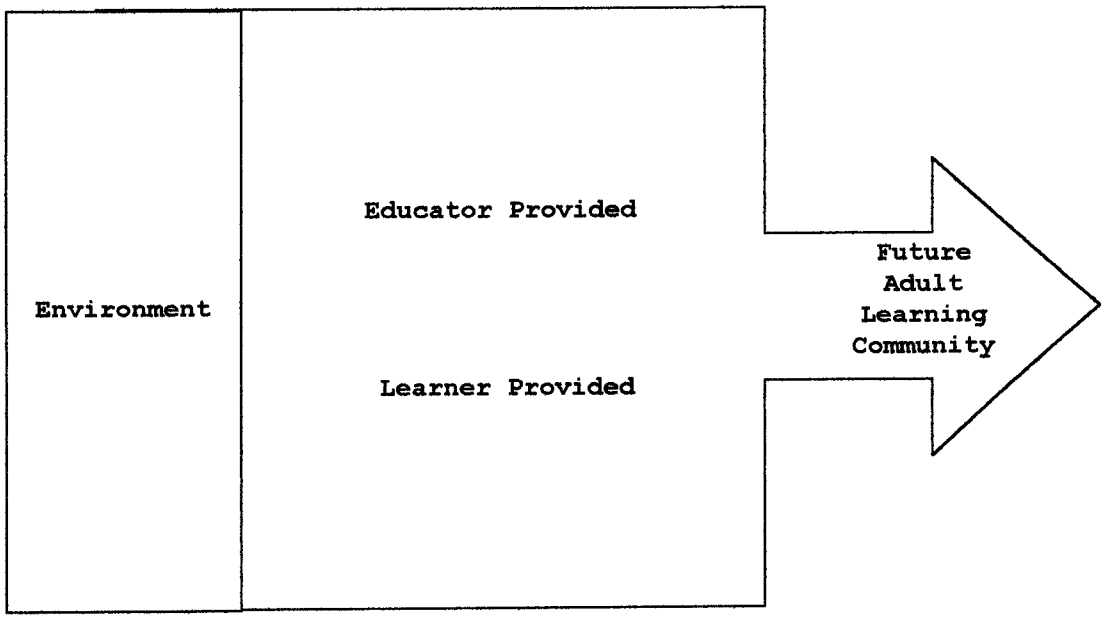
Leadership, the most significant giant that Dr. Hersey spoke about was Abraham Maslow.

The intuitive appeal of Maslow's hierarchy of needs has indeed enriched many lives though many scholars were unable to validate its proposed results through their studies. However, the central focus of the theory and model were that of well-defined needs. The adult learner, as mentioned previously, has very specific needs that differ from the non-adult learner. Therefore, educators must continually challenge themselves to acknowledge the core foundations of the very diverse adult learning community that is now a very strong and growing component of higher education.

A Proposed Framework for Adult Learning

The following proposed framework builds on previous research and attempts to operationalize adult learning androgogy.

Figure 1. Framework for Future Adult Learning Community.



Learner Provided

- Autonomy
- Self-Direction
- Goal-Orientation
- Perception, Attitudes, Behaviors
- Skills
- Life Experiences
- Need for Respect

Educator Provided

- Collaborative/Constructivist Environment
- Relevance
- Experiential Learning
- Problem-Orientation
- Zones of Proximal Development

With an understanding that the learner is the center of the learning process, educators begin by providing a learning environment that challenges and extends the adult learner's "self". The educator then builds and extends the learner provided components through experientially-oriented learning environments, based on appropriate and

relevant situational environmental issues (Figure 1.) that will prove to enhance and build mutual respect between all participants.

Lastly, the situated context of the learning environment places a maximum emphasis on,

1) group activities and development of social and team skills
2) higher order critical thinking skills
3) intellectual development
4) shared responsibilities in self-regulated learning
5) abilities to reflect on assumptions and thought processes.

It is in this way the overall educational environment contributes to future adult learning communities. At this point, one may ask, "Where does the technology component fit in?" Alas, we have come full circle to understanding the value of the third view of technology integration - seamless and invisible; as an extension of the self.

This particular notion is not common and may not be popular in some circles as most schools of thought view technology as a separate component, hence perceiving the technology integration from either views one or two. However, this writer views technology as being integrated into the "situatedness" of the contextual adult learning experience.

If Socrates had a PC…

Socrates' ability to draw forth knowledge through a series of questions and implications of the student's answers led to the methods that we know today as the Socratic Dialog. This method is extremely effective in developing provocative thought, critical thinking skills and reinforces several of the previously mentioned principles of experiential learning. Two such examples are that people will believe more in knowledge they have discovered themselves than in knowledge presented by others and learning is more effective when it is an active rather than a passive process.

If Socrates had a PC, there is no doubt that he would have mastered the nuances of the device without reluctance, as he once stated, "Let him that would move the world first

move himself", or, "Wisdom begins in wonder".

If Socrates had a PC, the dialogic art form that he so keenly developed would not have been hampered by the technological maladies we experience today. Why? - because Socrates' true wisdom was evident through the debates of virtue and the disclosure of ignorance, hypocrisy and conceit. To eclipse the quest for knowledge and wisdom for the sake of technological integration would most certainly qualify to Socrates as, "…one evil…" or, that of ignorance.

It is evident that the Socratic view of knowledge and wisdom were situated in the activities and experiences of the moment, and as such, the collective nature of the Socratic Dialog will forever be espoused in the principles of future adult learning communities.

By seeking a greater understanding of adult learning needs, Socrates' one good, the precious gift of knowledge, passed on to us so graciously by the great philosophers, will prevail from within our future learning communities

-- even if Socrates had a PC.

References

Bolman, L.G., & Deal, T.E. (1997). Reframing organizations (2nd ed.). San Francisco: Jossey-Bass.

Brown, J.S., Collins, A. & Duguid, P. Situated cognition and the culture of learning. [On-line]. Available. http://www.ilt.columbia.edu/ilt/papers/JohnBrown.html

Dewey, J., (1916). Democracy and education. New York: The Macmillan Company.

Johnson, D. & Johnson, R. (1993). What we know about cooperative learning at a college level. Cooperative Learning, Vol. 13, No. 3.

Lieb, S. Principles of adult learning. [On-line]. Available. http://www.hcc.hawaii.edu/education/hcc/facdev/AdultLearning.html

Matthews, R.S., Cooper, J.L. Building bridges between cooperative and collaborative learning. [On-line]. Available. http://www2.emc.maricopa.edu/innovation/CCL/building.html

Pickett, M.C. (1997). (unpublished). Doctoral Consultancy Proposal for ED785, Pepperdine University.

References (cont.)

Sherman, L.W. (1996). Cooperative learning in post secondary education: implications from social psychology for active learning experiences. Presentation at American Educational Research Association, Chicago, Il. [On-line]. Available. http://miavx1.muohio.edu/~lwsherman/aera906.html

Smagorinsky, P. The social construction of data: methodological problems of investigating learning in the zone of proximal development. [On-line]. Available. http://www.glas.apc.org/~vega/vygodsky/smagor.html

Strommen, E.F. & Lincoln, B. Constructivism, technology, and the future of classroom learning. [On-line]. Available. http://www.ilt.columbia.edu/ilt/papers/construct.html

Vygotsky, L.S., (1978) Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

DISTANCE LEARNING ON THE INTERNET:

A SITUATIONAL ANALYSIS

BY

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ABSTRACT

Embry-Riddle Aeronautical University (ERAU) recently began using WebCT as an interface tool to link the university's graduate aviation courses to its worldwide distance education student body. This report provides a qualitative SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) of the pilot-study course used by the university to determine the effectiveness of the new interface. The purpose of this situational analysis, written by the instructor of the pilot-study course, is to provide feedback to educators and administrators interested in learning more about distance learning using the Internet as the link between an educational institution and its students. Distance learning has emerged as the brightest star on the horizon of higher education innovation over the last decade and using the Internet to deliver materials to the learners is a trend that is not likely to go away. The author concludes that distance learning on the Internet has many advantages over face-to-face education but that there are a number of threats that must be addressed to protect the integrity of the institution implementing this type of degree program.

INTRODUCTION

Colleges and universities around the world, including Embry-Riddle Aeronautical University, are facing growing demands for education that is at the same time more effective and less costly. As a result of these pressures, Distance Learning has emerged as the brightest star in the horizon of higher education innovation over the last decade. Distance Learning, delivered electronically to students in their own domain, is a strategy for adapting to a changing external environment that is now embraced by schools everywhere. . As traditional place-based, face-to-face educational providers find themselves struggling to sustain quality educational programs because of shrinking budgets and enrollments, those institutions that are providing relevant distance learning programs are enjoying significant growth and increases in enrollment.

As with any academic innovation that challenges traditions that date back to Plato's time, this alternative to a "face-to-face" learning environment is, unfortunately, either contentious or confusing to many within the academic community. Although resistance to change is common throughout society, educators sometimes demonstrate remarkable tenacity in defending status quo. Although challenging, the task of obtaining faculty buy-in on this new approach to educational delivery will be promoted by expanding awareness of the benefits of Distance Learning. Equally important, it will benefit both the providers and the users of this exciting new delivery system if some of the glaring weaknesses can be corrected through the communication of their inherent threats to an audience that needs to know. The trend toward the proliferation of Distance Learning is not likely to weaken. However, the weak programs ***are*** likely to fail and that should be a concern to everyone with an eye on the horizon.

BACKGROUND

Embry-Riddle Aeronautical University (ERAU) has been a leader in the planning, design, development, implementation, and evaluation of Distance Learning (DL) courses in aviation-related education for over a decade. In

1993, the university began providing asynchronous graduate courses using the computer-mediated distance learning software and technologies available at that time. Recently, higher education's efforts to provide DL programs have been given a favorable tail wind by the emergence of an array of powerful new software tools that provide schools with the ability to interface their education offerings with the World Wide Web (WWW) or Internet. After reviewing a number of these new interface tools, the University's Instructional Technology (IT) Department selected WebCT as the best choice for the institution's situation. WebCT is described as an interface tool that facilitates the creation of World Wide Web-based educational presentations that can be accessed by anyone having an Internet connection.

After selecting the WebCT software, the next step was to pilot test the interface with one of the University's existing master's level courses. The pilot study was to determine the feasibility of switching all DL courses to the new interface and dropping the CompuServe interface that was being used to connect students worldwide. The pilot test involved the delivery of MAS 606, Aviation/Aerospace Communications and Control Systems, using WebCT as the interface with students. The purpose of the pilot test, which the writer teaches, was to evaluate the "fit" between a university course, the new WebCT interface, the World Wide Web, and the university's unique student population.

