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ABSTRACT

This annual serial volume contains 19 articles offering practical pedagogical ideas from faculty at New Hampshire technical colleges. The following articles are presented: (1) "Goodbye Mr. Desrochers or What I Learned While Teaching My First Lit. Course," by Diane Chin; (2) "A Teacher Learns: Building a Fly Rod," by Walter Ryan; (3) "A Teacher in the Workplace--On the Cutting Edge," by Janice G. Kaliski; (4) "Teaching in Culture Shock," by Sandra Cole; (5) "First Time Teacher," by Sean M. Kenney; (6) "A Cautionary Tale," by Krista L. Zielinski; (7) "Understanding the Learning Cycle: A Teacher's Aide," by Eugene C. Johnson; (8) "Adventure in Teaching," by Judy Honsinger; (9) "Integrating Music into Your Classroom," by Dick Conway; (10) "Response: A Valuable Tool," by Arthur R. Deleault; (11) "The Analogy and the Moment of Insight," by Bill Warnken; (12) "A Different Presentation of a Difficult Subject," by Andrea G. Gordon; (13) "Students as Assessors--II," by Nancy Marashio; (14) "Evaluating the Effectiveness of a Telecourse," by William A. McIntyre and John J. Carlisle; (15) "A Curriculum Reform Project: Using Voluntary National Skill Standards in Performance-Based Curriculum Design," by Keith W. Bird and Ann Weddleton; (16) "Assessment and Prediction for Success of Commercial Art Students," by Jere Turner; (17) "Journey Through Choices, Challenges, and Changes," by Tyler S. St. Cyr and Denise S. St. Cyr; (18) "Educating for Organizational Change," by Theimann H. Ackerson and William V. Wheeler; and (19) "The Learner's Journey," by Paul Marashio. (HAA)

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"Not only is there an art to knowing a thing, but also a certain art in teaching it."

Marcus Tullius Cicero
(143-104 BCE)

New Hampshire
Community Technical Colleges

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PREFACE

Designers of Learning Cultures

Paul Marashio
Chair, Pedagogy Committee

The shift from a teaching to a learning culture is gaining a foothold in the New Hampshire Community Technical College System's classrooms where many faculty are in the forefront of designing learning cultures. Learners are no longer passive, empty receptacles but active participants. No longer are instructors solely information givers but coaches, observers, counselors, guides, facilitators, experts, and mentors. As with any radical change, during the critical entry stage of the new culture both instructors and students are usually nagged by the trinity of doubt, insecurity, and fear.

While designing this learning culture the instructor wonders where to begin, how to get the students started, then once in the midst of it, how to know if the students are learning, and what they are learning. Not only that, the instructor must take into account the multiple learning styles and match those with multiple teaching styles. Finally, the instructor quickly learns the traditional assessment models are no longer reliable indicators of students' learning in this nontraditional culture. New assessment models are necessary to reliably and accurately measure students' learning in a learning culture.

These are the challenges instructors encounter when shifting from a teaching to a learning culture. Yet, we only have to remind ourselves, the ecstasy of teaching lies in the magical mystery tour that is learning.

The articles in Volume 3 of the "Pedagogy Journal" offer us numerous, varied, and helpful "hands-on" ideas in designing a learning culture where learners "act-out" or "learn by doing" or "share learning". In addition, two contributors successfully take on the prickly assessment issue offering learning assessment models.

If you are rustled by the potent winds of change, then these articles will stir you.

The Pedagogy Committee enthusiastically thanks the contributors for making Volume 3 of the "Pedagogy Journal" a success and for continuing to bind the System into an even stronger, prouder community. Our deepest appreciation to Commissioner H. Jeffrey Rafn, who supports and

encourages the "Pedagogy Journal" both through words and deeds. A special thank you to Victor Somma, whose professional expertise and guidance contributes to the Journal's touch of class and to Jan Eaklor whose secretarial talents pull the Journal together. To the Pedagogy Committee, specifically the editorial board, my heartfelt gratitude for your tireless efforts in making the "Pedagogy Journal" a reality and a success.

To our readers - you are encouraged to use any idea that strikes your imagination. Feel free to contact any of the contributors for assistance or for exchanging ideas. The contributors' colleges, college telephone numbers, and e-mail addresses are listed at the end of the Journal. The Pedagogy Committee believes you will enjoy these articles as much as we enjoyed bringing them to you.

Paul Marashio Chair,
Pedagogy Committee

GOING ON VACATION

No one can be blamed for seeking shelter from the maelstrom of ideas, change, technology growth, and critical review of the learning and teaching methods of today and for tomorrow. The increasing diversity of learners and the demands for higher and more continuous learning have led to an environment of intense change in which the foundation seems to constantly shift. Is it any wonder that we become inured to the latest educational fad, burned out by newest technological advance, or lost in the myriad of projects, studies, and implementation strategies? It's time to go on vacation! It's time to reflect, refocus, and grow.

I invite the reader to reflect on the many accomplishments he/she has achieved in the past year. Too often, we do not take the time to recognize the great job we do. Our focus tends to be on what we have not accomplished or on what we have yet to accomplish. As you read this pedagogy journal, I wager that you will find that you have engaged in many of the strategies and issues discussed. I am sure that you will be reminded of what you have accomplished and of the excellent teacher (we are all teachers) you are and to which you aspire. I am certainly reminded that we are a recognized leader in the use of technology in the classroom, freely experiment with many different learning environments, and are pioneers in the use of skill standards and competencies.

With so much change, uncertainty, and opportunity it is easy to lose focus on what is most important and what we represent. This journal reminds us that students are most important and that we represent a commitment to make learning accessible and successful for all students. Our vision as community technical colleges with its commitment to occupational and technical programs, teaching and learning, access and success for all, continuous life-long learning, and to sustain economic development and vitality is refocused and strengthened.

Growth reinvigorates our spirits and provides new energy to tackle not only today's challenges, but to also prepare for tomorrow's opportunities. As we are teachers and administrators, we are also learners. We become excited as we learn about CD-ROMs, distance learning, assessment, school-to-work, the needs of the disadvantaged and dislocated, and what it means to be a community technical college. Readers of this journal will experience the excitement of those who are learning while becoming excited as they learn.

I invite each of you to read this journal as if you were going on vacation. Sit under a tree, beside the ocean, or on a mountain top and reflect, refocus, and grow. You will leave this journal refreshed and re-energized.

Dr. H. Jeffrey Rafn
Commissioner

CONTENTS

GOODBYE MR. DESROCHERS OR WHAT I LEARNED WHILE TEACHING MY FIRST LIT. COURSE

Diane Chin

I won't bother to explain why, after teaching at the two year college level for 11 years at NHCTC in Stratham and 5 years prior to that at Northern Essex Community College in Haverhill, MA, I taught a literature course for the first time just this past semester. Let it suffice to say I've had a long time to prepare. So I wrote my syllabus exactly the way Mr. Desrochers would have. He was the young, cute English teacher who had inspired me to major in English altogether too many years ago.

I strode proudly and confidently with my syllabus to EN200, The Short Story class, that afternoon last January. My colleagues, I'm sure, were sick to death of hearing about the whos, whats, and wherefores of how I was going to instill my students with not only literary awareness and appreciation, but analytical skills as well. They looked happy for me though, and, no doubt, happy for themselves: "Her students will have to listen to her now."

I introduced the class to the short story and the elements of fiction through an absolutely amazing lecture and side by side reading and commentary of Kate Chopin's The Story of an Hour. I posed "relevant" questions about character, plot, setting, ... and then I gave amazing answers to those questions. I was hoarse from having been so amazing. Mr. Desrochers would finally have fallen in love with my analysis, and me, and now my students would fall in love with literature.

Before I handed out my syllabus (I hadn't yet, because I wanted to whet their appetites first), I asked if there were any questions. I heard other voices for the first time in an hour and fifteen minutes. Their questions told me that I had never asked one question that allowed them to link literature with lives, that I'd asked nothing that would enable them to see that there's more going on in the story than what the words say. I hadn't asked anything that would elicit students thinking their way into understanding the story. I had asked only questions that imposed rigid single interpretive answers. I had let exposure to the critics tell them what to think instead of letting them discover their own intellectual and emotional re-

actions. The "Mr. Desrochers" analysis I led them through was going to kill their appreciation of literature, even though it had failed to kill my own many years before.

I thought if the very nature of the short story is to create a slice of human existence and to draw readers into the context of living, then I'd have to sacrifice the "hard" (analytical, expository) process for the "soft" (personal, expressive, creative), if I hoped to have them interact personally with the stories. I wondered why this dichotomy had never occurred to me before, when I was "a student" of literature instead of "a teacher," and, more germane to the present, how this course then could ever compete with the likes of Tech Writing as a viable elective. However, what I began learning that day, and continued to learn well throughout the semester (I always have been a good student after all) is that I don't have to sacrifice anything; there doesn't have to be a trade off. I never handed out my syllabus that day. I went back to the old - scratch that - my NEW drawing board and created The Short Story Experience, an experience in which the students (including me) in the class are offered not only new things to see, but more significantly, new ways to see. As mentioned before, I learned that I had to rethink the relative analytical properties associated with what I had determined as the right questions to generate discussion. I opted for alternative questions that enabled students to use personal response as an infrastructure for literary interpretation and appreciation of the interrelationship of the elements of fiction in a work. For example, I found that asking us to look at what the story would be like or mean if it were told from another character's point of view, or in another setting; or if the characters' actions were plausible given the information we had, provided refreshing ways of analyzing the story. I asked us what we would do in those same circumstances, and why the characters acted differently, or if we would have acted the same as the characters, would our motivations have differed.

I realized that I was asking them to examine human nature as it had been freeze-framed in works of fiction. Wait!!! Wasn't that what I had planned originally!?! And weren't they examining the elements of fiction as well!?! But it wasn't the way Mr. Desrochers did it.

Students were, of course, required to keep journals (I mean I wasn't that far out of touch). At first they didn't like that I was grading these journals; these were after all their personal opinions, thoughts, reactions. But as they articulated more and more within their journals of their own subjective

engagement with the story, rather than just outlining the story as they read it, they wanted a grade on it, something that placed extrinsic value on their interaction with the stories. "Oh okay, I'll continue to grade your journals, if you insist"

Class usually began with students reading aloud from their journals, and then comparisons of reactions, insights, interpretations. No Mr. Desrochers, I did not begin with "Now let's trace the rising action of the plot." If the first student who read was greatly affected by the ending, well, then that's where we began.

We did have contests though, like The "AHA" Insight of the Day. Students saw to it that everybody won at least twice. Or sometimes I'd assign something to look for, like see who can come up with the most descriptions given of the character of the same name in The Very Old Man With Enormous Wings. Then we'd have friendly fights over what was a description and what was the result of another character's belief. We would never have gotten into a critical examination like this had we traced the rising and falling action.

I sometimes asked them on some of the shorter stories to reread and write in their journals, a second and third time, then write about the difference in their reactions ("What? Do an assignment more than once?") AND THEY DID IT !!!! SOMETIMES WHEN IT HADN'T EVEN BEEN ASSIGNED!!! Also class absence was rare; if they were going to do all this writing, then the class was going to hear what they thought, and they were going to be there to argue and support.