The purpose of this paper is to provide a qualitative evaluation of the results of that pilot study. To evaluate how well a system is performing, one of the tools frequently used is a SWOT analysis. The acronym SWOT stands for Strengths, Weaknesses, Opportunities, and Threats. SWOT analysis is grounded in the basic principle that an organization's strategy must aim at producing a good fit between the institution's resources and its external situation (Thompson & Strickland, 1998). In addition to the identification of relevant (a) strengths, (b) weaknesses, (c) opportunities, and (d) threats, the author offers some conclusions based on the experience gained in this study.

STRENGTHS

If we define a *strength* as something that

we are good at or a characteristic that makes us more competitive, then we should also have something to benchmark a strength against. In the current study, we will use conventional, face-to-face (FTF) instructional delivery systems as the basis for comparison as we discuss Distance Learning (DL) on the Internet.

Access. One of the obvious benefits of DL via the Internet is rapid access. DL courses can be delivered to students living anywhere in the world as long as they have access to the Internet. The asynchronous mode in which ERAU CDL courses are provided is ideal for allowing our students the freedom to work on course work when it is convenient for them. In face-to-face (FTF) classes, the material is normally presented during the day at a time convenient to the instructor and the institution. When students are free from the constraints of learning place and time, they can better manage their career and family responsibilities in a way that best suits them. For busy aviation professionals, this is truly a characteristic that gives DL an advantage over FTF environments. If student-centered learning is "better," then DL on the Internet wins because it is obviously more "user-friendly" than FTF.

Power. Effective learning environments should involve frequent and personalized interactions among the learners and the instructor. In the pilot MAS 606 class, there were over 1200 "hits" recorded on the WebCT counter. This level of interaction far surpassed any face-to-face class I have ever taught in over 20 years of teaching. In addition to the sheer number of hits during the semester, the quality of the interaction and the depth of the exchanges between students was a defining experience for me and, apparently, from their end of course comments, to the students as well. The value of this interaction is vested in the *sharing* of knowledge and opinions between classmates. Instead of one "more-knowing " instructor and a group of "lesser-knowing" students, the interaction was based more on individuals with expertise in a given area sharing their knowledge with the rest of the class. Keep in mind that many of our students are experts in their own right and this delivery system allows them to "step up to the plate" when the questions involved an issue in their professional domain. The

members in this pilot-study class represented a diverse cross section of the aviation industry. There were many pilots (air carrier, military, corporate, and general aviation), and representatives of government, industry, and business in the class.

Other DL writers have addressed the benefits of "empowerment" inherent in an Internet-based delivery mode. In this pilot study, the writer observed the impact of this "empowerment" phenomena and it was a convincing, reinforcer of the intrinsic value this mode of instruction.

Cost-effectiveness. The economic benefits of DL are the primary driving forces in the rapid expansion of this form of educational delivery system. Distance learning is increasingly seen as a means to boost educational productivity and improve cost control. Institutions everywhere have recognized the financial advantages to be gained through videotaping a course one time and then using the same course every semester for several years without having the usual faculty salaries or additional production expenses. Depending on the number of enrollments, this can become a "cash cow" that pays a lot of the institution's other expenses.

Automation. Using WebCT for DL creates a far more efficient way to exchange information and messages, retrieve and store data, log assignments, and analyze student performance (grade papers using computer applications, record number of forum hits, etc.) than would be possible in a FTF environment. Students in the DL classes are actively composing responses to questions and interacting with others electronically in a manner not unlike the chat groups people engage in for fun. In the MAS 606 class, students were required to research and upload 10 abstracts as a course requirement. With 19 students, this resulted in nearly 200 topic-specific articles that were shared and commented on by other members of the class. This level of collaboration, involvement, and sharing of information would be impossible in a FTF class.

WEAKNESSESS

The learning curve. WebCT is a very powerful interface tool with an extensive array of features and constructs that can increase the sophistication of the learning experience.

It is not especially easy to learn, however, and a novice will quickly find that it is NOT a point-and-click kind of software. For this reason, institutions planning on converting to WebCT should also plan on providing training to its faculty before the semester actually begins. Adequate technical support should also be provided to answer questions from both faculty and students during both day and at night. Distance learners can quickly begin to feel isolated when they cannot access a course they have enrolled in and there should be someone available to help them solve the insidious software problems that always come up with new software.

The FUD factor. Fear, uncertainty, and doubt (FUD) is a condition that dissuades many faculty and students alike from joining the ranks of those who are working with technology and the World Wide Web environment. Other researchers have come to the same conclusion:

> Unfamiliarity with and fear of distance education technologies represents the single biggest problem in distance learning today. Teachers need to become comfortable with the hardware, to understand how the signal flows through it, to become familiar with media production, and to have guided, hands-on practice designing and delivering courseware in a non-threatening environment. Then, they will be able to focus on the learners rather than on the technology itself." (Sherry & Morse, 1995, p. 5).

As the trend toward increasing the university's commitment to DL delivery continues, it will be necessary to recruit and train additional faculty to avoid the frustrations that can occur when neither the faculty or the students know how to solve the software problems that inevitably come up.

Instructor time. It takes much longer to design, develop, and deliver a course in the DL mode. In FTF education, a professor walks into a classroom, gives his/her spiel and walks out. In a day or two, s/he reenters the room, gives his/her spiel and walks out. Student assistants help out with the grading of tests and other administrative activities. In the DL on the Internet mode, classroom activities take place on an around the clock basis. Students are uploading work from

wherever there are at whatever time they feel like working. Furthermore, they want feedback from the instructor so as to stay in a comfort zone. The instructor, therefore, is responding, or should be, to every student in the class. This need to respond to students on a regular basis easily consumes several hours a day every day of the week. Downloading files, grading papers and tests, reading the online communications, answering student's e-mail, posting grades, and maintaining the forum are all very time consuming activities. Compared to FTF faculty work, DL is much more work at much less pay, a condition that will not serve to attract full-time professors to the ranks of the university's DL program.

OPPORTUNITIES

WebCT courses on the Internet can be offered to students worldwide. This opens up an enormous student market to the university. The compelling advantages to students include the freedom from location and time constraints, the potential cost savings, the ability to stay active in one's career (and be on the payroll) and still obtain an education. Another bonus comes from having the opportunity to "work" industry problems within the context of the course requirements. The University, in turn, has the opportunity to target large student populations and offer educational opportunities to those working adults to whom there are no practical alternatives.

The DL courses ERAU offers are especially attractive to those busy aviation professionals who travel a lot and are away from home a great deal. Students can work from home, their office, an airplane, a hotel room, and at any time of the day or night.

Internet-based delivery also allows the institution to integrate new learning paradigms in which teachers, technology, and students are linked in exciting new environments that offer significant increases in speed and accessibility as well as greatly expanding the sources of relevant information. Because aviation is a dynamic, rapidly changing industry, aviation education should also be dynamic and be rapidly responsive to its students. Internet-based courses, such as MAS 606, provide a seamless interface with a wealth of current aviation events

that would not be available in a ground-based school setting. Contrary to popular opinion, many on-campus students do not have a computer and/or access to the Internet. By contrast, all CDL students have the required equipment and most are very proficient in using them.

THREATS

Until recently, the University managed its distance learning courses in a manner that recognized the limited "shelf-life" of courses relating to the aviation industry. Courses were revised every two years and updated to insure the material was relevant. This policy has changed, unfortunately, and an administrative decision has been made to discontinue the two-year limit on course run. Contracts have been changed to delete the two-year time limit and consideration is being given to finding ways to reduce the faculty role in the development and presentation of these courses. These are apparently cost cutting measures that are meant to increase the profits generated by distance education courses. While saving money is always important, those that save it at the expense of quality should be reminded that Embry-Riddle became the world's preeminent aviation university because of its world class excellence, not because of its thrift.

Most of our students are employed within the aviation industry and are aware of the changes taking place within that environment. Out of date course materials stand out like a beacon to this crowd. These students are also our best source of advertising for our graduate programs. Our reputation as the school with the best graduate program for aviation professionals could quickly change to that of being a "diploma mill" if our students perceive we have failed to provide them with the current and relevant education they expect for their tuition dollars.

CONCLUSIONS

On the basis of the experiences obtained in this pilot-study, WebCT, with the new Internet connection, is significantly better than the traditional FTF classroom environment in meeting the current and future educational needs of a majority of the aviation education student population. Judging from the end-of-course comments submitted by the 19

students who completed the pilot study, DL on the Internet is a "home run" and a welcome improvement over previous classes most had taken.

From the faculty perspective, there was significant improvement in all areas of student performance, e.g., class participation, course completions, grades, participation, student interaction, etc. This course was definitely a more exciting and better learning experience than the typical FTF class. While one class does not provide sufficient evidence to support sweeping generalizations to all DL classes, it did provide the positive results needed to justify the green light for putting other ERAU DL courses on the Internet.

RECOMMENDATIONS

Offering DL courses on the Internet is a high-potential, high-risk educational innovation that has the power to leverage an institution's future dramatically. The schools that prudently manage their involvement in Internet-based education to ensure that only relevant, high-quality materials are offered will find themselves with a growing student market that is almost limitless. For this reason, schools should carefully monitor the distance education programs to insure the standards of quality are not lost in the ever-present need to stay ahead of increasing costs. Administrators may be attracted to Internet-based education because of the economies of scale that it offers and become overly focused on the profit potential to the point that there is a risk to the program's quality. Schools should either excel in Distance Learning or get out of it.

REFERENCES

Thompson, A. A, & Srickland, A. J., (1998). Strategic Management: concepts and cases. (10th ed.) Chicago: Irwin

Sherry, S. & Morse, R. (1995). An assessment of training needs in the use of Distance Education for instruction. [On-line] Available: http://www.cudenver.edu

Annual Symposium on Teaching Effectiveness

Is Socrates dead [in Mathematics]?: The role of the Mathematics Teacher in Higher Education now and for the next ten years

by
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Abstract

Is Socrates dead [in Mathematics]?:
The role of the Mathematics Teacher in Higher Education now and for the next ten years

Socratic questioning is an important tool of the mathematical trade for mathematicians and students alike. Simply "turning the crank" is not mathematics. Without the willingness and/or ability for Socratic thought new worlds of mathematics for the future may not be invented nor discovered. Therefore, future students of mathematics need not only be taught to learn from the past but to question toward the future as well. Consequently, the teacher of mathematics must fill a dual role: a) that of purveyor of facts and methods for the application of those already established structures that comprise mathematical thought and b) that of instructor in detective-ability.