The journals were instrumental in what I would now call a critical thinking process, as I believe it was posited by Richard Paul in his book, Critical Thinking, What Every Person Needs to Survive in a Rapidly Changing World. Students were taking ownership of the process of making meaning. Written development of ideas that existed in an inchoate state prior to journaling gave them control of the words that expressed the experience, thus over the experience itself. Students were writing their way into class discussion, into their other writing assignments (Oh No! Did I inadvertently slip in some writing process here?), and most importantly, into the literature.

I learned a lot about those "other assignments" too. The traditional approach is that writing about literature presumes understanding the literary work being studied before writing assignments are done. Those Mr. D. methodologies demonstrate the premise that in order to produce a

meaningful written presentation, students must read it critically, analyze its structure and elements, and interpret its meaning first. An assignment was the product of analysis, rather than the process of analysis. So I guess then that Sister Mary Adversary of the Devil, a composite nun of other former English teachers, not so young and not so cute, would probably have to have me burned at the stake for the antithetical, even heretical, position I explored: Writing assignments as a means to understanding, rather than as a demonstration of understanding.

This exploration might mean giving up the traditional thesis/support papers. I assigned them this time but probably won't the next time. (Abandon hope of Mr. Desrochers showing up to sweep me off to inspiring English teacher land.) What I experienced was that those papers required students to interact with a literary work in a mechanical way, simply deciding what they could prove and then referring to passages that demonstrated it. They would regurgitate back an accurate but prearranged interpretation of the work that may have precluded any personal discovery process. While thesis papers do require students to use text and incorporate some research, I found that once they got the "hang" of it, those same students who wrote fresh, vital journals, would turn out boring papers on the same work. In the future I will opt for more variations of what I determined to be the two most successful projects of the class.

First, I have to acknowledge that I can't take credit for the conception of these projects, only the modifications. I looked to models of assignments used in secondary and even elementary schools, and adapted them for the post-secondary level. OH NO! WHAT HAVE I ADMITTED TO NOW?!? I guess the answer to that (Bless Me Father) is (For I have given) assignments that represent students reading, rereading, researching, reflecting on and interacting with a work **AS** they arrive at observations and conclusions about it, Not after, just like a seventh grade teacher would do.

The first project was renamed, I like to think - affectionately, by students The Paper of (Too) Many Parts. It is a portfolio of several shorter pieces of writing, rather than one major paper. Here it is, cut and pasted in, direct from the Syllabus:

The Paper of Many Parts

Choose a short story from the text that the class will not be covering, or from some other source, to interact independently with throughout the semester. Use the same journal approach as you do with the stories we will

be covering; however, you will not be required to submit your journal. You will use your collection of observations, ideas, research etc. as a basis for the following portfolio of shorter pieces of writing (typed):

1. Initial response or reaction to the short story (to be written after the first reading)
2. Persona Writing: In a stream of conscious narrative imagine you are a character in the story at a crucial point in the story; write your thoughts as that character as they occur and integrate actual lines of text
3. Address how the author chose to structure and tell the story in terms of its effect on your interpretation of story. You may include historical context in this or biographical data on the author.
4. If you were teaching this class, why would you have included this story in the syllabus. What elements of fiction (character, plot, setting, theme, point of view) do you think your students could appreciate as a result of interacting with this story.
5. Choose and discuss one passage or section or lines, event, character or relationship between characters, or idea from the story that you particularly liked or thought was particularly revealing, moving, affective, or effective, or clever.
6. Concluding response, one that extends and reflects upon the first (#1).

* Also prepare a short story review, as if you were a critic, to present to the class to generate interest in your story. This does not have to be included in your portfolio.

Choose your story the 3rd or 4th week of class, so that this project can begin to evolve.

The students probably saw this as a lengthy assignment because, well, it was, and, moreover, they responded beyond both my and their own expectation. They had invested in a short story, and it paid off. Some of the persona writings could actually have been seamlessly integrated into the real text. Some students read several other works of their author to capture his/her style. One student captured the Florida black tradition of speech and culture so well in Zora Neale Hurston's Spunk that I had to go back into the story, which I had read a few weeks earlier, to make sure I hadn't somehow missed this part of the story. Another student took on the persona of a sentry in Ambrose Bierce's An Occurrence at Owl Creek Bridge and wrote letters home describing the hanging and examining the nature of actions committed in the name of a cause. To address #3, another

student researched magazine and newspaper accounts of the real murders on which Joyce Carol Oates based Where Are You Going, Where Have You Been? to explain certain elements and characteristics of characters in the story.

I discovered that meaningful, analytical, and organized presentations that build both literary and writing skills do not have to be lengthy dissertations; do not have to fit together under a thesis; do not have to have a formal Introduction and Conclusion, although parts 1 and 6 do serve as such; do not have to have transition between parts; and certainly do not have to come AFTER understanding and interpretation. In fact, they don't really even have to be papers... .

Collaborative Group Project
See What Happens or What If Project

Choose elements from at least three different stories. It could be 3 characters, or 3 ideas, or 3 themes and put them together, or interchange elements, put a character from one story, a setting from another, a plot from another (I'm open to innovative connections as long as they are consistent with the what we know from the original story), or put characters from a story together with the author or another author, AND SEE WHAT HAPPENS. Put them together through writing another story or scene or play or other presentation type (be creative) that combines them in a meaningful way. Class time will be used to enable you to begin working on these projects in your group; however, you may need to work together outside of class also. The final week of class will be devoted to these presentations.

ALL GROUP MEMBERS WILL RECEIVE THE SAME GRADE.

While this is not the typical assignment for a college literature class, this project required as much, if not more, analytical and critical thinking, elemental synthesis, literary knowledge and interpretation as the typical thesis or research paper I wrote for Mr. Desrochers. I will concede that not all students in all classes will devote the same amount of energy to this as this particular class did, but it's a chance worth taking. Once again, the connections and creativity generated via this project offered a unique dimension to the learning process, and allowed students to tap into other ways of knowing or individual talents or skills, e.g. drawing or musical.

One group of students learned that Flannery O'Connor believed that once a character was created, that character's created personality dictated what the author would write or how the story would progress. They cre-

ated three newscasts (on video, no less) which presented alternative endings to Everything that Rises Must Converge, and included characters from other stories. Another group created a three dimensional, illustrated children's story, which featured three children, who had died before we met their parent(s) in the stories Shiloh, Civil Peace, and Death in the Woods. What their parents' lives were like as a result of their deaths was poignantly and beautifully explained by an angel, The Very Old Man With Enormous Wings.

Another group told the story of Leroy and Norma Jean's life in Shiloh from Norma Jean's point of view instead of Leroy's. The story was told using a combination of the elements of a diary and letters, based on Little Miracles, Kept Promises and a series of written checks, based on Ordeal by Checque.

In the end, we all shared quite an experience, a learning experience - a Short Story Experience, to be exact. Through reading, reflecting, and writing, and rewriting, we worked for the grades/evaluations that would satisfy us. More important, we were happy with and proud of how we evolved in the class, and of how we made the focus of the course not the stories themselves nor their authors. The focus was the interaction of the stories, the authors, and us. It was the dialogue we each had with the characters. The bonus was that we didn't have to sacrifice anything that fell into the categories of problem-solving, literary analysis, critical thinking., writing intensive, etc. So I won't bother to explain why after all these years I have to say Goodbye Mr. Desrochers.▼

A TEACHER LEARNS:
Building a Fly Rod

Walter Ryan

A few years ago a friend pointed out to me that it is good for a teacher to occasionally learn something new — that it gives you a chance to remember what it is like to be a beginner. It really doesn't matter what you learn. It might be a new subject, a foreign language perhaps; it might be a new slant on an old subject; it might be a new skill. I decided to learn to build a fly rod.

Roger is a fly tier and a rod builder. He also sells, among other things, fly tying tools and supplies, fishing gear, and fly rods, as well as the components needed to build fly rods, at a local sporting goods store. He once told me "Anyone who can tie flies can build a fly rod." I can tie flies. In fact, I've been tying flies for long enough now that, although I'm slower than the professional tiers, I do tie good flies. For the past few years I've fished with, mostly, flies I tied myself. I said to myself, "I can build a fly rod."

When I'm faced with a new challenge or get a new idea I like to think it over carefully. To walk around it. To look it over. To ease my way into it. I began by looking at the rod building supplies in the fishing catalogs. (There is something seductive about a good catalog in the dead of winter. The right one can generate enough fantasies to take me right through mud season.) I got catalogs from anyone who would send me one and pored over them. Then I ordered a book on building a fly rod.

I was getting ready to learn.

The weather turned nasty that winter. It seemed to have settled into a pattern of snow, followed by rain, followed by cold. The cross country skiing around here was ruined, and I had a bad case of mid-winter blues compounded by cabin fever. Then the UPS driver showed up with the book.

I had it unwrapped before he was out of my driveway. Even as I leafed through it I saw that I was not ready to build a fly rod. Not yet. There were so many things I didn't know. What is the spine of the rod? How do I find it? And what is this business about dressing the feet of the guides?

And there were decisions to make. I had to choose a reel seat and a grip. Should the reel seat hold the reel with sliding rings or a threaded locking ring? If I used a threaded lockingring should it be up-locking or down-locking? Should the grip be a full wells, a superfine, or something in

between? What style guides were best? How should I space them? I hadn't realized all the decisions that had been made for me every time I picked out a new fly rod.

I began to feel overwhelmed, forced to make decisions I didn't feel ready to make.

Later that winter, at a Trout Unlimited dinner, one of the items in a raffle was a fly rod building kit. (Trout Unlimited has more raffles than a parish with a building program. We use the money for educational and conservation projects.) I bought ten dollars worth of tickets and put them all on the kit. I didn't win it but the thought of that kit sent me back to my book. That kit would solve many of my problems. It not only contained a four-piece graphite rod blank, a reel seat, a cork grip, and all the guides, but also wrapping thread, epoxy, disposable cups in which to mix the epoxy, and brushes to spread it. I wouldn't have to decide which components to buy; they were all there. When built, the result would be a nine foot, six weight fly rod. It would be ideal for trout or bass fishing from a canoe or even from a float tube. I didn't own a rod like that and obviously I needed one. After all, I have a canoe. (I don't have a float tube, but that's another story.) What better way to get such a rod than to build it? I went to see Roger and bought the kit.

If some of the basic decisions are made for me the task seems more manageable.

As soon as I got the kit home, I unpacked the components and looked them over. The spine was marked on the rod sections. By now, I knew that the spine was the stiff side of the rod and that if the guides were not lined up opposite the spine the rod wouldn't cast well. This was critical. Every step was critical. I read all of the cautions for what was probably the tenth time and then decided — I needed some tools. I ordered a rod wrapping stand and a finishing motor.

The wrapping stand supports the rod and holds the wrapping thread that is used to fasten the guides to the rod. A spool of wrapping thread fits over a pin in the rod wrapping stand much as a spool of thread sits on a sewing machine. The thread passes through a spring loaded tensioning device from where it is led up to the rod. The rod lies in two vee notches in the top of the stand. The notches support the rod as you rotate it, winding the thread onto the rod and over the foot of the guides.