As new initiatives promote "knowledge that integrates and synthesizes the perspective of several disciplines into mathematics education is faced with the opportunity to present undergraduate mathematics in context; mathematics rising out of literature, art, and/or the sciences; meaningful mathematics demanding attention because of its source. Teachers of mathematics have analytical approaches and concepts that apply across pedagogical boundaries as both method and metaphor in understanding and explaining the world around us, as is exemplified in many literary works. The mathematics immersed in literature, such as Richard Powers' *Galatea 2.2*, gives rise to powerful language which, for understanding of the metaphor, requires investigation into the meaning of the mathematics. The internet can be incorporated into learning as well as use of the computer, itself, or the graphing programmable-calculator. The internet provides look-up of text, such as *Alice in Wonderland* or *Flatland*, for reading facts and detecting meaningful relationships for mathematical understanding and applications as well as search and communication capabilities. When students combine these components and others to produce their own results, thinking involvement on many levels is at work in the process, as the facts are combined with critical processes. Consequently, the role of the mathematics Teacher in Higher Education now and for the next ten years must be to prepare students for worlds yet

unseen and to face ideas that are unexpected and, perhaps, unwelcome.

Is Socrates dead [in Mathematics]?: The role of the Mathematics Teacher in Higher Education now and for the next ten years

Analyzing the Question

When mathematicians consider Socrates, immediately critical thinking comes to mind. Socratic questioning is an important tool of the mathematical trade for mathematicians and students alike. Mathematicians, themselves, must engage in questioning. Moreover, if this questioning spirit is not conveyed to students of mathematics, their mathematics exercise is just that, an exercise. Mathematics becomes a labor in futility when Socratic questioning is omitted from the mathematical process. Simply "turning the crank" is not mathematics.

The mathematician builds worlds upon worlds through questioning and developing ideas that rest upon ideas already developed. Mathematics, in itself, has developed as a way to understand and explain the world around us. During the fourth and fifth centuries BCE, the Pythagoreans investigated the physical world using whole numbers--0, 1, 2, 3, . . .-- and ratios of whole numbers--1/2, 3/4, 5/2. When their "Golden Ratio" was shown to be something other than a ratio of whole numbers (Wheeler, p.308), the Pythagoreans dissolved, unable to investigate the implications of the unwelcomed discovery. Fortunately, others went forward, investigating for themselves. Without the willingness and/or ability for Socratic thought new worlds of mathematics for the future may not be invented nor discovered.

Teachers of mathematics cannot omit the questioning skills from the mathematics that they teach. Therefore, future students of mathematics need not only be taught to learn from the past but to question toward the future as well. The student may need to practice mathematics for a particular skill or in an application presented at the moment, but to use the skill in the future will require that students be taught Socratic critical-ability to question. Consequently, the teacher of mathematics must fill a dual role: a) that of purveyor of facts and methods for the application of those already established structures that comprise mathematical thought and b) that of

instructor in detective-ability.

A purveyor of facts and methods simply is a "show-and-tell" supplier. The student sees, copies the supplier, practices, and becomes skilled at the level of practice: a) much practice, high skill level; b) not much practice, shaky ability level; and c) no practice, little skill unless overcome by an exceedingly high talent. On the other hand, the instructor who develops the student's detective-ability challenges the student in various ways to become one who questions effectively and follows the clues which the answers to the questioning bring. First, the student-detective must have the facts and methods to base probing upon. Then, the student can be directed to pursue thought. The teacher acting in these dual roles and using innovative, meaningful ways must reach beyond disciplinary bounds.

Teaching Mathematics In 2000+

Background

During the past few years a movement toward Interdisciplinary Studies has exploded (DeZure). In the past, interdisciplinary has been attempted without removing the disciplinary aspect. As new initiatives promote "knowledge that integrates and synthesizes the perspective of several disciplines into a construction that is greater than the sum of its disciplinary parts" (DeZure, p.1), mathematics education is faced with the opportunity to present undergraduate mathematics in context; mathematics rising out of literature, art, and/or the sciences; meaningful mathematics demanding attention because of its source; mathematics sans isolation. Although many Interdisciplinary Studies courses exclude mathematics from their purview, "movement of methods and methods and analytical approaches across disciplinary boundaries has become an important feature of knowledge production today." (Klein, p.3) Teachers of mathematics have analytical approaches and concepts that apply across pedagogical boundaries as both method and metaphor in understanding and explaining the world around us, as is exemplified in many literary works.

Galates 2.2

The mathematics immersed in literature, such as Richard Powers' *Galatea 2.2*, gives rise to powerful language which, for understanding of the metaphor, requires

investigation into the meaning of the mathematics. Some mathematical ideas used by Powers in compelling new ways are: a) algorithms, b) sine curve, c) isomorphic contour map, and d) Turing machine. His words, "The universe will be its own index. The *isomorphic* contour map, the way the data get packed together." (p.85) are exiting, inviting mathematical discovery and discourse about functions especially those that are isomorphic mappings. Words like "Now, when B started to do its *premutational* thing, I learned to say no." (p.90) move one to investigation into what combinations and permutations are all about.

Other investigations are stimulated by words like "The brain, Lentz had it, was itself just a glorified, fudged-up *Turing machine*." (p.70) Turing machine investigations, as well as other investigations, may be done via of internet searches or using appropriate logic text books. Students are usually highly receptive to using the internet, and, if they are reluctant, they soon become excited concerning internet use when given minimum instruction on its use. http://obiwan.univ.edu/computing/turing/more.htm is one of many sites featuring Turing machine information.

The university site gives a clear explanation of the Turing machine operation. However, to enhance understanding, students, under the teacher's direction, will find that a simple model of the Turing machine may be made of paper. A paper "triangle" (this shape is not sacred, just easy to cut and to hold when using), which has a small square cut from the middle to serve as a viewing area, a slit cut on either side of the viewing area to hold the instruction tape, and a paper strip which is no wider than the machine's slits and which houses blanks, zeros, and ones. The machine's *algorithm* is given as a five-tuple of instructions: state of the machine, what is read, the direction (left or right) to move, what is printed, and the new state of the machine. Iteration of the algorithm constitutes the machine's function being carried out until it halts. (It should be noted as well that the halting problem is an issue as well.)

Galatea 2.2 is no stranger to Trigonometry either. "The man's long, accreting addiction that made every day a sine wave of new hope crushed." (p.59) are words that bring

up the image of the periodic sine curve. The student can relate the graph of this curve to the metaphor it inspires. With a graphing calculator or by hand, graphing the sine curve which is presented in this context deeply impresses the student by intertwining the text with mathematics in an unforgettable liaison.

Alice in Wonderland

Many more pieces of literature serve to bond the relationship between mathematics and metaphors of our world. *Alice in Wonderland*, of recent television fame, holds number controversy high. During the time period in which it was written by Lewis Carroll, negative integers were suspect by many as non-numbers. Students that are steeped in the "number line" of more modern times cannot imagine negative-one missing from the hallowed line. Although movie versions rarely portray the text "to the letter', fame enhances the perceived value of a text. Interestingly, even in reading the February 27-March 5 *TVGuide* 's description of the current depiction of *Alice* the student would find: "'We've *amplified* everything.' The March Hare, with its freaky *asymmetrical* eyes, scared Majorino." (p.21-22). It is mathematics that amplifies sine curves and that speaks of symmetry in various venues. With magnification and dilation as well as other topological wonders all taking place on Alice's body and in her surroundings, mathematics awareness, interest, and investigations take on new depths and meanings.

Flatland

Not only is *Alice* and other mathematically useful literature, such as *Flatland*, available at libraries and in bookstores, but such materials are accessible on the internet from several web sites. For example, *Alice* may be found along with musical accompaniment at http://www.megabrands.com/alice/goalice.html?. Retrievable at http://www.msc.cornell.edu/~rick/flatland/flatland.html, *Flatland* is a small, captivating book featuring geometry. The author, Edwin Abbott, relates a story of life in two-dimensions, before and after the invasion of Flatland by one from a world of three-dimensions. The book sparks much conversation and is highly

thought provoking. Additionally, it points to how reticent society is to accept new paradigms and concepts that shatter "holy cows", an issue faced by mathematicians and scientists such as Galileo, Einstein, and others who recognized truths that had before been unseen.

Including Interdisciplinary Approaches

When students become involved in mathematical truths from contexts of history or interesting literature, investigations into the history of the times and makeup of the mathematicians personalities and lives can be incorporated into the study of the actual mathematical concepts. When such an interdisciplinary approach is included in students' studies, meaning and retention is enhanced. Incorporating technology, history, literature, and concepts strengthens the approach to the material. Approaching a topic from several aspects allows for students with different learning strengths to participate more fully in the learning process. Afterall, mathematics does not result from a vacuum but develops in a context of personality, the times, and history--that which has proceeded the new development. Another feature of the general education approach is that it highlights the truth that mathematics is an evolving body of knowledge, a discipline that is neither stagnate nor completed.

The interdisciplinary approach may be used to go beyond logical skills and pointedly mirror the discipline and self (Newell,1992, p.220). Consequently, an important feature of the interdisciplinary approach is that, when the world view and underlying assumptions of the discipline are made explicit (p.506), a strong sense of critical thinking is promoted and mathematics is revealed as more than computation and calculation that can be carried out with computing devices.

Learning with Technology

Technology and mathematical thought are not mutually exclusive either. Technology has become an increasingly important part of our daily life. In the mathematics classroom, students experience and understanding of the concepts can be enhanced by using technology at an

integral part of the learning experience. The graphing programmable-calculator is useful but cannot replace certain aspects of mathematical accomplishment. Assuredly, mathematics is not *answers*. Rather, mathematics is procedures and thought processes which require critical thinking. However, as a tool the graphing programmable-calculator may be used in many settings. One application would be graphing complicated functions once a student has learned to graph for himself. Calculator skills, combined with previous facts, knowledge, and skills of how to graph, speed other processes which would be the focus of the learning. The facts are the basis for the ability to make meaning of the use of technology.

The internet can be incorporated into learning as well as use of the computer, itself, or the graphing programmable-calculator. The internet provides, look-up of text, such as *Alice* or *Flatland*, for reading the facts and detecting meaningful relationships for mathematical understanding and applications. It also provides the ability to search for facts and information from many sources around the world, as in the case of Turing-machine facts. To only use the computer as a source of tutorials or as a wordprocessor omits much of its power from use for learning. It takes critical thinking to use known facts and information to decide what search is needed, what information to retrieve, and what use of the information is appropriate. When students combine these components to produce their own results, thinking involvement on many levels is at work in the process, as the facts are combined with critical processes.

Searching for Socrates

If the answer to the question "Is Socrates dead [in Mathematics]? ",is "Yes", indeed, the discipline has lost its future and becomes dead as well. If the caution of A.N. Whitehead, that it is a "common error to assume that, because prolonged and accurate mathematical calculations have been made, the application of the result to some fact of nature is absolutely certain."(TCU, p.1), becomes a stumbling block, the doors to tomorrow's new worlds close. In applying mathematics, it is mandatory that Socratic questioning live and that the facts are put together

References

Abbott, E.A. (1984). Flatland. NAL/Dutton.
Carroll, L. (1995). Alice in wonderland. B&N Distribution.
DeZure, D. (1999, February). Interdisciplinary teaching and learning. Teaching
Excellence. p. 1-4.
Hatcher, R. (Ed.). (1999, April). TCU Math Newsletter.
(Available from
Department of Mathematics, Texas Christian University, Fort Worth, Texas)
Klein, J.T. (1999). Mapping interdisciplinary studies
(Second in a series of
discussion papers for faculty members and academic leaders). Washington,
DC: Association of American Colleges and Universities.
Panek, R. (1999, February 14). Art and science: A universe apart? The New
York Times, pp. 1, 39.
Weeks, J. (1999, February 27). An awesome Alice. TVGuide, pp.18-22.
Wheeler, R.E. & Wheeler, E.R. (1998). Modern mathematics (10th ed.).
Dubque, Iowa: Kendall/Hunt.

Socratic ENGAGEMENT: 10 Ways to Get the Class Started - Andragogically, of Course!

By:

Dr. Gary Heartsill

Socratic ENGAGEMENT: 10 Ways to Get the Class Started - Andragogically, of Course!

"And the pilot - that is to say, the true pilot - is he a captain of sailors or a mere sailor?….Why do you ask such a question, I said, when you ought rather to be answering?" (*Republic*, Book 1).

Abstract - ENGAGEMENT is a plan; for sure, we all have our ideas on how to get on stage (center stage front) when it comes to "show time." This paper is a quasi tongue in cheek limited look at a few ways to "…create an educational program and setting in which adult students can develop their latent self-directed learning skills" (Brookfield, 1986, p. 92). Most of us need a plan to get on stage before we start a class. Having a plan is half the battle for engagement success. An andragogue/teacher/instructor/facilitator (ATIF) will look forward to lighting the fuse if he knows exactly how he is going to start the class.

ENGAGEMENT

G**E**T on stage.
I**N**TRODUCE with Power Point.
Use ANDRA**G**OGY
ASK a question.
You've only **G**OT three seconds!
Give a PR**E**-TEST.
Use the Socratic PARADIG**M**.
Give the P**E**FORMANCE objective.
Handout an OUTLI**N**E.
TELL a story.

1. G**E**T on stage - Walk in at precisely the starting time (students appreciate a punctual arrival and you know they are waiting for you to help stamp out aviation ignorance). My best start -- the one that gets the most attention -- is when I come in and stand on top of the desk to make my opening comments. I promise you they will not forget your first words - you won't have to say, "This will be on the test!" "*Research indicates…students in classrooms, where teachers have positive self-concepts, tend to have students with high self-concepts*" (AFMAN, 1994, p. 236).

2. I**N**TRODUCE with Power Point - Hit 'em with some cleverly designed and colorful slides - don't forget to use all the bells and whistles - and use an ample amount of *laser text,*

machine guns, and ta-das. "Adding visuals to a presentation can reduce the time required to grasp a concept by up to 40 percent" (Currid, 1995, p. 4). Course, you may have to use your own laptop to present your program, but *it does suggest that we promote and recommend the use of the computer in our training and teaching.*

3. Use ANDRA**G**OGY - No pedagogy in my class. Pedagogy is for kids. Tell your students right up front that you will be using andragogy and not pedagogy. Tell them that you expect them to learn at their own rate and you will provide "an atmosphere characterized by both mutual caring and support and intellectual rigor" (Knowles, 1975, p.

34). We facilitate the andragogical process by striving toward self-

direction. As Kidd has written, "the purpose of adult education…is to make the subject a continuing 'inner-directed,' self-operating learner" (1973, p. 47). *This also fills the "natural maturation" square for us andragogues* (Knowles, 1973, p. 54).

4. **A**SK a question - Start the class off with the question, "Let me ask you a question." Then apply **APPLE**:

A - ASK
P - PAUSE
P - PICK
L - LISTEN
E - EVALUATE

This is the beginning of "didactic dialogue." This is where facilitating begins. You must know your students and have knowledge of your subject to pull this off; however, you must find out where your students are before you can take them anywhere. This is what questioning will do. This is what probing will do. We must also remember as Wlodkowski (1985) suggests, "Always dignify the learner's response. The real fear for most adults in public responding is embarrassment" (p. 147). Socrates, as Morris (1966) says, "*by virtue of the planned sequence of queries…is sometimes alluded to as the father of all programmed learning" (p. 136).*

5. You've only **G**OT three seconds! - Your students will size you up in three seconds; indeed, they'll have your number. Lavington (1997) says, "It's not a comforting prospect to be judged so hastily, but that's the way it is" (p. 1). My best "three second impressions" are (1) wearing my camouflaged fighter pilot jacket to show that we sometimes have to do battle, and (2) throwing the checklist against the wall to show that you first have to solve the problem before you get into the books (This comes under the rubric of not letting the checklist do the thinking for you -- The checklist is to be used as a tool, not gospel). *This splendid opening helps explicate the term "FLY THE AIRPLANE!"*

6. Pr**E**-test - A pre-test will show intentionality. It will surely set the pace. It shows you mean business and that you take your job seriously. Consider a two or three page questionnaire that includes a few short demographics to see where

TEACHING STRATEGIES FOR TODAY'S COLLEGE CLASSROOM

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ABSTRACT

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

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

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

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

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

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

Teaching Strategies For Today's College Classroom

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

Alexander Pope
'An Essay on
Criticism'

Introduction:

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

It is a favorite pastime of students to discuss their professors. If you ever get a chance to listen in on them, it is enlightening. Much, if not most, of the discussions are on the personal level. They don't like one's ties and the other one's shoes. One shouts too much and the other one puts you to sleep. One never allows time for questions and the other is always getting off subject. And, so it goes… a lot of opinion without much depth. Should we really expect anything but this? Most of them have been sitting in a classroom for 12+ years: in many cases, a classroom where the teaching has been little more than adequate. Can we really expect these students to have developed an in-depth perspective of what the teaching-learning process is all about? We should be concerned about their critiques but we should also realize they could hardly be expected to come up with supportable thoughts about effective and efficient teaching based on theories commonly accepted in the discipline.

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

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

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

Background:

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

Effect of programmed texts on academic achievement under three different techniques of instruction.

Effect of class size on academic achievement and attitude.

Effect of intelligence and social atmosphere on group problem solving.

Study of the use of lectures to large groups of students when teaching the fundamentals of speech.

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

Comparison between lecture and discussion methods when teaching psychology.

Reading improvements as a function of teaching method.

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

(Davis, 1996)

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

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

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

> Lecturing appears to be an effective means for disseminating information but others appear to be much more important for achieving higher cognitive and attitudinal objectives.
>
> Discussion proves useful in accomplishing certain objectives but the method varies in its effectiveness according to how the discussion is conducted, the size of the group, and the

degree of student centeredness.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Yes, everything matters!

--Class size can make a difference.

--Motivation of the student can matter.

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

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

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

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

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

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

--Interpersonal relationships between faculty and students may matter.

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

--Teacher behavior can matter.

--Ad infinitum

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

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

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

Teaching Strategies

Behavioral Learning

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

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

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

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

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

The most important thing to remember about reinforcers is that their effect does not depend on their properties but rather on how an individual responds to them (Skinner, 1974). The use of a 'good grade' or a 'poor grade' as a positive or negative reinforcer is only as effective as the importance of grades is to the individual student. The wide range of learning behaviors, for which students can earn, depending on the individual faculty member, a 'good grade' gives cause to be concerned about the students' response to the reinforcer. Are these faculty members reinforcing mediocre learning behavior?

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

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

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

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

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

Most important for classroom application is to formulate general goals by describing them in behavioral terms and to implement them with complementary objectives that are relatively specific statements of learning outcomes expressed from the learners' perspective and that describe what the learner is ***to do.***

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

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

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

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

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

Cognitive Psychology

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

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

The earliest psychologists studied what

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

The behaviorist does not have much use for the formal lecture. The cognitive psychologist sees it as an opportunity to put an extremely complex process into motion. First of all, before we can process any information we must give our attention to it (Davis,1996). Researchers have shown that human beings appear to have an amazing ability to pay attention to an identifiable line of reasoning and pick it out of a jumble of stimuli. Some subjects of their research blocked out undesired stimuli so effectively, they weren't even sure it was there. When we do attend to something, we attend to it almost exclusively.

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

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

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

Or: IBM
CIA
IOU ?

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

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

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

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

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

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

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

Throughout the lecture the faculty member must keep in mind that his or her students are active processors of data. When they are truly listening, they are processing for essential features and patterns. The notes they will take are idiosyncratic codes for their perceptions. Handouts assist the student in making the coding process orderly and complete. Students will only follow what they give attention to and will only remember what, for some reason, they have made unforgettable. That 'reason' being what came out of the cognitive processing of stimuli. Any concepts other than those attended to and processed are but chaff that fall to the floor.

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

Inquiry

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

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

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

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

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

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

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

Problem solving (critical thinking) depends on the inquirer's ability to generate unusual solutions (answers) that are, despite their uniqueness, relevant (Werthheimer, 1969). Through it all there is reasoning but there is frequently intuition and guessing also. These kinds of mental processes seem to appear more frequently when there are situations too broad and complex for quick logical analysis. Don't be mistaken, intuition is an integral part of the inquiry process.

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

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

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

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

The faculty member's evaluation of their students will not be based on how many facts they have memorized but rather on how they have enhanced their ability to inquire. He or she will want to examine the frequency with which they ask questions; the relevance and cogency of their questions; the conviction of their challenges to other students' assertions; their willingness to change their position when data warrant such change, etc. In short, instructors who use an inquiry strategy first have to learn how to become masters at helping their students learn how to think.

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

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

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

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

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

Group Processes

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

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

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

Opinions, attitudes, and beliefs are not easily changed. When they are changed it is almost always through group affiliations. Research indicates there is very little permanence to OABs that were not developed through familial or other group affiliations. Given familial or other group support to the contrary, OABs are unlikely to change at all—to the point of virtual impossibility. When OABs do change it is through the influence of a reference group or, maybe, a new group affiliation. OABs are subject to the most influence by the most prestigious members of the group. Short of giving up group affiliation, dissenters are inclined to join the majority of the group (Knowles, 1959).