The finishing motor rotates the rod slowly after the thread wrappings have been coated with epoxy.

I didn't really need either of these tools. The book said I could put the thread in a cup, lead it between the pages of a thick book to maintain the tension, and hold the rod in my hands as I wrapped the guides. I could cut notches in opposite ends of a cardboard box and lay the rod in them after I had coated the wraps with epoxy. But then, if I didn't rotate the rod every fifteen minutes while the epoxy was drying, the book promised the epoxy would sag, causing an unsightly lump on the bottom side of the rod. Compared to an unsightly lump, the tools were a bargain.

If I know that I have the right tools when I'm learning a new skill, I feel more confident.

Let's ease into this, I told myself; let's do the easy stuff first. I took the tip section of the rod and mounted the tip guide, using hot glue. That was easy; I can undo hot glue.

Next I took the butt section of the rod and fit the reel seat and grip in place, shimming and adjusting just the way the book said to, but not using any cement. I marked the alignment between them and the spine of the rod. I checked the alignment. Then I took the reel seat and the grip off the rod, spread cement along the rod, and mounted the reel seat. Then I mounted the grip. It was starting to look like a fly rod. I reminded myself that once the cement dried the only way to move the reel seat or the grip was to cut them off. I checked the alignment again.

I rested for the remainder of the day.

When I'm learning a new skill, I can only absorb so much at a time.

Now it was time for me to mount the guides. The process sounded easy. First, I measured and marked the location of all the guides. The guides must line up with both the reel seat and the spine of the rod and be precisely spaced along the length of the rod.

I took the first guide, lined it up over the mark and taped one end to the rod. (Masking tape is best.) Then I placed the rod in the wrapping stand, lay the thread against the rod and, rotating the rod, wound the thread over itself, up the rod, and over the foot of the guide.

A few turns before the end, I placed a loop of monofilament nylon leader material against the rod and continued wrapping, over the monofilament, over the rod, and over the foot of the guide. When the thread completely covered the foot of the guide, I cut the thread, passed the cut end through the loop of monofilament, and pulled the loop out, pulling the wrapping thread under itself, and cutting off the tag end of the thread. I sat back to admire my first whipped finish and then took the tape off the other end of the first guide and wrapped it.

It's important to keep constant tension in the thread and to make sure the wraps lie next to each other. Loose thread means loose guides. Gaps or overlapping turns of thread are poor workmanship. When you show your new rod to a friend, he's sure to see the errors. If he's a real friend, he won't point them out.

But I must have a realistic assessment of how well I am doing if I am going to improve.

The workers at the Orvis factory can wrap a rod in an hour and a half. Wrapping the first guide took me most of the morning. Only nine more guides, a hook keeper, and a wrap on each ferrule to go. A wrap just below the tip guide and another just above the grip will finish the job off and make the rod look sharper than anything.

I need to learn patience. I can't expect to be as fast as a skilled worker when I am just learning the job.

The last task is to coat the wraps with epoxy. I have to mix the epoxy, paint it onto the wraps, and keep the rod rotating while the epoxy dries. Drying time is eight hours. I can do one section a day: four sections to the rod – four days – two weekends. And Spring was coming fast. I can't hurry, though. If I'm not careful when I paint the epoxy on, it will flow past the end of the wraps and the rod will look sloppy.

Epoxy is tricky stuff. The epoxy in the kit comes from a company in Texas. Not much fly fishing in Texas, I thought. They're mostly bass anglers down there. You know, the kind of people you might see on one of those fishing shows on cable T. V.: big flashy boats, big flashy motors, big flashy lures, and big flashy hats. But I checked. This is the epoxy that is sold in all the best fly fishing catalogs.

The epoxy comes in two plastic syringes, one with resin, one with hardener, marked with graduations on the barrel. It must be mixed carefully. The secret is to mix the resin and the hardener in equal amounts. Too much hardener and the epoxy will set before I can use it. That is called short pot life. Too much resin and the epoxy will never set. That is called a gummy mess.

The butt section of the rod only has three wraps on it; that's the one to start on. I set the rod on the wrapping stand, got the finishing motor ready, carefully measured and mixed the epoxy, and painted it neatly on the wraps. Then I fastened the end of the rod to the finishing motor and turned on the motor. The rod started rotating and I went to relax. When I checked it several hours later, the epoxy was smooth and hard; a perfect job.

When things are going well, life is wonderful.

The next day, I took the next section of the rod and followed the same procedure as before. This time something went wrong. The epoxy didn't harden and I had a gummy mess. I went over every step in my mind. I was sure I had measured the epoxy correctly, had mixed it thoroughly, and had painted it on the rod properly. It couldn't be my fault that it hadn't cured. I didn't know what to do.

When things go wrong when I am learning a new skill, I sometimes panic.

The next day, when I was calmer, I took another look at the rod. It was as bad as I remembered. I talked with Roger; I talked with a colleague who sometimes works with epoxy; I got advice and suggestions from all over. I followed all of the advice and implemented all of the suggestions. Nothing worked;no matter what I did the epoxy remained a gummy mess.

Finally I screwed up my resolve and did what I should have done at the start; I scraped off the gummy epoxy and cleaned up that section of the rod. It was a long, messy job. Then I started again, measuring and mixing the epoxy, painting it on the wraps, mounting the rod section in the finishing motor, and leaving it alone, allowing the epoxy time to cure. This time the cure took.

When I really make a mistake, I need time to stew about it and then encouragement to go back and do it right.

The last two sections of the rod were anticlimactic. The rod wasn't completed in time for the start of the fishing season but it was completed.

I got a new rod out of this, as well as some new tools, some new skills, some new language, and some new insight into the way I learn a new skill. The rod was the vehicle but the skills, the language, and the insight will probably last longest.

If I look carefully at the way I learn, I may be more able to adjust my classes to diverse learning styles of my students ▼

A TEACHER IN THE WORKPLACE – ON THE CUTTING EDGE

Janice G. Kaliski

In the summer of 1995 I did something that I never expected to do at this stage of my career and something I had never done before. I worked as an engineer at Lockheed Commercial Electronics Company in Hudson, New Hampshire. How did this switch in roles take place? Well, I was offered an opportunity to participate in the Teacher in the Workplace program and grabbed the chance as I knew this would provide me with an answer to a question that had been haunting me since graduation from high school... what if I had gone into engineering instead of into teaching?

I had a ball! My time spent at Lockheed provided me with a veritable wealth of ideas for future lessons and gave me a fantastic chance to denote the skills that were used by all workers on a daily basis. I can now speak with "authority" when in the classroom as I had been there and done that.

Besides gaining a better insight into what is really happening in the workplace, I also gained a tremendous boost to my own self worth as I now know that I could have survived in the industrial setting had this career path been available for me (years ago) when I was choosing a career. But, it wasn't, nor was there any encouragement, by my mostly male teachers, to balk from the normal female career path.

The Experience

The Teacher in the Workplace program is part of the School to Work program, a federal initiative which presents a bold challenge to local communities to develop more effective ways to transition students from high school to work or to further education. To qualify for this opportunity, I had to undergo a formal job interview for the position of engineer by the Director of Human Resources and the Chief Engineer at Lockheed. It was so realistic! Yes, I was shaking in my boots. My qualifications and experience placed me in the Manufacturing Processes Department, a department responsible for the manufacturing of circuit boards and panels. I reported to the Director of Process Engineering, who also served as my mentor, during my time at the firm.

The initial tour of the Manufacturing Processes Department overwhelmed me and filled me with doubts about my ability to adequately serve my internship! Although I was fascinated by the technology employed and the

widespread use of the computer during all stages of production, I questioned how I could possibly gain the necessary knowledge quickly enough to meet the objectives of my assignment. Fortunately, I was matched up with a gracious mentor who, upon sensing my uneasiness, immediately teamed me up with two of the newest support engineers so that we all could discover the "Lockheed way" together. I learned first hand the value of teams as a learning tool.

I began my education by reading material concerning the process of screen printing and the three systems used to apply solder to the circuit boards. Once I felt more familiar with the terminology and the systems, I went to the assembly line to observe the systems in action and to talk with the assembly line workers. The production of circuit boards involves six assembly lines, but my time was to be spent working on only two of these lines: the Red and the Gold.

My internship focused on three objectives:

Objective One

To compare the data collected when three different systems of solder paste screen printing processes are employed during the initial stage of manufacturing.

To meet the needs of my first objective, I went to the assembly line to observe the systems in action and to talk with the line operators and support engineers. In the past, since the only method used to apply paste to a circuit board was a manual one, the uniformity of the paste heights (the amount of solder deposited) depended on the skill of the individual worker. The operator sets up the machine to apply paste to the board when a lever or crank is activated. After the initial board is pasted, the operator removes the board from the line, measures the paste heights at five different locations and records this data in a paste height log. The measurements are averaged, and the average is compared to the expected average paste height. If the results are within the acceptable range of heights expected for that particular board, the print process continues. Depending on the type of board being pasted, the assessment process of paste heights occurs every fifth, tenth, or twentieth board printed during a run.

If the initial board's evaluation reveals a problem, the operator analyzes the situation and, based on previous experience or intuition, makes the necessary adjustments to correct the situation. If the problem persists, the operator communicates the nature of the problem to the support engineer.

The operator's ability to state the problem in clear and concise terms is an asset, as it reduces the time needed for the support engineer to understand and then solve the problem as well as the amount of "down-time" for the line. Using a "hands-on" approach to eliminate any glitches, engineers work side by side with the operators. Print systems require the engineer to program key information about the board into the computer using x,y,z coordinates of selected positions on the board. Line operators are more acutely familiar with these positions and provide valuable assistance here. The need for positive people skills is crucial if the engineer-operator partnership is to succeed and both members are to gain from each interaction.

To overcome the variance in paste heights due to the skill level of the line operator, which may negatively impact product quality and customer satisfaction, Lockheed management decided to automate the screen printing process. Essentially, my statistical study compared the results obtained from two automated systems, on loan to the firm, with the results obtained from the manual system. The outcome of my study was used to help develop a critique of each system for use during the selection process of the system to be purchased.

Objective Two

To assist in the calibration and debugging of a new process tool that automatically measures the paste height.

The second half of my internship was spent calibrating and debugging a new process tool which provides for the automatic inspection of paste heights when compared to pre-programmed specified images for given test sites. This tool represented cutting edge technology! It was mind-boggling! Installed on the production line immediately following the screen printer, the tool provides for the systematic inspection of the wet paste to identify potential printing problems before the yield is affected. After each board is printed, it is inspected by this new tool and the data collected for each site are averaged and displayed on the computer screen in a statistical format. Should a problem occur with a board, a four-color warning light pole immediately alerts the operator. Programming the tool depended on the perception of the magnified image of each site to be tested or the degree of resolution chosen by the support engineer responsible.

I am still amazed that I was allowed to be the first engineer who worked with this brand new tool. I was left to program ten sites for the first board

to be tested when both of my teammates were needed in other areas on the assembly line. I was able to set up the system and test a board. The results were disheartening: all ten sites failed inspection. The most probable cause for these dismal results was the chosen specification and tolerance limits. These limits had to be re-established, as the limits previously used were based on the manual system of printing a board. At best, I could only make an educated guess as to what these limits should be. I spent the next two days varying the limits in an attempt to achieve passing inspections for all ten sites. Despite my attempts, two sites failed every time, three other sites earned warnings, while five sites cleared the inspection. It was then that I realized how easily one could "lose herself" to the solving of a problem while working in industry.