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

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

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

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

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

Groups pass through the following stages of development.

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

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

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

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

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

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

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

-What is being learned must be personally relevant.

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

-The learning experience must provide a memorable insight.

-Learning is a direct function of interpersonal relations.

(Wheeler, 1990)

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

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

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

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

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

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

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

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

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

-Use the 'Case' method

-Use role playing in problem-solving scenarios

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

(Shoben, 1988)

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

Conclusion

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

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

The faculty member must decide this on the basis of personal educational philosophy or personal preference. The faculty member might choose a strategy that best suits the needs of the students. The answer might be in what best fits the educational goals or performance outcomes of the course. Some faculty will only and always use that one strategy that fits them best. Others will draw eclectically from the four suggested, or others. In choosing a teaching strategy, the answer to the following question should be your guide.

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

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

Talking is not teaching and listening is not learning.

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

Winston L.S. Churchill

References Cited

Broadbent, D.E. "A Mechanical Model for Human Attention and Immediate Memory."
Psychological Review, 1967.

Cohen, Arthur, Clare Rose, and James W. Trent. "Teaching Technology and
Methods". In Robert M.W. Travers, ed., *Second Handbook of Research on Teaching.* Chicago: Rand McNally Co., 1993.

Davis, James R. *College Teaching.* Boulder,CO: Westview Press, 1996.

Dubin, Robert and Thomas G. Tafeggia. *The Teaching-Learning Paradox: A Comparative Analysis of College Teaching Methods.* Eugene, OR: Center for the Advanced Study of Educational Administration, 1998.

Gage, N.L. *Handbook of Research on Teaching.* Chicago: Rand McNally, 1983.

Gardner, R.A. and B.T. Gardner. "Teaching Sign Language to a Chimpanzee." *Science,*
1996.

Gramercy Books. *Webster's Encyclopedic Unabridged Dictionary of the English*
Language. New York: Random House, 1997.

Hayes, K.J., and C. Hayes. *The Ape in our House.* New York: Harper, 1974.

Knowles, Malcom, and Hulda Knowles. *Introduction to Group Dynamics.* New York:
Association Press, 1959.

Lewin, Kurt. "Forces Behind Food Habits and Methods of Change." Bulletin of the
National Research Council: 1943.

Lindsay, Peter, and Don Norman. *Human Information Processing: An Introduction to Psychology.* New York: Academic Press, 1992.

Mager, Robert F. *Preparing Instructional Objectives.* Palo Alto, CA: Fearon Pub., 1982.

McGaugh, James L. *Learning and Memory: An Introduction.* San Francisco: Albion Publishing Co., 1994.

McKeachie, Wilbert J. "Research on College Teaching: A Review." Report 6, ERIC Clearinghouse on Higher Education, Washington, 1990.

McKeachie, Wilbert J. "Research on Teaching at the College and University Level." Chicago: Rand McNally, 1980.

Milton, Ohmer. *Alternatives to the Traditional.* San Francisco: Jossey-Bass, 1992.

Norman, Donald A. *Memory and Attention.* New York: John Wiley and Sons, 1989.

Seigel, Laurence, and Lila C. Seigel. "A Multivariate Paradigm for Educational Research." *Psychological Bulletin,* 1997.

Shoben, Edward Joseph. *Learning and the Professors.* Athen, OH: Ohio University Press, 1988.

Skinner, B.F. *About Behaviorism.* New York:Alfred A. Knopf, 1974.

Skinner, B.F. *Science and Human Behavior.* New York: Alfred A. Knopf, 1953.

Skinner, B.F. *The Technology of Teaching.* New York: Alfred A. Knopf, 1968.

Verney, Thomas R. *Inside Groups*. New York: McGraw-Hill, 1984.

Wertheimer, Max. *Productive Thinking*. New York: Harper and Row, 1969.

Wheeler, Ladd. *Interpersonal Influence*. Boston: Allyn Bacon, 1990.

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Email and Online Interactive Communication - Is it really an effective tool for teaching?

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ABSTRACT

Higher education has entered an information age in which power comes to those who have information and know how to access it. However, as more and more classes rely upon the integration of these technologies in classroom activities and assignments, instructors have discovered a pedagogical bonus – more frequent communication from the students using electronic mail (Email). However, with the use of these new electronically enhanced tools comes the need for assessment. Teachers who use electronic communication tools in distance learning programs want to know how effective these tools are in terms of student outcomes. Additionally, administrators want to know if the cost of the new technologies is justified in terms of student learning.

Introduction

The use of technology, and especially the use of telecommunications tools, has begun to change the face of education. As college classrooms begin to employ the latest technologies, both student-professor and student-student interactions can be extended and enhanced (Karayan & Crowe, 1997). According to Pardee (1997), "communication technology can serve as an extension of traditional classroom instruction." Pardee (1997) further states that use of an electronic news group or electronic discussion group has many benefits over the traditional forms of classroom discussion, citing convenience, depth of commitment, and exam preparation among these benefits.

Berge and Collins (1995) note, "We have entered an information age in which power comes to those who have information and know how to access it" (p. 4-5). According to Berge and Collins (1995) students recognize the importance of gaining competence with online communications for workplace preparation. However, as more and more classes rely upon the integration of these technologies in classroom activities and assignments, instructors have discovered a pedagogical bonus – more frequent communication from the students using electronic mail (Email).

Presently, in online learning environments such as distance learning programs and technically enhanced traditional classrooms, educational institutions have adopted different modes of communication. Many institutions of higher learning have been able to develop and support Multi-User Domains (MUDs) for collaborative classroom activities. Other institutions have developed distance learning courses using instructional television (ITV) classrooms, telecourses, and talking head presentations on the Web (Boettcher, 1998). Still more educational institutions, facing budgetary or scheduling constraints, may rely upon institutional laboratories where students can access the Internet via the World Wide Web (Web) and an Email system to gain valuable experience with these technologies (Oppenheimer, 1997).

Since, the Web is

still a relatively new environment for teaching and learning at a distance, faculty teaching and communicating online in various distance learning programs are still learning from their experiences. This new environment has prompted researchers to explore the possible effect of computer-mediated communication on pedagogy (Griffin & Anderton-Lewis, 1998). The early findings of communication patterns in online, distance learning courses appear to be more divergent than the traditional classroom communication patterns (Boettcher, 1998).

The Need for Quality Communication

In a qualitative study conducted by Babko (1998) regarding the preference of teachers to instruct in distance learning courses, a problem concerning communication was uncovered. The crux of the communication problem according to Babko's research (1998) is the quality of professor/student and student/student interaction.

Students expect educational experiences to be delivered through a variety of high-tech modes, but they also have come to expect personalized, high-touch access to services, instructors, and their classmates (Fulkerth, 1998). According to Gibson & Rutherford (1998) traditional classrooms allow for communication and interactions, with good use being made of all the skills and knowledge the students may already have. However, many forms of distance education do not allow any exchanges between the students and many Web based learning systems are also set up to miss out even though the Internet provides a great opportunity to include everyone.

Also, studies indicate that it is very important to include electronic communication tools into Distance Learning programs that promote and implement good student and faculty, and student to student interaction. Without a good plan and the proper use of electronic communication tools, much interaction and learning experiences can be lost (Gibson & Rutherford, 1998).

Even with a good plan for the proper use of electronic communication tools, without the proper training or experience on the faculty members part,

interactive communication can fail. Babko (1998) concluded that many instructors who try to build interaction into distance delivery courses often find it frustrating. One professor in Babko's (1998) study tried to include interaction into his course, but decided not to continue with it. This professor used the example of the audio bridge.

> "I never met those people. I had no idea of their background whatsoever. They were just voices on the radio, on the telephone… there was very little I could get for a discussion a lot of times. I would use my discussion techniques, but then, everybody was reticent to answer. It wasn't like a regular class where you could walk around and say 'okay, now let's see, what do you have to say? There were times when I did just do down the roll and call on somebody. But, they were now on the telephone in front of all the rest of the members of the class that they've never seen. They were not at ease" (Babko, P.H., 1998, p. 60).

Another professor in Babko's (1998) study explained that in his teaching style he presented concepts and required students to give feedback using "dialogue as to what this means and how it can be used and applied." He explained that, in his face-to-face classroom, "This certainly enhances the course. We're missing a lot of that on-line. That needs to be brought back in." He has identified limited interaction as a weakness in his own first attempt at distance education delivery (Babko, P.H., 1998, p. 60).

The Need for Investigative Research

Does access to online communications encourage students to contact instructors for help? Chizmar and Williams (1996) conclude that it does. Does this technology encourage active learning? Studies by Chizmar and Williams, Canagarajah (1997), and Manrique and Gardiner (1995) demonstrate that it can. Does computer-mediated communication between students and instructors alter the formal boundaries of the relationship between them? Chizmar and Williams (1996) argue that it has "a great

social leveling or equalizing effect." Does the informality of Email contribute to the perception of the instructor as facilitator? Berge and Collins (1995) note, "No longer perceived as the sole experts and information providers, teachers become facilitators and guides" (p. 6).

Might this mean that the faculty member spends more course time listening and reflecting back on thoughtful questions and confused comments? Is it possible to use this new environment to do what teachers have always wanted to do, but have been constrained by the classroom? Can this space be used to support rigorous intellectual relationships between faculty and students? As more expertise is gathered in this new teaching and learning space, might it not be true that the online course experiences are more satisfying for both teachers and students? Anecdotal evidence suggests that students feel closer to faculty and to their fellow students in online courses. Why might this be so? Are more truly intellectual conversations taking place when the faculty assumes more of a balanced talking and listening role (Boettcher, 1998)?

The Significance of Interactive Electronic Communication

One of the significant skills gained through college education is that of being able to write coherently for the purpose of communication. Electronic discussion and communication tools for distance learning programs are excellent tools through which these skills develop in a natural, non-threatening atmosphere. The quality of responses to the discussion improves because participants have enough time to think, process and fine-tune their ideas (Karayan & Crowe, 1997).

Electronic discussion tools also provide convenient interaction; students and teacher respond according to their time schedule. They are not rushed to produce "an answer" on the spot, as they are when in a traditional classroom situation. Students and teachers can respond and intellectually contribute when they are most alert. Some people function better in the mornings and some

function better in the evenings. Thus the electronic communications can provide an experience in distance education that is unconstrained by time and place. (Karayan & Crowe, 1997).