I was consumed by this poor performance until a colleague pointed out to me that the images processed were only as good as the images originally programmed into the printing system. If an error had occurred at that initial point, paste heights would then have been printed too high or too low and those sites would have always failed the inspection. I was able to program three boards successfully for inspection before my internship ended.

Objective Three

To compare the reliability of the data collected from this new tool with the reliability of the data collected from the three systems studied.

Boards were tested over and over to determine the reliability of the measurements processed at each site. The challenge of fine tuning the inspection of each board to clearly pin point problems caused by too little or too much paste and not those problems caused by the pre-set tolerance levels was not something that could be done quickly. Data would have to be collected over the next several months and then thoroughly scrutinized before final decisions could be made about the standard images that the computer would use as a basis for comparison when inspecting a board.

I had only made a small contribution to this process when I had been able to program three boards out of the total of 24 boards investigated for my statistical study. There definitely was not enough available data to meet the needs of my third objective before the internship ended. Perhaps, the third objective was not a realistic one.

The Assessment

I was sorry to see my time at Lockheed come to an end as it had been a stimulating and intellectual experience for me. Never again would I

wonder what it would have been like to work as an engineer for a big firm. The members of the workforce with whom I worked on a daily basis were wonderful, especially the line workers who I got to better know because of my project. I endorse the team approach used at the firm since line workers appear to be recognized for the "hands-on" experience and knowledge they have to offer to the support engineers. While each member of the team contributes to the overall success of the manufacturing process, it is the assembly line workers who initiate the success or failure of a board.

Many startling revelations come to mind when I reflect on my time at Lockheed. I was surprised by the **use of statistics by all levels of the workforce**. At the college where I teach, we do not mandate a course in statistics for our students, but we do offer an elective in statistics for business majors. I recommend that a statistics course be developed and offered to every student at our college. I was amazed at the **"hands-on" style of engineering** that brought the engineer to the trenches to **solve problems** with the line operators. This style encouraged the **empowerment of all members of the workforce**. The team approach recognized the line workers for the experience, knowledge, and **critical thinking skills** they have to offer to the support engineer. To reduce or maintain costs of production, much **emphasis is placed on the efficiency of operation**. For example, during the wave solder stage of production, deionized water used during the wash and rinse cycles becomes too dirty to be reused. Water was dumped and removed and fresh water was added to the system every hour for a ten minute period, whether this needed to be done or not. This was costly. Engineers came up with a better, less costly solution by **using the scientific method**.

Additionally, I was impressed by the **sophisticated level of quality control aimed at customer satisfaction**. The product is assessed during and immediately following each stage of production in an effort to catch defects that may lead to customer dissatisfaction. Shouldn't we, as educators be doing the same thing with our end product, the "educated" student? Are we specifically assessing our students to determine if they really are learning the material we profess to be teaching? Can we be confident that when students leave our classes they have gained enough knowledge to permit them to successfully continue into the next course or into the workplace? Aren't our customers both the student and the employer? Isn't it our job to satisfy the needs of both customers?

The new process tool and the decision to purchase automated systems for the screen printing of circuit boards are prime examples of the firm's dedication to superior product quality. There is **extensive use of image processing as a tool** for measurement or assessment in industry, yet this tool is not yet in use in the classroom. Wouldn't it be nice if we could run our students under an imaging processor to determine if they are ready to be graduated from college? Wouldn't it be great if this new tool could also not only indicate where the learning did not take place, but could also suggest a course of remediation to be followed to upgrade the product to meet the specifications? Better still, wouldn't it be great if we could use this tool to assess each student before they were even admitted to college?

My experience also made me question the validity of the content of the courses that I teach. Do they effectively contribute to the total education of the students at my college? If the ultimate outcome of an effective science program is to enable all students to become scientifically and technologically literate, have we succeeded? Have we engaged our students in problem-solving experiences that lead to the acquisition of scientific knowledge or technological knowledge? Why should our students have to wait until they are on-the-job before they are completely educated in this area? Shouldn't I be simulating some of the practices, such as the use of image processing technology as a tool for discovery and analysis or the emphasis on statistical analysis of data for the benefit of my students? Of course, I should be doing this.

Back to Reality - On the Blunt Edge

I could hardly wait until I returned to the classroom to share my newly acquired knowledge with the students in my classes. I was so excited about what I had gained that I really felt like running out into the world and shouting about my time spent at Lockheed from the top of my lungs. But, I feared that I would be viewed with indifference or regarded as a weirdo. Would the students tune me out long before I finished my message because we shared different mindsets? Would they want to listen to the need for both hard work and sharpened skills to survive in the workplace? Would they honestly believe me when some have been used to coasting along doing the bare minimum to get by?

With that in mind, I developed a curriculum unit to be used in my physics classes. The unit had two goals. The first goal introduced imaging processing as a tool for discovery and analysis. The second goal placed more emphasis on the statistical analysis of data gathered while in the lab.

It was my desire to simulate some of the practices I saw at Lockheed for the benefit of my students. I tried out this new unit with one of my classes.

The unit began with the introduction of image processing technology by a guest speaker from the field. Students learned what image processing is, what a digital image is, and the many ways the technique is used in industry, business, and the scientific community. Students were asked to dream up a stadium picture to be used at a Red Sox game and bring it with them to the next class. During the second class, the students had a chance to work with images on the computer and to become familiar with the NIH Image, an image processing and analysis program for the Macintosh. Unfortunately, only some of the students were able to grasp the skill required to manipulate images. The rest were unable to do this, but I am not sure why this was the case. The fact that there was **only one computer** available to meet the needs of 22 students coupled with the fact that many students lacked confidence in using the computer did provide a place to start to correct the situation.

Had the unit progressed as planned and had the students had the chance to manipulate images, and to discover the power of the software, students would have been ready for the third lesson. This lesson starts with the viewing of three images by students from the class. Students would have been asked to mentally blend these images into one image and predict what kind of blended image they would expect to see. They would then test their predictions by blending the images on the computer screen. Once that was done, students would have been asked to define the term mean as it applies to this blend. Other subsequent activities would have defined median and mode. I omitted this lesson.

During the fourth lesson, students were introduced to automated timing and the instant feedback of data as displayed on the screen. Using Mac Timer software, students studied the motion of a cart down a ramp as the angle of inclination was varied. After each trial run, students interpreted the statistics displayed and made decisions. I was unprepared for the attitude of the students that surfaced during this lesson. It was clear that the students were not comfortable, thus they resented the inclusion of this activity. Again, I suspect the use of the computer to demonstrate the lab investigation rather than to have students run the lab themselves (because of the lack of computers) contributed to the negative thoughts expressed.

The unit ended with an in-depth look at the data gathered during the first experiment of the term, Graphical Analysis of Motion. Students com-

pleted a statistical analysis of the data, and made decisions about the reliability of the averages found. Large deviations from the expected values were discussed and justified.

I realize that while I am on the **"cutting edge"**, many of my students are on the **"blunt edge"**. A strong sharpening process is clearly needed, for without it, they surely won't get in the door of the jobs of today and tomorrow. What sharpening tools can I use? This is the frustration of this entire past school year for me, for I have tried many tools and while I have impacted some of the students, there are many yet to be reached.

I also realize that helping our students today is much more than any one teacher's efforts – it must be a team of us. As a group, we must assess the ability of each student whom we admit, provide remediation for those who need it, and then offer a rigorous, realistic curriculum to bring our students to the "cutting edge". In addition, we need to increase the frequency of the assessment of students while in our classes to permit a more realistic image of what and how our students are learning.

All we need to do is to look at Lockheed to discover a possible solution. We should include students in this team effort to develop a winning product. We must find ways to help students to become actively involved in the learning process. Students must willingly accept the responsibility of assessing whether learning has occurred, and if it has not, to instantly seek help from the other members of the team before the defect becomes any larger. We should help students to accept the fact that to err is human and that more is learned through failure than through smooth sailing when dealing with new material. Students should then learn from the team that the old adage "practice makes perfect" does indeed apply in today's learning environment. We also need to become better listeners so that we can gain from the feedback given to us by our students. We need to recognize the "hands-on" experience and knowledge they bring to our courses and to us. We also need to better articulate any potential problems with other members of the team so that the **entire team can work together** to attain a sophisticated level of quality control aimed at customer satisfaction.

TEACHING IN CULTURE SHOCK

Sandra Cole

In the spring of 1995, a piece of paper mysteriously appeared on my desk (how it came to be there, I'm still not sure) advertising for instructors to teach Health Psychology in the Israeli Program to be held at New England College that summer. I applied, met with the Program Director, was accepted, and began one of the most engrossing educational experiences of my career. The summer semester included the final three courses of a one year program jointly designed and administered by New England College and Israel University. At its end, nursing students who had graduated from three year technical programs were awarded with Bachelor's Degrees.

A remarkably varied group of 125 Israeli students took three courses in six weeks while contending with heat, clogged toilets, homesickness, and varying degrees of culture shock and language barriers. The instructors contended with an interesting variety of problems in teaching them as well.

ORIENTATION

A one day orientation was held to prepare us for this unique experience. Several New England College instructors who had taught at Israel University in the previous two semesters shared with us their experiences, including their understanding of the social system and educational challenges we would in all likelihood face in our classrooms.

We learned that there would be a complete spectrum of English abilities, from American Israeli immigrants who would have no problems at all to Russian Israeli immigrants who might have a great deal of difficulty understanding the technical as well as conversational levels of language. Thus, at any pause in our lectures, the room could be engulfed in a tidal wave of sound while those who understood academic English translated what was said into Hebrew for those who didn't. We were warned that any attempt to reimpose order would be futile. Nothing could be done while the wave was surging around the room, but soon with the sound of a receding wave they would "shhhhh" each other down and we would be allowed to go on.

We were told that the students would come to us as a unified social group, helping each other out to degrees that would cause us to consider that one was doing the work for the other. And we were warned that when they

presented themselves as a united front, we would have to be very careful that situations didn't deteriorate into "us against them." In the spirit of Israeli assertiveness, students would try to negotiate course requirements and those of us teaching the same course would have to be careful that we had uniform requirements to cut down on dissent. "Negotiate only during the first two days of class then steadfastly keep to your requirements," we were told- never mind the fact that this was a first-time course with first-time instructors who had begun to wonder how they had ever gotten into this.

But we were also told that the students were a wonderful group, warm and interesting, and very HIGHLY MOTIVATED to the point that they were already irritated that NEC didn't give an A+ as Israel University had.

CLASSES BEGIN

Our post-orientation weekend worries came to life the following Monday when each of us met with our classes of twenty-five Israeli nursing students, ranging in ages from early twenties to mid-fifties.

My first class was a crash course in coping. Students were already overwhelmed. Some had divided the total number of pages in the book by six and came up with over a hundred pages per week, which- coupled with the hundreds of pages from their other two courses- was much more than they felt they could be expected to read. The audio- visual closet wasn't unlocked as I had been promised and when the staff person did unlock it, we found there were no VCR's on the TV carts inside.