In a study by Griffin & Anderton-Lewis (1998), 138 business communications students were studies to determine the communicative effects of Email interaction between teacher and students. In their findings, it was noted that more than 89% of the students reported using Email for exchanges outside required course work. Additionally, Griffin & Anderton further concluded that the students' comfort level with their instructors, evidenced by the informal conversational diction and requests for help, suggested that Email did contribute to a social leveling that allowed instructors to be seen more in the role of facilitators. (Griffin & Anderton-Lewis, 1998).

One clear example of the possible increase in student/teacher interaction in distance learning courses can be seen at Montgomery College in Texas. The College has adopted the software application entitled CyberClass from HyperGraphics Corporation. This innovative software application has been adopted by many schools across the country and provides an Internet-based learning environment that allows instructors to post on the Internet syllabi, assignments, tests, and hot links without ever having to learn HyperText Mark-up Language (HTML). One instructor at Montgomery College in Texas claims that CyberClass has enhanced his course by allowing him to become more of a mentor and guide to his students. A Computer Information Systems Instructor from Montgomery College states; "The students are given responsibility and accountability for their studies. The Web provides me with feedback from the students and this further guides the mentor/learner experience." Additionally, his students report that they actually work closer together in CyberClass' classroom than in traditional classrooms and they claim that it has actually enhanced their learning experience. This increased collaboration and interaction is especially seen in the group project assignment. The instructor reports that CyberClass increases collaboration,

interaction and problem-solving in groups because there is a central location to post syllabi, tests, assignments, messaging, audio conferencing, text chat (Case Studies, 1998).

Students at Westminster College in Salt Lake City have used the World Wide Web to collaborate with students from University of California -- Santa Barbara for research projects. This is an excellent example of how the Internet brings university students together to share data online (Case Studies, 1997). This type of sharing online indicates a possible pattern of collaborative communications that stems from the opportunity to use the Internet for interaction and teamwork. Improving technologies make distance collaboration easier and more desirable. Learning to collaborate on the Web can greatly expand the student's learning experiences. Since many of Westminster's students commute or take classes part time, they benefit from having Web access around the clock and on their own time for interactive research and communication (Case Studies, 1997).

At the University of Connecticut a beta test site for Compaq Computer's Compaq Networked Multimedia Solution (CNMM), which is an innovative product that lets educators connect with elementary school students in real time, teachers-to-be can communicate with kindergarteners through sixth grade students at Natchaug Elementary school in Willimantic, Connecticut. The teachers-in-training observe and communicate with elementary school classes using a video link and the Web. According to Sue Collins, director of education at Compac Computer Corporation, CNMM lets students and teachers communicate, collaborate, and interact with each other and with experts such as a university professor, a field researcher, or a scientist, in a realtime learning environment that eliminates academic and geographic barriers. Live interaction with researchers and current events brings the classroom one notch closer to personal experience and allows the teachers-to-be and the students to bond (Technology across the curriculum, 1997).

In a study conducted by Karayan & Crowe (1997) on student perceptions of electronic discussion

groups indicated that electronic communication formats increased student-to-student interaction. This indication suggests that the instructor begins to act more as a facilitator of the learning process than as a director of learning when using electronic communication formats. Additionally, their research on student perceptions of the use of electronic discussion groups provided insight into the changed behaviors of participating students. These favorable results should encourage other faculty at the institution and elsewhere to include electronic discussions as an integral part of teaching in particular and the teaching-learning process in general (Karavan & Crowe, 1997).

However, according to Boettcher (1997), faculty who are employing Email communications with students find that online communications have many problems and inherent difficulties. One example is the variety in computer knowledge and usage among the students. Some distance learning students will be able to communicate via electronic mail and contribute to WebBoards or lists immediately, while less experienced students could take weeks in overcoming technical difficulties and technical comprehension problems and communicate electronically.

The Barriers and Issues in using Electronic Communication

Time is a major barrier in distance learning courses and in the online learning environment in general. Faculty members spend much more time with online courses than in the traditional classroom. We have a scattered amount of anecdotal evidence that faculty spend not only more time with online courses than with campus courses, but that they spend significantly more time with their sections of online courses.

In a Web posting from November 11, 1996, L. Estabrook, the Dean of a Graduate School of Library and Information Sciences at the University of Illinois noted that a faculty-student conversation during a class break could take 30 seconds while that same information might take 2-3 minutes to exchange in an Email. There also appear to be differences from one faculty to another. In the same Web posting from November 11, 1996, Estabrook noted that online

teaching can be "significantly more time-intensive" for one faculty member than another.

Faculty do everything they have been doing in the traditional classroom plus all the personal communication with the students online. And, it all being done with new tools and increased expectations. Now that faculty can communicate with students at anytime and anywhere, the expectation is that the faculty member it is always there. Consider how incensed or unsatisfactory students would be if their online faculty member said, "I'm sorry, but I only answer students' Email on Tuesdays and Thursdays between 3 and 4 p.m." But, faculty can and should set some rules about when they are available and the expected response time (Boettcher, 1998).

Is it known how much time faculty members spend with their students? The answer is no because there have not been enough conclusive studies to know. One useful approach to measuring the amount of time faculty are spending on student and course communication suggested by Boettcher (1998) is to try to estimate the amount of time that a given faculty subject spends with each student over the course of a semester. Early estimates—about 2 hours per student, including student testing and evaluations but not lectures or preparations—have been rejected by some faculty. Frank Jewett of the Cal State System Office did a presentation on this topic at the Syllabus meeting at Cal State Poly at Pomona in March, 1998. Jewett noted that although the 2-hour per student figure is rejected, sometimes vigorously, that if one calculates the number of hours per week in a semester, divides by the number of hours available for student interaction, and then by the number of students, that it becomes apparent that two hours is about right. It is simply not possible to spend much more time than that. Many professors feel that they need or should spend more than two hours per student, but there are simply not enough hours in a semester to do so. It is no wonder that faculty often feel stressed by the demands of online teaching, student communications, and student evaluations (Boettcher, 1998).

A major issue concerning interactive communication in most online learning

environments is the new communication patterns that are developing (Boettcher, 1998). For example, in the traditional classroom there are well-defined and established patterns of communication. The most accepted pattern of communication is primarily from the faculty to the students and from the students back to the faculty. This is a very efficient model of communication. The teacher is speaking to 25-30 students at the same time, and their eyes and body language communicates the likelihood that they are listening (or not) and understanding (or not). In this environment it is often assumed that the faculty member is the one and only expert. The established teaching paradigm is the faculty member as the lecturer—dispensing information to the students. And instructional television (ITV) classrooms, telecourses, and talking head presentations on the Web reinforce this model of knowledge flowing in one direction. However, in the online environment the lines of communication are more divergent. In the online classroom environment there are fully linked networks of communication lines—threads between all the members of the Web course community and between multiple groups as well. This network pattern of communications between faculty and students and between and among students and groups of students creates a powerful tool for inviting and supporting student involvement. It is suggested that in these online networks, students are more likely to contribute their experiences, share their insights, and frame thoughtful, reflective questions. If students are more likely to contribute in this online environment, then the course experience – creating a knowledge community among the student group and a knowledge base within each individual—springs from many more seeds. Expertise can come from many directions, thus enriching the learning experience. However, in this highly interactive, contributory environment, confusion could be more prevalent as well (Boettcher, 1998).

Additionally, accoring to Boettcher's (1998) research, instructors and universities are gradually learning that a Web course is not just a "class" (as in classroom) on the Web.

The Web is truly a different environment. In the online environment the lines of communication are more divergent than in the traditional classroom. Boettcher (1998) concluded that research was needed to understand interactive communication and the expectations of what students have for interaction with faculty in a distance learning course experience.

The Western Cooperative for Educational Telecommunication (WCET) (1999) support Boettcher's (1998) conclusion in a recent project they conducted. The WCET's project resulted in the development of a set of Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs. These principles were also adopted and enhanced by the board setting up the new Southern Regional Electronic Campus (SREC) (1999). Under the section on "Curriculum and Instruction" is stated the following: "The course provides for appropriate interaction between faculty and students and among students." (p.24). Then the "Faculty Support" section of the principles from the SREC, follows with: "The program or course provides adequate equipment, software, and communications to faculty for interaction with students, institutions, and other faculty." Similar statements are part of the quality standards issued by the Norwegian Association of Distance Education (NADE, 1999). Section 10 on "Course Delivery" includes standards such as: "... real two-way remote communication must occur to a considerable extent." (10.1.2) and ".. teachers' tasks should include real teaching and guidance of the students in a way that takes care of the individual student's needs." (10.2.1) (NADE, 1999).

Another issue in which student teacher communication is important in online learning environments is in the student's perceived instructional immediacy. Teacher immediacy has received a great deal of attention in the instructional communication literature. Originally conceptualized as teacher nonverbal behaviors that either increase or decrease the degree of psychological distance between teacher and students (Andersen, 1979), immediacy was later refined to include teacher verbal behaviors (Gorham,

1988). Nonverbal behaviors include teacher use of eye contact, body position, gestures, facial expression, touch, space, and vocal qualities (Andersen,1979; Richmond, Gorham, & McCroskey,1987). Verbal behaviors include teacher use of student names, questions, feedback, praise, and humor (Gorham, 1988), among other behaviors. Together, it has been established that instructor use of nonverbal and verbal immediacy has an effect on students, most notably in the areas of student affective learning (Andersen,1979; Christensen & Menzel,1998; Christophel,1990; Gorham, 1988; Plax, Kearney, McCroskey, & Richmond, 1986), behavioral learning (Christensen & Menzel, 1998), and perceived cognitive learning (Christophel, 1990; Gorham, 1988; Jordan & Merkel, 1994; Richmond et al.,1987). Instructor immediacy has also been associated with perceptions of instructor clarity (Powell & Harville, 1990), instructor use of humor (Gorham & Christophel, 1990), instructor socio-communicative style (Thomas, Richmond, & McCroskey, 1994), instructor effectiveness (Gorham & Zakahi, 1990; Moore, Masterson, Christophel, & Shea, 1996), student motivation (Christensen & Menzel, 1998; Christophel & Gorham, 1995; Frymier, 1993, 1994), and student learner empowerment (Frymier, Shulman, & Houser, 1996). However, these studies have been conducted within conventional classroom settings, and researchers have devoted little attention to the instruction or communication taking place in the distance learning classroom (Freitas, Meyers, & Avtgis, 1998).