It was very hot in the classroom. Without a movie, I was forced to lecture and wonder how much got through. The noise level was intense whenever I paused to check my notes. At the end of class I was surrounded by questioning students who stood so close my eyes could hardly focus on their faces while I struggled to understand what they were asking me. I felt as much culture shock as they did by the time I left the classroom.

The course remained a challenge throughout. I felt the book chosen by the resident professor from NEC was unsuitable for this particular audience: dull, repetitive, inappropriate for students with the health background they already possessed, and in difficult language for a foreign group. It was my first time teaching this course, so my comfort level with the material was tentative at times. Students would leave class to go out for a smoke and disappear for ten or fifteen minutes. As the semester wore on, it seemed to take longer and longer each morning to reach a quorum to get started.

My class members checked frequently with students in other sections to see if their instructors were requiring the same amount of work as I did. The esteem in which I was held rose temporarily with the group when I didn't require them to cover the basic anatomy and physiology chapter. I couldn't fathom why I should teach basic information to students who already knew much more about it than I did. The other two instructors plodded through the circulatory system, the respiratory system, the skeletal system, etc., etc.. But resting on one's laurels was not something the students allowed you. The next challenge might arise during conversation on the walk between classes or over lunch. You never knew.

I always remembered my water bottle- I've never had my mouth go dry so often in teaching a class.

THE "FINAL" MUTINY

One morning near the end, I entered a mutinous classroom where my students informed me that one of the other instructors was no longer requiring the take-home final exam and I shouldn't either. Whether trying to charm me out of it or being angrily assertive about it, almost everyone made that point very clearly. I went home, stopping off at a friend's house to blow off steam, trying to find a solution that would satisfy my integrity as an instructor and prevent a lynching (mine) at the same time.

By the next morning I had my plan. Playing off their need to excel against my need to do what I felt was right, I offered them this "concession." I agreed that I had already assessed their knowledge of the first two-fifths of the course content in the mid-term. I would also agree that they probably had learned at least thirty percent of what had been covered since. So I offered those who would choose not to do the final a 70 grade on it. I had an extremely strong suspicion that very few of them would be willing to settle for that, but it gave both them and me an "out." Twenty-four of the twenty-five handed in a final and in many cases did much more work on it than I would have required!

THE STUDENTS

All semester it felt as if I had been teaching a mob that might get unruly at any moment, yet as promised, they were delightful as individuals. Their backgrounds were extremely varied. Some were American immigrants to Israel with American family networks to visit while they were back in the country. Others were Russian immigrants or descendants of Russian immigrants. Some lived in high-rise apartments in Jerusalem or

Tel Aviv. Others were from remote kibbutzim. Some were grandparents; others were young people just out of their compulsory military services. Not everyone stood out, but those who did were fascinating.

Tovah brought her six-week old son and a friend to watch him while she attended class. She shared with me that her mother and father, Americans who lived in Florida, thought all of her Israeli friends were constantly arguing, judging by the volume of their voices. She had to explain that that was the normal voice level for them.

Sara had a great deal of difficulty understanding but worked very hard to tell me in English that she had just heard that her daughter in Israel had given birth to her first granddaughter the night before. Because of her difficulties with English, she felt ostracized by her class presentation group. She ended up in tears every day for a week while other classmates tried to work things out- in Hebrew so I was at a loss trying to help or to understand what was going on.

Vladimir drew wonderful caricatures and always screwed up the VCR in his extremely helpful way when I wanted to show a film.

Shuly was delightful, a leader of the group- affectionate and encouraging and hilarious when she told of an Off-Broadway play she went to where all manner of weird things happened in the second act. At the Farewell Party she told me that she intended to go for her PhD as soon as her sons had completed their military obligations, and I have no doubt that she will do just that.

Mazal told me she learned a lot about English by listening to the way I worded things, and hopefully learned a little Health Psychology too.

Riad was our "Omar Sharif" trying to charm me out of requiring assignments, and especially final tests, but was a devoted father very homesick for his wife and young daughters.

In a very soft voice Effie apologized about her English every time she came to ask a question and tried very hard to please in everything. She had an ally in Etty-who knew everything before we began and could devote herself to translating and mediating for anyone who appeared needy.

Etty thought the course was too far below her level and "had trouble understanding the oral class presentations" of her fellow students who didn't have English as a native language as she did. She helped others out, it seemed, as just another way to secure her position above the rest.

Lilly reported on Crohn's disease with her group and then stayed after class to tell me she had suffered from it all her life. It didn't stop her from being consistently sparkly and upbeat throughout the course or from dancing the night away at the final party.

Robin didn't respond much in class then wrote papers that would knock your socks off.

Avshi, from a small kibbutz, was a quiet but strong presence who went against the class rebellion over having to do a final take-home exam, but then asked me not to tell the others that he had handed his in. He wrote up his relaxation exercise by telling me he visualized himself sitting high above the Sea of Galilee.

Miriam was an older student and very assertively told me I must speak more slowly. (She was probably right but it is a hard habit for me to break.)

HIGH POINTS

We had some wonderful moments in addition to the personal relationships that developed. One group, who presented information on patient-practitioner interactions, hosted an evening showing of the movie, The Doctor, with William Hurt. In it Hurt's character changed from an unfeeling oncologist into a frightened cancer patient who sought treatment from the very doctors he had previously scorned for their bleeding heart approaches. They couldn't have chosen a better vehicle for getting their point across and they even served coffee and popcorn. It was class, but it was also a wonderful social experience that we all enjoyed.

Coming back to the college that night also allowed me to see another side of my students. That day, in an after-class stress haze, I had managed to trip over a curb, hit my head on the sidewalk, and make a fairly good mess of the left side of my face. In a nice change of roles, they became the experts, advising me on how to keep the swelling under control and what to take for pain relief. It was probably worth the discomfort, discoloration, and disfigurement to be able to see the caring side of my students that night. The human interaction of that evening added an underlying warmth to the atmosphere of future classes. We came back to tackle the ongoing class material knowing each other in a more dimensional manner.

MODIFYING TEACHING BEHAVIORS

Most of the time we would dwell in the ivory tower realm of pure academics: discussing patient education methods, stress relief, health compromising habits, and means of behavior change. Then in discussing pain relief methods for acute or chronic pain, one of the nurses would mention an injured soldier they had treated and with a jolt I'd realize once more that these lovely people came from a country where war was a daily reality.

As the students learned how to use behavior modification programs to change clients' unhealthy habits, they were using the same methods to shape my teaching behaviors with them. Baffled expressions or extra-long periods of Hebrew translation were negative consequences which constantly reminded me that my information wasn't getting across very well. I found that I had to pay painstaking attention to aspects of instruction which we usually take for granted; **when teachers speak, students automatically listen and learn.**

Suddenly it wasn't that simple. Lectures had to unknot the confusing prose in our convoluted textbook so that the information was manageable and available to all students. I continuously tried to say the same thing in several different ways, hoping to engage everyone at some language level. Condensation, organization, and clarification became extremely important. Tailor-made glossaries, outlines on the board, overheads of diagrams, pages and pages of handouts and subject-related videotapes became crucial in getting points across. Real life examples clarified the academic points the book made dryly and redundantly. Splitting chapters into sections, each of which could be read and then discussed in class by a small group, allowed for shared learning and decreased the amount of reading any one group had to do.

I usually spent several hours after each class, sitting in the sun in my backyard, grading papers, and working on ways of getting the next morning's lecture tightened up and understandable to the lowest language denominator. I searched the college nursing video collection for tapes that would illuminate and enliven class.

Totally immersed in my efforts, I was at the same time both overwhelmed and invigorated. Teaching my summer semester Introduction to Psychology classes in the afternoon and evening felt like recess-time: free, effortless, comforting, nourishing, and relaxing. My times back at my "home base," teaching familiar students familiar material, revitalized me and prepared me to face the challenges of the next morning.

THE FAREWELL

By the night of the Farewell Party- when all of the instructors had been given a standing ovation and presented with beautiful flower arrangements decorated with Israeli flags- there was no doubt that it had been a unique experience. Hugs, promises to show you round Jerusalem, a strange mixture of Israeli and Western songs and dances- and it was all over.

THE WRAP-UP

Like a tidal wave receding, all was quiet on the New England College campus the Friday after they all left. The Program Director and faculty came together to discuss the experience, debrief a little, and talk about what we'd do differently another time. It was heartening to find that many of the other instructors had found the semester to be the same roller coaster ride I had.

We agreed that through all the challenges, this opportunity to teach and interact with the Israeli students had been an enriching experience. We had been privileged to participate in the program and some of us would even do it again. I think I might.▼

FIRST TIME TEACHER

Sean M. Kenney

As long as I can remember I have wanted to be a teacher. I thought about it a lot but never did anything about it.

A customer one day suggested that I should think about becoming a teacher. Since I had never mentioned to her that I wanted to be one, her suggestion started me thinking.

A few days later I started making phone calls looking for a teaching position. Upon hearing my credentials Bill Webb, the Dean of Community Education at New Hampshire Community Technical College in Stratham invited me to send in my resume. I mailed it out that afternoon.

The next day I got a call from Bill. He wanted me to come in for an interview the next day.

The Interview

I arrived about 10 minutes early. Bill arrived a few minutes late because it was snowing. Of course the wait made me nervous.

After what seemed like an eternity I was called into his office. After we discussed my credentials, he started looking for something on his desk.

"I have a position open to teach math to electrical and HVAC students." Bill handed me a math book. "You shouldn't have any problem with this."

Panic set in. I have always been good at math but it's been over 15 years since I opened a math book. I hope he didn't hear me gulp.

"No problem." I heard myself say. I hope I convinced him better than I did myself.

Preparations

I had 2 weeks to prepare. No problem. Plenty of time. It was a slow week at work so I could take some time off to go through the book.

And then came the flu. One of those killer viruses that had been going around last winter. I tried to read the book and do the homework, but it was slow going with a malfunctioning brain.

After a week most of the flu symptoms started to disappear leaving me with stuffy ears that got worse by the day.

First Night

To make a long story short I showed up the first night barely prepared, half deaf and very nervous.

When the class started I froze. I could not remember any of my prepared lecture and my notes weren't helping much. Luckily it was a math class. I got them up to the board. One at a time. Everybody got a turn.

Soon everyone was as nervous as I was. This somehow put me more at ease. Somehow we all managed to survive that first night.

My ears finally cleared halfway through the course and I am no longer nervous in front of the class. Most of the time.

Teamwork

As a new teacher with no formal training as a teacher, I use my life experience to guide my teaching methods.

I teach a class the same way I run my business and my life, by focusing on teamwork. I find most people perform better when they feel they are a part of a team.

Every team needs a leader. That's where the teacher comes in. I like to establish myself as one of the guys while still maintaining my authority. One way to establish oneself as the authority is by dressing appropriately. Wearing a shirt and tie will help remind your students who is in charge. Having a loud voice helps too.

Students as Teachers

I have found some of the students in the class will know more about parts of the subject than I do. Some teachers are threatened by this. Not me. As a leader the teacher must know when to sit back and let others lead. I don't compete with my students. I use their knowledge to our advantage.