Conclusions

The incorporation of electronic communication like Email and the Internet into learning environments, especially in distance learning courses can complement textbooks, video taped class lectures, and interactive projects. Additionally, most traditional textbooks, mostly used in distance learning courses, necessitate and encourage more contact and more incidental computer-mediated communication (CMC) between students and instructors (Hartman, et al., 1995). Additionally, even business instructors, according to Berge and Collins (1995), recognize

the need to assure their students' competence and confidence in the use of the most basic online communication tools they will see in business: Email and the Internet.

However, with the use of these new electronically enhanced tools comes the need for assessment. Teachers who use electronic communication tools in distance learning programs want to know how effective these tools are in terms of student outcomes. Additionally, administrators want to know if the cost of the new technologies is justified in terms of student learning (Karayan & Crowe, 1997).

Reference List

Andersen,J. F. (1979). *Teacher immediacy as a predictor of teaching effectiveness.* In D. Nimmo (Ed.), Communication yearbook 3 (p. 543-559).
Thousand Oaks,CA: Sage.

Babko, P.H. (1998, May). *Influences upon higher education faculty use of distance education technology.* Florida Atlantic University Dissertation.
p. 60.

Berge, Z. L., & Collins, M. P. (1995). *Computer mediated communication and the online classroom.* (Vol. 2, pp. 1-10). Cresskill, NJ: Hampton Press.

Boettcher, J.V. (1997, November/December). Internet Pitfalls: what *not* to do when communicating with students on the Internet. *Syllabus Magazine.* (Vol. 11, No.4). p. 46,50,52.

Boettcher, J. V. (1998, August). How many students are "just right" in a Web course? *Syllabus Magazine.* (Vol. 12, No. 1). p. 45,47-49.

Canagarajah, A. S. (1997). Safe houses in the contact zone: Coping strategies of African-American students in the academy. *College Composition and Communication.* (Vol. 48, No. 2). p. 173-196.

Case Studies. (1997, October). Westminister College: students share data online. *Syllabus Magazine.* (vol 11, No. 3). p. 40.

Case Studies. (1998, August). Montgomery College: CyberClass. *Syllabus Magazine.* (Vol. 12, No. 1). p. 40, 41.

Chizmar, J. E, & Williams, D. B. (1996). Altering time and space through network technologies to enhance learning. *CAUSE/EFFECT.* (Vol.19,
No. 3). p. 14-21. [Accessed Online: July 22,1997].
http://causewww.colorado.edu/informationresources /ir-library/html/cem9634.html.

Christensen, L. J., & Menzel, K E. (1998). The linear relationship between student reports of teacher immediacy behaviors and perceptions of state motivation, and of cognitive, affective, and behavioral learning.
Communication Education. p.47,82-90.

Christophel, D. M. (1990). The relationships among teacher immediacy behaviors, student motivation, and learning. *Communication Education.*
p.39, 323-340.

Christophel, D. M., & Gorham, J. (1995). A test-retest analysis of student motivation, teacher immediacy, and perceived sources of motivation and demotivation in college classes. *Communication Education*. p. 44, 292-306.

Freitas, F., Meyers, T., and Avtgis, T.A. (1998, October). Student perceptions of instructor immediacy in conventional and distributed learning classrooms. *Communication Education: Speech Communication Association*. (Vol. 47, No.4). p. 336-372.

Frymier, A. B. (1993). The impact of teacher immediacy on students' motivation: Is it the same for all students? *Communication Quarterly*. p. 41, 454-464.

Frymier, A. B. (1994). A model of immediacy in the classroom. *Communication Quarterly*. p. 42, 133-144.

Frymier, A. B., Shulman, G. M., & Houser, M. (1996). The development of a learner empowerment measure. *Communication Education*. p. 45, 454-464.

Fulkerth, B. (1998, November/December). A Bridge for Distance Education: Planning for the Information-Age Student. *Syllabus Magazine*. (Vol.12, No. 4). p. 28, 30, 71.

Gay, L. R. (1996). *Educational Research: competencies for analysis and application, 5th Edition*. Englewood Cliffs: New Jersey. p. 7-8,11-14, 208-212, 218-224, 227-230.

Gibson, J., & Rutherford, P. (1998, April). *Learners are teachers too in our virtual classroom*. Amsterdam: Computer Networks and ISDN Systems. (Vol.30, Issue 1-7). p. 718-720.

Gorham, J. (1988). The relationship between verbal teacher immediacy behaviors and student learning. *Communication Education*. p. 37, 40-53.

Gorham, J., & Christophel, D. M. (1990). The relationship of teachers' use of humor in the classroom to immediacy and student learning. *Communication Education*. p. 39, 46-62.

Griffin, F., Anderton-Lewis, L. (1998, June). Enhancing connections between students and instructors: African-American students' use of computer mediated communication.

Business Communication Quarterly.
New York. (Vol. 61, No. 2). p. 9-19.
Jordan, F. F., & Merkel, A. M. (1994, November). *The relationship of selected and communication climate variables to cognitive learning in the college classroom.* Paper presented at the annual meeting of the Speech Communication Association, New Orleans, LA.
Hartman, K., Neuwirth, C. M., Kiesler, S., Sproull, L., Cochran, C., Palmquist, M., & Zubrow, D. (1995). Patterns of social interaction and learning to write: Some effects of network technologies. In Z. L Berge. & M. P Collins Eds.), *Computer mediated communication and the online classroom.* Cresskill, NJ: Hampton Press. (Vol. 2) p. 47-78.
Karayan, S., Crowe, J. (1997, April). Student perceptions of electronic discussion groups. *T.H.E. Journal.* (Vol.24, No. 9). p. 69-71.
Manrique, C., & Gardiner, H. W (1995). Computer-mediated communications applications in selected psychology and political science courses. In Z. L. Berge & M. P. Collins (Eds.), *Computer mediated communication and the online classroom* Cresskill, NJ: Hampton
Press. (Vol. 2) p. 123-136.
McMillian, J.H. and Schumacher, S. (1993). *Research in Education: A conceptual introduction., 3rd Edition.* New York: Harper Collins.
p. 14-15, 383-385, 388-391, 395-396.
NADE (1999). Norwegian Association of Distance Education. [Accessed online: April 1999]. http://www.nade-nff.no/nade-nff/nadeindx.html.
Oppenheimer, T. (1997, July). The computer delusion. *The Atlantic Monthly.*
(Vol. 18, No. 1).
Pardee, M. H. (June, 1996), Using Email, Web Sites & Newsgroups to enhance traditional Classroom Instruction. *T.H.E. Journal.* (Vol. 23, No.11). p. 79-82.
Plax, T. G., Kearney, P., McCroskey,J. C., & Richmond, V.P. (1986). Power in the classroom VI: Verbal control strategies, nonverbal immediacy and affective learning. *Communication Education.* p. 35, 43-55.
Powell, R. G., & Harville, B. (1990). The effects of teacher immediacy and clarity on instructional outcomes: An intercultural assessment.

Communication Education. p. 39, 369-379.
Richmond, V. P., Gorham,J. S., & McCroskey,J. C. (1987). The relationship between selected immediacy behaviors and cognitive learning. In M. McLaughlin (Ed.), *Communication yearbook 70*. Thousand Oaks, CA:
Sage. p. 574-590.

SREC (1999). Southern Regional Electronic Campus. *Survey Report of SREB State*
Regulations as They Apply to Distance Learning. [Accessed online: 4/99:]

http://www.srec.sreb.org/student/srecinfo/survey/distancelearning.html.

Technology Across the Curriculum. (1997, October). University of Connecticut: Students/Student teachers bond via Internet. *Syllabus Magazine*. (Vol. 11, No. 3). p. 35.

Thomas, C. E., Richmond, V. P., & McCroskey, J. C. (1994). The association between immediacy and socio communicative style.
Communication Research Reports. p. 17, 107-115.

WCET (1999). Western Cooperative for Educational Telecommunication.
Principles of good practice for electronically offered academic degree and certificate programs. [Accessed online, April 1999].
http://wiche.edu/telecom/projects/index.htm.

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TEACHING BUSINESS COURSES AT EXTENDED CAMPUSES

by
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ABSTRACT

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Teaching business courses at extended campuses raises three main problems: a shortage of time available to students; the quality of academic skills of the student body; the relevancy of course material which syllabi and course outlines make mandatory. The author makes several recommendations to alleviate these problems.

Lastly, the role of professors is viewed from the perspective of a communication model. As experts in their respective fields, PhDs act as knowledge-transmitting mechanisms. Students play the role of receptors, which are the creators of individual learning. To facilitate this communication process between teachers and students, the paper suggests systematic research into learning behavior at extended campuses.

INTRODUCTION

This paper focuses on undergraduate business courses taught at extended campuses. In accordance with the theme of the symposium, the emphasis rests on the role of the teacher, specifically one who holds a PhD. The reason is because most business schools maintain teacher quotas calling for a majority of PhDs.

There are several ways of approaching the issue. The one used here is the well-known managerial approach, which is used by most business schools, including Embry-Riddle Aeronautical University. This approach also forms the foundation of Goals 2000: Educate America Act. Though the law deals primarily with secondary schools, it has significant implications for higher education.

The managerial approach to any problem begins with goals and ends with results. It measures success or failure of teaching efforts by feedback, in this instance, by evidence of how much students actually learned. The method evaluates teachers not by their input, but by student output - a seemingly practical method. But this apparently straightforward model presents a number of problems relating to objectives, implementation, and monitoring. Let us examine some key issues at extended campuses.

DEFINING PERFORMANCE GOALS

Performance objectives determine the goals of a course. Given these objectives, an instructor is supposed to select those parts of a text which support the goals. However, the selection process is easier said than done. It raises several concerns, primarily those which relate to 1) the time factor 2) student quality 3) relevancy of reading material in the assigned text.

The Time Factor and Student Quality

The performance objectives, together with sample course outlines, virtually cover an entire textbook, and more. These mandates severely limit instructor selection of reading material.

Courses run for nine weeks, with one or two sessions per week totaling 42 hours of class

instruction. In effect, military exercises and exams often shrink actual classroom instruction by 22%. Be that as it may, courses at most business schools also last 42 hours a semester. But they stretch over a longer period - normally 14 weeks. We cannot assume that 42 hours is 42 hours is 42 hours, regardless as to how the hours are distributed. The more a course is compressed, the less actual time students have to read and absorb the course material.

Our students' first obligation is full time military duty. They pursue their education on a part time basis. Many also have family responsibilities. Assuming a student spends two hours reading, doing assignments, and studying for every hour of class time, two courses per semester translates into at least 28 hours of academic work in addition to 40 some hours taken up by military tasks. And that makes for a very long workweek.