When I teach a math class I require all the students to work up on the board and explain their work. I often let a student teach the class if they have a different way to look at the material than I do. I like to use their knowledge to learn new concepts and to help the class better understand the material being covered. I sometimes have to translate some of the concepts for the class but this method works well for me.

Remember as the teacher we don't have to be an expert at every aspect of the subjects we are teaching but we do have to find a way to make the class understand the material we are covering.

Luckily for us teachers we tend to teach a course repeatedly so we do become an expert at the subjects we teach partly by learning from our students.

Grading

Maybe I grade too easy but I give a student the best grade I can justify. I give partial credit on a test for concepts even if the answer is wrong if I can find in a student's work where he went wrong.

I do this for two reasons. Firstly, in math an understanding of the concepts involved is almost more important then the results. Anybody can transpose a number wrong or push the wrong button on a calculator.

Secondly, getting good grades will help to build a student's confidence and may help make them a better student. When a student thinks they are capable of getting good, grades, they may work harder.

I also give extra credit questions on a test on material I did not fully cover in class. I find it helps me too see if the students can apply the information we covered in class.

In Conclusion

I am almost halfway through teaching the course for the second time. Everybody passed the first time. Everybody is passing this time around too. I must be doing something right.

I still have a lot to learn but a one of my dreams has finally come true for me. I can finally hold my head up high and say "I'm a teacher."▼

~ A CAUTIONARY TALE ~

K.L. Zielinski

"The clay has dried in the shapes left by the artist's hand."
- Stephen King

A fact of life is that we live and learn. We grow up, we grow old and we die. Whether anything is gained in the experiences of life, whether we can assign attributes to lessons learned, whether we can spout sagaciously on wisdom gleaned from the endless processions of time would seem to be the core of education.

Yet, in the role of master/mistress of a class, we tend to play god with our students...

During summer semester at the NHCTC - Claremont campus, I was not enrolled as a learner. Yet it seemed my kismet had called me back to this place for an adventure, an experience, that still lay hidden on these grounds.

Sitting idly at the pond, which drew me, and holding a freshly plucked sedge stalk in the late afternoon sun, I sat staring out at the pond, swirling the sedge in big arcs through the water or hitting it abruptly and watching the concentric circles radiate outwards in ever-increasing size until they almost touched the shore. On the next "hit," I was surprised to feel tension at the end of my reed... that is when I saw the claws!... which alarmed me at first. But alarm quickly evaporated into fascination, and fascination into interest.

Pondering the situation carefully, I decided to dredge it up for study, except that it would not come out. Something was wrong. It would grasp the stick, but as soon as I tried to pull it out, it would let go and - ploop! - back down to its murky depths.

Watching carefully, I repeated the trial. But every effort to extract it failed. Yet it would latch on tightly each time I offered the stick to it. Curious. What was its motivation, and what did it want? I decided that if I could not get it out, I would try to get it closer. Instead of lifting on the stick, I only pulled on it and "towed" the crayfish in towards me until it let go of its own will - but this time, when it raised its claws, they broke the surface of the pond.

"So what do you want?" I asked the crayfish, but it only stood and regarded me as I regarded it.

Swishing the stick in the water before it, did not cause it to flee. It shuffled forward, grabbed the reed and immediately tried to eat it.

Several hours, and a modest investment in disgusting tuna fish, later found me back at the pond, armed with tweezers (while I was fairly certain that it could not break bones, I was quite sure that it would hurt if I got pinched with its claws).

As the day progressed, a congregation – a school – of crayfish formed in the water around me in a large sweeping arc. Some would not venture forward and thus were too far away to feed. But all who were close enough, who raised their claws above the water, were fed. I wondered what attracted them. The smell in the water probably. But is was the stick, initially. Did the stick have a smell? If it does, it probably is not much of one... . What had I done? I had wiggled it! It was the motion and the vibration that had attracted the first one.

Could I teach them knowing these two things? Could I teach them to come and to move towards shore to eat? Pavlov taught dogs. But dogs have intelligence, do crayfish? I wondered.

I pondered these questions and decided that I would try at least. They were worth the effort.

Day after day for a week, I would come to the pond and "hit" the water with a branch and wait. Slowly, they began emerging from the depths and trekking towards the shoreline, claws above the surface, looking for handouts.

Once they responded positively, I began to skip days. I did not want them to learn by rote and pedantics. I wanted them to be learners that synthesized given information and used it in a practicum.

Days passed.

I returned to the pond one late afternoon. Fearing that they would not remember and, ergo, not respond. I rationalized that I was only kidding myself, that they were incapable of learning or carrying information for long periods... and not to be disappointed if they failed.

Tentatively, I grasped my sedge stalk and stroked the mirror surface of the water. Obediently, a dozen claws, or so, broached the surface. They remembered. They had learned. They would come when they were called!

The next step in their education was to try to get them closer to shore – close enough so that I did not have to stretch precariously across an expanse. Time and I would teach them that. It would be an easy lesson. At least, easier than I thought it would be – but it turned out to be a mistake too.

There were reasons why they did not venture too close to land, but in my selfishness to "play God" with these creatures, I had undone their instincts, corrupted them, made them susceptible to the dangers within their own microcosm. I had not taught a subject – but I had subjected them. "Learn this!" I demanded... and they did... but it was greed and war and a free lunch that they inevitably exhibited. While fighting their civil wars for the most food, their brothers and sisters were dying. They were being eaten alive by the bullfrogs that had also learned that when the stick wiggled, crayfish came to shore. It was I who had taught impractically. Crayfish lost claws in their own private battles, and the bullfrogs got fat on the bold ones that ventured closest in order to have the best and the most. I had failed to analyze cause and effect and left this ecosystem altered, warped in some way – worse than when I had started. I had failed to take all the entities into account and to look for attainable goals. Instead I suffered from a kind of selective myopia to satisfy my ego.

I had always believed that I was a bad learner. I am quarrelsome. I question authority, I battle for ambiguous points that seem relevant only to me. Blind faith in my professors, in their lessons, as absolute truths is not pertinent, is not a "given" in my view. Yet, I had demanded this from my learners in a sort of Thoreauvian utilitarian hypocrisy: I had made my wants, their needs... and they had suffered for it.

I had concentrated on a destination and not on the journey that we had mutually embarked upon. I had lost sight of the class and its guided paths that are the essence and the scaffolding of any curriculum. Had I been paying attention to the route that was being followed, I would have seen the yellow signs that warned of imminent danger – for both learner and instructor – ahead. But I had looked only to the horizon, at the place where I wanted them – us – to be. Impatience prompted me to look there and I, inevitably, lost sight of the road that I was travelling with them. I had, effectually, de-railed a class in an effort to get them some place too fast. They had learned. I had taught them. Of that there is little doubt. But I wonder if the lessons I learned in those 6 weeks at the pond were more pertinent and more valuable than anything I had learned in the previous 16 weeks in the halls and classes of this institution.

* * *

A fact of life remains – we live and learn, whether one is the direct outcome of the other remains to be seen.

Yet, we trundle throughout our daily lives and, if we are open to the experiences – surprise! – we may just have learned something today... something subtle and self-taught and unique. A now to dwell and the treasure because it has significance and personal meaning. An idea imparted and comprehended and stored away for future world use.

These translations of awareness, dubiously entitled "lessons," are made more palatable and digestible within the realms of classrooms.

Fragmented ideas are imparted in the hopes of a group comprehending and assimilating a whole concept for practical, demonstrable use.

And I, ashamed of myself in this experiment, have been an instructor. A workplace instructor, but still an instructor. I, teaching neophytes in industrial settings – a big gamble, a risk.

Active concern for the student (and the equipment), prompts testing, question-and-answer sessions, the building of trust... skills training.

"This machine can and will take a life if I screw up, or if my student does," was ever-present in my mind. Fear became a great motivator, and, looking back on it, I wonder if it is possible to overtrain?

The foremost question that would always loom largest, was not: "Is s/he competent to run It?" But, "Is s/he bright enough to shut it down if something goes wrong?"

Students - mine, anyway - were quick to show me what they could do, what they had remembered and could perform. It was what they could not do or were skittish and unwilling to perform that were the sources of my greatest challenges and biggest worries.

To overcome, we would move laterally. Drilling and drilling on already mastered operations, admitting an essence of the next skill and working and working until either the fear dissipated and the student vaulted ahead of his/her own volition or I set them up in such a way that they were nearly unaware that they had performed the higher skill... which amazed them and would aid in restoring confidence and trust until, after much work, student and machine were no longer entities battling each other, but a unit working together in harmony.

The industrial nomenclature for this phenomenon is skills mastery. The pedagogical term would be experiential rote; and, in the workplace, it does, indeed, work.

"You will run this and perform operations in the exact manner that I show you, or you will not run it." Period.

A right and a wrong, a black and a white - no gray areas. Crayfish, I had been at a loss. The methods I had relied upon in previous forums were notwithstanding in this new place.

Yet, I was urgently trying to impose my methods on a microcosm that neither needed to be educated nor would benefit from such an experience. They were, in themselves, a gray area.

They had no apparent needs, so there were no steps to follow. I made up the curriculum as I went along. Long-range vision and ambiguous, esoteric goals with no direction and unsure of where to proceed next.

Every turn produced a crossroads and at every nexus I would ponder what direction I would pursue. A "well, you did that well. I wonder what I should have you do next? Let's try _____." Acts of futility in the name of education. Structureless, directionless, inane and futile.

I had lost sight of them - as individuals and as a group. Without guidance or focus, they reverted. The will of the group prevailed and they failed because I had allowed them to.

Reflecting on this travesty, the query that I had demanded myself to live and teach by, and to have always and absolutely resolved, comes back at me and echoes and reverberates in the recesses of my brain. I whisper the answer thinly, weakly, remorsefully:

"I was not competent to run this machine nor bright enough to shut it down when something went wrong." So much for ethics.

As Ben Okri reminds: "You can not hide your head from life. If you succeed, you will lose your head. You must also learn how to fail."

* * *

Sometimes, teachers fail. And it is not okay... but it is, too. So long as the instructor has examined methods and motives, knows s/he has exhausted every resource within reach and has no where left to go... when we know we've done everything in our power and have answered genuinely, it is okay to fail.

But, when teachers succeed, when we really do - and we see, perhaps, for the first time, a student as a skilled professional, (and not as the shaky novice that they started as), we beam inwardly with pride because we have done everything right and well. When we leave behind our fledglings, when we finally tear ourselves away and seemingly, callously, (in their eyes) turn our backs on them and walk away; from a distance, we watch them struggle forlornly, (some near panic), groping and probing cautiously in their new

world. They experiment practically, inquiring of self; and there is recall as tentative hands remember and recite the lessons eloquently. They work calmly in the rhythmic applications that we have taught them to. Confidence grows. New wings are tested with courage and beat down the currents in a first flight of pride and knowing and self-reliance. The learner transcends the academics of the lessons and soars in practical performances of acquired skills. Knowledge is the wings. Teachers give them.▼

UNDERSTANDING THE LEARNING CYCLE:
A Teacher's Aide

Eugene C. Johnson

Who are you calling a stuffed shirt?

Although I believed there was an 'art' to teaching since I was in the sixth grade, it never occurred to me that it was as important to develop a style of teaching as to have the knowledge of the subject matter. Although I have trained pharmacy students, new grads, and experienced pharmacists for nearly two decade, I am relatively new at teaching in a formal and structured environment such as NHCTC. My experience began in October of 1994. I now have a better appreciation for the 'how' in addition to the 'what'.

Influences

My mother and most of my aunts were teachers. I suspected they wanted me to be a teacher. It seemed natural for me to rebel against that idea. When I was younger, I read all of Ian Fleming's 'James Bond' series as well as other adventure/swashbuckling books. For the longest time, I fancied myself as an adventurer, living on the edge. A life-long friend, Linda Goodridge, used a phrase that I rather liked. She once told me that I was not happy unless I had what she called "...the heart in mouth syndrome." She was absolutely right. I discovered I enjoyed tense and uncertain situations that induced my adrenal glands to work overtime. It became apparent that I would be limited in my swashbuckling unless I secured a good job in order to pay for my vices. To do that, I had to be educated.

I began my academic career majoring in Business Education. To this day, I do not know why I chose that field as a major. As young minds often do, my interest drifted and I decided I liked the sciences. I concluded that pharmacy was a cross between biology and chemistry. I found myself at Northeastern University in the College of Pharmacy. Early on, it was a tremendous struggle to maintain the intensity of the study regimen. As time went by, I began to examine why I did better in some courses and not others. I had a few instructors who made what seemed to be dull courses, very exciting. Inorganic and organic chemistry, biochemistry, analytical chemistry, and drug analysis were among the most difficult courses in the pharmacy curriculum. I tried to memorize the material. It did not take long for me to realize that that was not the correct method for me to succeed with those kinds of courses. My perception that memorizing the material would be enough to get by was dashed. It became necessary for me to reevaluate my learning technique and study habits. I had a need to thoroughly understand the material, not just use rote memory. My attitude about school and learning in general had changed. I would not leave a topic until I knew it backwards and forwards. Professor Joseph "Uncle Joe" Palumbo, former instructor at Northeastern University's College of Pharmacy, had a profound effect on me and countless other pharmacy students. This sincere, giving man had a genuine interest in both the academic and professional career of all of his students. If he identified someone having difficulty, in his subtle manner, he would lead them to the right answers simply by asking the right questions. I hope to mimic his behavior.

Philosophy

I believe everybody has the capacity to learn. Learning is acquiring new information or skills. People may have different topic areas or subject matters where they have the aptitude to learn at accelerated rates. There are those that find understanding atomic energy much easier than interpreting a poem. What a person learns and at what rate is as individual as one's personality.

Training or teaching, in my humble opinion, simply stated, is sharing information. I believe that most people, even young children, have the ability to share information. A child of five can teach a child of two how to get the cookies out of a cookie jar. I suppose what differentiates teaching is the notion of sharing useful information.

Just as I believe everybody can learn, ie. obtain new information, I believe that most people have the ability to teach (share information). It would appear to me that anyone with the desire to share information can be an instructor.

Style

Different styles of sharing information can and often will result in a different level of understanding. When I became a manager/supervisor, I began to think about the different styles my former bosses and instructors used to direct my behavior. I was always self-motivated, but the people I term "mentors" were especially adept at bringing out the best in me. As I continue to look back, I realize they showed me a path and challenged me to travel along it. In keeping with "...the heart in mouth syndrome.", I accepted the challenge. It was a learning challenge. A challenge to search for answers to unasked questions. I became a 'what if' explorer. I like to believe that my style of teaching challenges each student to seek answers to questions that I have yet to ask.

A new adventure and challenge begins with each new class because the students are all different. At the start of each course, no matter what the class, I make a declaration to the students. I do not lecture directly from the book. I explain that it is a testament to the fact that I believe they know how to read and I do not wish to read to them. I once had a Physiology professor that walked into the lecture hall a bit late. He opened his book and began to read verbatim from the text. It was a chapter I had read three times in the last week. My expectations from the instructor was for him to share pearls of wisdom that were not included in the text. I left the lecture hall and allowed my classmates to soak up the words as he read to them. I did not think I had to be read to in my fourth year at the College of Pharmacy. I was highly insulted. Instead of sharing new information, he chose to fill the hour in the same manner used by my first grade teacher by reading to the class. The text and I will cross paths and I will make reference to the materials in the text. The text serves only to act as a supplement to augment concepts discussed in the classroom.

The style that I have chosen for myself, I believe is conducive to optimum learning. Presently, I give instructions in two diverse areas, Human Relations in the Organization and Medical Terminology. In addition, I conduct seminars involving health care issues. My basic philosophy remains the same, but my technique may vary slightly. In Human Relations, they learn by analyzing behavior. In Medical Terminology, they learn by

association. My end point is the same. By the end of each course, I want my students to have significant insight into the realm of new knowledge. I want that knowledge to be practical in every sense of the word. The information that I share in Human Relations is transferable from one industry to the next and can be utilized in work and personal settings. The Medical Terminology students will have a greater appreciation for the complexity of the human body.

Methodology

To enhance the learning process, it becomes necessary for me to capture the student's imagination. They must willingly climb aboard this train on the tracks to discovery. For an instructor, it is not an easy thing to accomplish. The instructor walks into a classroom with total strangers. Why should these students put their minds into the hands of a person they just met and let this unknown person influence their thought processes? The only thing about my students that I am sure of when I enter the room is that they are all a sum of their own experiences. There are as many different attitudes and ways of looking at things as there are students. The expectations from each student varies. In my mind's eye, I see each student as an individual with valuable information to share with the class. Extracting that information is my challenge.

After I introduce myself and hand out a syllabus, I attempt to reduce the size of the barrier that exists between student and teacher. A dichotomy clearly exists on day one. I begin by describing my background and recall the sequence of events that brought me to the classroom. As I go along, I speak briefly about the different positions I have had and what I have learned as my career grew. I relate a few personal situations that have direct relevance to the course. When my story is complete and before the students talk about themselves and their experiences, I ask them all to offer job related and personal situations when it pertains to the topic being discussed. Each student is encouraged to participate openly and offer different view points. I let them know that it is okay to be different and most do not hesitate to express themselves. It is my job to build confidence and raise self-esteem. Low self-esteem and a poor attitude can act as a barrier to learning.

With the Medical Terminology class, my point of departure is the experience I have had working in large teaching hospitals and medical centers. The course requires that the information be memorized. If you recall,

I believe in understanding the material as opposed to rote memory. Because I do not want to compromise the course or my philosophy of learning, it is necessary for me to relate the terminology with the things that are familiar. As an example, I will use the topic of the digestive tract. Because everybody needs to eat, it becomes easier to understand the sequence of steps involved in digestion. Essentially, it is the same for most organs. There is a natural curiosity about how the human body works and most of the students are eager to learn.

The abstract ideas and concepts of human relations are a bit more difficult to grasp. Human behavior in any given scenario, may vary widely. In addition to studying the definitions of attitudes, perceptions, motivation theories, group dynamics, etc., the student must learn how to observe and describe behavior. He/she must learn how and when to collect supplemental information, the kind of information that lends greater insight into the behavior of an individual or group. The student must also learn to separate fact from opinion. In order to practice gathering information and analyzing human behavior, I use the case method. The class is divided into working groups. The groups read the case, extract the main idea or topic, identify the human relation aspects, analyze (describe) the behavior, identify options, and offer and support a recommendation. The open discussions that follow result in different interpretations by people within the same work group. It is at this point that all become aware of the reasons for the different perspectives. It becomes clear that differing viewpoints may be valid and the students begin to search on their own. They begin to open their minds to the limitless possibilities. They begin to actively try to understand human behavior.

One of my students changed her major from accounting to management. Another student working in a medical laboratory suffered from low self-esteem and did not actively participate with the class. As the term progressed and we began to cover the work environment, it became clear that she worked in a very negative climate. Her supervisor and co-workers all contributed to an atmosphere of repression. She began talking about her work situation and the class explored the dynamics of the interaction within the organization. The student's self-image was reversed because she realized that she was not the problem. She became extremely active in the class and was able to see the larger picture and the roles people played that led to an unhealthy atmosphere.

In addition to case analysis, I also use videos depicting the range of behavior and how the behavior changes with the dynamics of the situations. There are times when I bring in a guest speakers and have tried role playing.

Results

Overall, I feel I have succeeded in my goal of helping the majority of students develop skills that will enrich their lives. A number of them have admitted to me that they may be unsure when and how they would use their new knowledge, but most of them recognize that they have acquired skills they did not have at the beginning of the course. When the term ends, they have the ability to recognize hidden agendas and identify situations that need further analysis. They have a working knowledge of the decision making process and an understanding of how the myriad of variables such as attitudes, perceptions, and probabilities of outcomes, along with culture, environment, and personal experience, together shape human behavior.

Some of my students have recommended my course to others. Some have expressed a desire to take additional courses with me. It is flattering to say the least. On the other hand, there were a few students that felt as though they did not gain anything. Those are the students I failed to reach. I continue to re-evaluate my performance because it is not my job to reach most of my students; it is to reach all of them. My Medical Terminology students are confident that they have the ability to perform in a health care environment with relative ease.

The last act in all of my classes is to distribute an evaluation form to all of the students. I ask them directly what works for them and what does not. I ask them for their input to make me a better communicator (instructor). Most of them want to talk more about their work environment and personal interactions. I have implemented more than half of their suggestions and I have been rewarded with improved participation and understanding. I never want to give anyone the impression that I think I know the best way to teach. I am still learning how to teach. I hope I never stop learning.

ADVENTURE IN TEACHING

Judy Honsinger

A definite directional change took place in my professional career as I moved from medical technologist to teacher. It seems as if it was just the other day when I began teaching at NHCTC-Claremont, but in reality it has been close to 18 years. All these years have been spent as a teacher in the sciences. Like many college instructors, I did not have a teaching degree and therefore spent many years learning the art of teaching. As time went on, I had my subject matter in order and I felt comfortable being more creative with my teaching. Each year I would try something new in delivery of material, lab preparation, course content, student involvement, etc. This article deals with one such "adventure" in teaching... the journal.

I have always felt that the ability of the students to verbalize the information they were learning in their classes was a direct indication of their knowledge of the material presented to them. They must use the new vocabulary and construct full sentences that reflect understanding of their area of study. Without the ability to "talk the talk" I felt the student did not fully comprehend their subject. It was to this end that I required the keeping of a journal in the two advanced lab courses which I teach: Pathogenic Microbiology and Clinical Chemistry.

The journal was a tool designed to:

1. *help the student to articulate his/her learning experience.*
2. *help the student to keep track of weekly assignments.*
3. *be used for students to write reviews of magazine articles.*
4. *provide the student a way to communicate weekly with the instructor as he/she writes concerns, indicateds problem area and addresses questions.*
5. *allow the instructor to identify areas of progress as well as areas where additional help is needed.*

The design of the journal was very simple.