Moreover, textbooks are not noted for ease of reading. Most use technical language, even when not absolutely necessary. They are commonly written in a dry, overly pedantic style, with ponderous, elephantine sentences which can only be deciphered, not read. The few easy-to-read texts "dumb down" the content. Lastly, our student body consists of enlisted personnel, most of whom never enrolled in a college. A goodly number began courses at Embry-Riddle years after being out of school. Instead of time compression, time expansion would be a more appropriate policy for military personnel. Business Week, in a completely different context, suggests letting recruits go to college first and serve the military later (Crock). This would not be a bad idea to upgrade the quality of education among enlisted men, though this is not a decision to be made by Embry-Riddle.

Some 30% of college entrants today take remedial courses in basic English and mathematics (Wessel). The proportion for service people needing such aids to repair past deficiencies probably exceeds 30%. Most enlisted personnel have never applied to enter a college. They also come from poorer neighborhoods, where high school education lingers below the national average.

Literacy of our current video generation has become a national concern. Various studies by the Educational Testing Service (ETS) and National Assessment of Educational Progress (NAEP) indicates no evidence of improvement among 21-25 year olds of any during the last decade. The ETS study of 1993 entitled "Adult Literacy in America," reported close to 50% of our population read at the 8th grade level or less (Educational Testing Service). These stark statistics raises serious questions about our students' ability to read and understand 600 pages or more of text in the short time they have for studying. But teachers must work with the material at hand. Given student quality, how can we improve it? Consider a few alternatives.

Instructors at extended campuses can reduce the student work load by cutting down on reading assignments. They probably do this already in many instances, simply because the performance objectives are impractical and cannot be attained. This is probably the worst course of action. For one thing, it negates uniform academic standards from campus to campus.

Are there better options? Yes. Here are several which might be considered:

1. As presently outlined, performance objectives have an equal weight. However, it is doubtful whether each goal is of the same importance. Why not rank objectives in order of importance? In this way, if an instructor cannot cover everything in a textbook, he would be able to omit the least important topics.

2. Give students a literacy test to determine their level of comprehension at a given reading speed, but not as a requirement for college admission. Such research should allow us to set more realistic assignments in our course outlines. Knowing what deficiencies exist better enables us to improve our students' reading skills.

3. Conduct experimental studies. For example, we might vary reading or assignment loads among classes, while giving them the same exam. Such experiments would show the effects of reading assignments, if all other factors are held constant.

Such tests might be carried out with students taking the same courses at different extended campuses. Since classes are normally small, it may take some time to accumulate data to yield statistically reliable results.

4. Analyze test grades of independent studies, which may yield some indication of how students perform when left on their own. Such analysis may provide insights about students' comprehensive abilities as well as differential effects of preparation time.

These suggestions are not mutually exclusive. They are presented only as possible options for trying to understand learning variables. Without doubt, there may be other research ideas which may turn out more efficacious. But without a systematic approach to probe into learning processes, we will remain stuck at square one.

Relevancy of Subject Matter

Since Embry-Riddle specializes in aviation and aerospace education, it is understandable that sample outlines call for professors to utilize current aviation examples to illustrate business principles. The trouble is that business texts may devote one out of 600 pages to an aviation example. Why? For many reasons.

Undergraduate business texts are broad-based, emphasizing basic principles and common practices. The subject matter itself is of various kinds. Some are highly structured, such as statistics or accounting, and students learn by doing. For example, probability theory and practice remain the same, regardless of application. The calculation of a probable outcome is the same for estimating airline traffic to the Caribbean, projected sales of Ivory soap, or the amount of defects in a production line. Similarly, corporate financial statements must follow standard accounting principles, no matter if the P&L and balance sheet reports are those of American Airlines, Intel, or Walmart.

Other business courses are not as structured as statistics or accounting, but their subject matter, in varying degrees, is not company or industry specific. Corporate finance concepts, such as risk analysis, present

value, zero working capital, cash management, current accounts financing, securities valuation, and capital budgeting, are common to almost all business enterprises in our economy. Basic marketing functions, such as sales promotion, pricing, personal selling, and advertising, similarly enjoy a universal business practice. Textbooks seldom use aviation examples because they address the mainstream of business, not any specific company. The examples they employ usually illustrate common trade practices. The advertising budgets of the largest airlines, United and American, for example, pale to insignificance when compared with those selling mass produced goods, like Procter & Gamble, General Motors, Ford, and Philip Morris, the nation's marketing leaders. Why should a text bother with illustrations which represent followers, not leaders, of current practices?

Sometimes, course outlines look strained when delegating a certain amount of hours to aviation issues. To illustrate: performance objectives for Macroeconomics stress demand-supply analysis, national income measurements, and fiscal and monetary theories our central banking system employs to promote economic stability and growth. Yet the sample outline recommends 30% of the first eight hours to be spent on such subjects as "counter-cyclical growth of start-up airlines and ATC privatization." None of these topics is even remotely related to the performance objectives.

Or again, take our politically correct course on business ethics, which is required for completion of some degree programs. Does it matter whether an aircraft manufacturer or a brokerage house violates antidiscrimination or employee privacy laws? In both cases the penalties and potential legal liabilities are the same. Then why waste precious, niggardly-rationed time on peripheral subjects? We should use aviation examples - but only where highly appropriate and where we do not stray from the main road.

Our teaching should be relevant. But relevancy is a many-sided thing. For purposes of this paper, I will only deal with its utilitarian aspects.

From a utilitarian perspective, relevancy should be related to our students' current tasks as well as what they will do when military service is over. Relating current jobs with courses is relatively simple. To assess the after-service relationship between jobs and academic courses may prove more difficult. Many business schools follow the careers of their graduates, and seek to find out whether jobs after graduation are related to their field of academic studies. These periodic surveys cover such topics as the industries which graduates enter, the positions and salaries they attain, and the extent to which courses helped them in achieving their goals. ERAU might follow this course of action. It makes a huge difference to a school's program whether graduates end up as computer programmers, repair mechanics, processing supervisors, or systems analysts.

THE ROLE OF A PROFESSOR

What role should a professor play in our educational scheme of things? PhDs are usually trained in research, not teaching. Most of them never took an education course in their lives. They are experts in their respective field. Administrations reward them with promotions and tenure for publishing, consulting, participating in academic conferences and business conclaves, and making appearances on media. These activities enhance a school's reputation, bring in revenue, and sell endowment funds (Anderson). The AACSB also gives these acts high grades when accrediting business schools. In recent years, AACSB schools have relaxed the publishing-research standards, giving credit for teaching contributions. But the elite B-schools require professors who select a teaching track to conduct research on educational theory and techniques, and to publish the results of their work.

Often business schools run conferences and special classes for business people. Recently, Columbia University signed a contract to provide UNEXT.com with educational material for corporations. In exchange for its services, Columbia is to receive royalties in the form of company stock (McGeehan). Faculties of the top business schools assume high government

posts, such as positions on the President's Council of Economic Advisors and his cabinet. Professors also serve on federal and state agencies, and testify before Congressional and state legislative committees. The fact is that a university serves many publics. Such actions, many critics assert, turn faculty attention away from a commitment to teaching.

Another issue today is what is taught. Top business schools, the practices of which are widely emulated, emphasize vague, theoretical concepts, which have only a tenuous relationship to the real world. In this respect, opinions differ greatly. Some argue that business education has become so specialized that is has lost its meaning in day-to-day business operations (Lynch). Others accept courses which stress economic theory, but fault business schools for failing to ingrain future managers with ideas for carrying on practical business operations (Samuelson). Yet another group thinks that B-school programs should eshew theoretical, blue-sky concepts and focus exclusively on job training (Scribner).

There is no ready answer for these problems. But we can start with a basic question. Can professors sporting PhDs contribute to the quality of education? Definitely yes, unless we accept intellectual Ludditism. Their expertise is necessary if we are to impart knowledge. We certainly cannot expect improvement in our educational fare by entrusting the conveyance of information to people having no competence in a subject. Too many schools suffer from this deficiency already.

Nevertheless, any human communication system depends not merely on the sender, but on the receiver. Do professors really teach? No, I don't think so. They organize, select, and explain course material. They accomplish only the first part of the communication process. In this sense, they are tantamount to a knowledge transmitting-mechanism. They guide the learning process.

The second part of the system - that of learning - depends on the student. Unlike purely mechanical systems, human receptors are frail things. They

have faulty recording, storage, and retrieving attributes. To learn, students must have a desire to learn. Moreover, what is desired to be learned is dependent on previously acquired knowledge.

Schools of higher learning often assume that their students have the ability to learn at prescribed levels of instruction. This presumption is probably correct, if students are prescreened before admittance, such as by SAT and GMAT scores. But this heroic assumption may not hold for schools with open enrollment.

On the basis of ERAU brochures, we regard students at our extended campuses as mature men and women who enrolled in a university to better themselves, to take advantage of opportunities that education might offer them. But here lies the rub.

* Do our graduates get jobs in the field of their majors? The implications are quite different, depending on the answer. An affirmative implies a broadening of the curriculum. A negative suggests greater specialization.

* Do students take courses to achieve excellence in their chosen field? Or do they attend classes just to get a degree? If we cater to the latter desires, we are acting like the legendary Wizard of Oz, who satisfied the scarecrow's wish for a brain by giving him a university degree.

* Do students actively bend their energies to acquire knowledge? Or do they learn passively, hoping that knowledge will flow to them from the teacher in the classroom, as by osmosis? The latter situation may involve either a workload-time relationship, or it may be a case of mistaken "rational expectations."

Some answers may be readily forthcoming, others may not. But all professors who take education to heart would want answers to these questions - and more. I can only suggest, in accordance with the discipline in which I was schooled, to conduct research into study and learning habits. At least, that is a start to a better understanding as to how we, as educators, can improve our educational offerings.

REFERENCES

Anderson, M. (1996). Impostors in the Temple. Stamford, CA: Hoover Institute Press.

Crock, S. (1999, March 8). Pushing the Pay Envelope. Business Week, pp. 92,94.

Educational Testing Service. (1993). Adult Literacy in America. Princeton, NJ.: Princeton.

Lynch, P. (1994). Beating the Street. New York: Simon & Schuster.

McGeehan, P. (1999, April 2). Columbia University's Business School Signs On With Internet Education Firm. The Wall Street Journal, pp, C1, C9.

Samuelson, R.J. (1990, May 14). What Good Are B-Schools? Newsweek, p. 49.

Scribner, C.M. (1993, July 19.) Marketing News, p. 17.

Wessel, D. (1998, November 9). Who Will Teach Johnny to Read? The Wall Street Journal, p. 1.