* *The journal is a collection of homeworks, summaries of articles and most importantly the students' own written interpretation of how the course is going for them.*
* *The journal is a separate notebook which would reflect their progress in both courses.*
* *Comments made on a weekly basis are directed at encouragement and motivation, as strengths and weaknesses are pointed out by me.*

* *Each course requires the journal be submitted on alternating weeks.*
* *I assigned specific homework that would be placed in the journal and was graded as if it were a regular assignment.*
* *Comments to me concerning the course were responded to but were not used as a basis for grading. I felt I could be trusted to hear and respond appropriately to the most positive or negative comments the students could throw my way.*

I feel that sometimes students assess their own lab skills too harshly and suspect they are always making mistakes, especially in the student lab. The student generally lacks the ability to monitor individual growth in the course and in the various lab skills, both manual and interpretive. This happens because they are unable to envision the whole picture of the medical technologist in relation to what they are doing at that point in time. Both the students and myself now had a tool, the journal, through which we could look back over time and hopefully point out specific areas where we both agree progress is being made.

My point is made by the following student who wrote that *she felt like she would never make it as a med. tech. since her labs were never up to the level she expected and that maybe this was not the profession for her.* Through the journal I was able to express my encouragement and reassurance that she was exactly where most students are at this point in the course. She was a perfectionist, and this was putting added internal pressure on her. The way in which this student first expressed her concerns, in writing, is similar to the manner in which other students have identified their own concerns. My students have tended to "test" the validity of their feelings first in a brief comment to me in the journal and then they wait for the response. This has allowed opportunities for me to continue with a private discussion of their initial comments. I feel this has helped to encourage students in areas which they see as difficulties.

There are also students that do not have difficulty with pathogenic microbiology and clinical chemistry. These students have used the journal not to express concerns but to express excitement over some new information they have learned, be it in class or through a magazine article. The excitement is contagious, and it spreads through the course and right up to me!

The different personalities were reflected in the students' journals. Some were eager to share their thoughts concerning the course, while others were more private with their writing.

I enjoyed reading each entry and actually did not feel overwhelmed by the additional time required to respond to these writings. It was understood that the journals would be returned the day after they were collected, and this was especially important if feedback was to be of assistance to the student.

One student in my microbiology class was having a great deal of difficulty learning the biochemical reactions that are necessary for this course. Knowing a written test on this topic was coming up, I assigned a list of 10 biochemical tests that the students were to explain, in detail, in their journal. I was particularly interested in reagents used in the test, the chemical reactions which took place and what a positive and negative reaction would look like in the lab. When challenged, this student handed in her journal with descriptions of these tests which lacked clarity and completeness. I corrected her errors and told her to re-write the descriptions, making necessary additions and deletions. Her new entries were absolutely wonderful! The descriptions of what took place in the test tube for these biochemicals were exactly accurate. Armed now with her own descriptions of these biochemicals, she studied for the test. The test asked for a complete description of those exact biochemical reactions which each student had written of in their journal. However, when tested, the student's performance revealed less understanding than she demonstrated in her original journal entries. I was able to see that this student required help at the college's "learning center". I brought both her journal and her test with me to the center to show the staff that the student had a problem assimilating large amounts of information in a sequential manner. The journal was instrumental in my directing this student to the appropriate source of help.

In the Clinical Chemistry journal I had students record the work they had done on mathematical problems frequently encountered by the medical laboratory technician. I was able to correct these math problems as I normally would, but since they were collected in the journal notebook, I could track their math progress by flipping back over previous work.

I felt this immediate feedback was extremely helpful with this group of students. In this written form I was able to speak to each of them about their individual concerns and progress. I always talk to my students in class, but in the group setting it is sometimes difficult to speak to each student in a meaningful way. I felt the journal allowed me the opportunity to make each of them a special part of the program.

As a scientist, I am used to experimentation in the laboratory, and now I am using my experimentation in the class setting. I am trying new ideas, evaluating them, improving my teaching, and also taking this opportunity to write. I have received a great deal of support from several instructors at the college and that has motivated me to keep looking for ways to better reach and teach the students. I feel the journal has helped both the students and myself to use writing across the curriculum for positive outcomes. The journal has truly been an "Adventure in Teaching" for this teacher/medical technologist.▼

INTEGRATING MUSIC INTO YOUR CLASSROOM

Dick Conway

I realize that you may have heard about classroom music already, as background cover or white noise. IQs are supposed to go up when music's playing , especially Mozart. Test results are better. This intrigues me, but it's not my main point.

This article is intended to get you interested in using music in your classroom as an addition to your normal material. In my field, the Humanities, this isn't much of a stretch, although it's still uncommon. In other academic areas, it's a harder sell, but I have some ideas for you.

I left teaching for an extended period, and returned in 1992.

When I began to teach again, I did the usual things: review the notes, read the text, etc. After all that, I still was unsure enough of my preparation to dig out the Instructor's manual. I was surprised at how useful it was, both encouraging and relatively complete. I also didn't expect it to proselytise for particular areas of study, but it did-especially music.

Consequently, I entered my classroom many times knowing that a particular issue was being discussed in other classes ,using the same textbook, but with musical accompaniment. I sent for the tapes that came with the textbook. Another surprise. They weren't that great. As I studied them, and the accompanying material, I found myself mumbling that I could find better exa·nples in my own collection, which is eclectic if not complete, or in the library.

The turning point was an appointment I scheduled with one of the Deans whose Academic background was music. We talked about choosing from the textbook examples for a trial run. We reworked THE LIST, but mostly he wanted to add to it. So did the librarian, who had both suggestions and more resources to offer. Nobody, to my growing horror, was advising that I drop the whole idea and return to the textbook examples.

I made the premier presentation as a 12-piece quick history of music in one hour at a Fall class. There was deathly silence. Were the students bored? Terrified? Tone-deaf? Actually, it was none of those. They were simply unaccustomed to musical discussion in a classroom setting. This was a serious hurdle for me. I have no formal musical training. Starting a discussion on a poem or story is difficult enough, but the language of musical discussion is really awkward.

I've settled on, "tell me what you hear." as a starting point after playing each piece, sometimes even before it's over. Invariably, there's a technical or historical reference to be covered if the music itself doesn't register. On the other hand, most pieces will be identified by someone in class.

LIST OF PIECES-Survey of American Music:

One of the courses I teach covers the Humanities in the U.S. 20th century. I use 30-36 musical selections to get to the 1980's. I won't list them all here; in fact, you might want to fill in or guess some of the blanks yourself.

What follows, then, is a quick survey of early 20th Century music, with the kinds of issues that might be raised in subsequent discussion. There are inevitably time constraints, but in the end I want control of the material, so I keep the tunes coming: three minutes or less of music, two or three minutes of discussion.

1) J.P Sousa-any marching band piece, the louder the better. First of all, you have the class's attention. Second, they'll recognize the piece, or guess that it's by the Boston Pops (so I pick one by the Boston Pops to play). Points to discuss are the military roots of music, spread of types of songs after the civil war, etc. The concept of the wind orchestra (no strings) is interesting to students, and so is the portability of certain instruments.

2) Gershwin piano rolls- These recordings won a Grammy a couple of years ago. The most important issue is the change in technology, and our current ability to restore old recordings. A student can hear Gershwin himself playing his own songs. Piano rolls were a brief phenomenon (1913-26), but the issues raised go on and on. Was Gershwin a classical or a popular composer? What was the state of American classical music? Composing for film? etc.

3) Ferdinand Le Menthe-(Jelly Roll Morton)- This is a gold mine. Morton had classical training, and also insisted that he invented Jazz. Discuss New Orleans, slave songs, the blues, etc. This music is the subject of a recent Broadway show, JELLY'S LAST JAM. I play a solo recording called King Porter.

4) Morton/Oliver- I follow the above with a King Porter version that adds King Oliver on trumpet to Morton's piano. The difference between musical treatments is remarkable. You can almost hear Jazz growing up.

5) Scotland/ Bill Monroe-by now your Country and Western fans are chewing up their textbooks. Help them out by introducing European, Piedmont, or Appalachian music, or just start a discussion of Folk Music. Hold back on the protest issues for now.

6) Lil Hardin-Female composers are hard to find, but Hardin's work is available because her husband, Louis Armstrong, recorded it early. This facilitates a discussion of record companies, and recording in the 20s.

7) Bessie Smith- early recordings by small Black recording studios. Bessie's career paralleled America's in the 20s and 30s. Make the point that like films, early recordings were often obscene.

8) Louis Armstrong- I use Miles Davis' quote: :"I can tell you the history of jazz in four words: Louis Armstrong/ Charlie Parker". Students will recognize Armstrong, but often as a cultural icon rather than a musician. Wynton Marsalis has a lot to say about this in a recent AMERICAN SCHOLAR interview. The music is accessible to any culture.

9) Amy Beach-what a natural. A New Hampshire composer and the first American woman to write a symphony- also, a recording including her music won a Grammy last year. What's happening with American classical music in the pre-war period is that it's about to be invaded (and eclipsed) by European immigrants and influences. This doesn't happen with Folk, Jazz, or Popular music. Why not?

10) Benny Goodman Quartet- small combos replace Big Bands. Students really respond to Swing music, but the issues to cover include integration of bands, arrangers, and the decline and fall of dance halls (including those around Lake Sunapee, or your own area) both before and after World War II.

11) Lena Horne- Nobody typifies the WWII sound as well, and she's still performing today! You get to set the song in time, historical context, and style. Then compare it to subsequent developments.

12) Charlie Parker- see above. Despite his genius at other things, what students will notice (appropriately) is the early sound of both Rock & Roll and Rhythm & Blues in his work. Early 40's recordings are best for this context. Historians are suggesting that Parker "saved" American music and cemented New York's position as the center of world culture after the war, but the bebop of the 50's scares newcomers.

There you are: 50 years of American Music in 50 minutes if you hurry. It's better if you don't.

PARTICULAR ISSUES:

It is tempting for students to respond,"I don't understand it", or "I only listen to New Age music (or C&W, classical, blues, etc)". However much I'm tempted to flip on a selection from that genre and say, "OK, let's talk

about that instead," I can't do it and stay on schedule. On the other hand, it's important never to demean musical types, and I'm quick to remind students that all music is an extension of earlier music.

I've never had a student flat-out turn off during class, but some will moan for relief. It's important to vary the presentation. Mix up musical styles, change the volume, use humor- don't let them think it's a "music lesson." It's an extension of their study of Literature, History, Humanities, Math, Nursing, etc.

Playing music is moderately technology-dependent. Pieces have to be cued and preparation is important. I use CDs whenever possible, and tapes otherwise. If it's only available in vinyl, I don't use it.

You don't need to get far into this business before you're convinced that multimedia has more potential than you can tap, either professionally or economically. Don't be discouraged. Use references, library holdings, etc. Most of all, expect this to be more fun than you anticipated for both you and the students. Here are some typical student reactions:

"From now on, I'll really listen when I play music."

"The music was my favorite part, especially_____."

"I never really thought about this stuff before."

RESPONSE:
A Valuable Tool

Arthur R. Deleault

One school of thought among literary critics argues that the literary text is not a finished product but that it is continuously being "rewritten" by its readers. Reader response critics feel that the meaning of a text is not grounded in the text itself but rather the meaning is constructed by individual readers. As such, readers react to pieces of writing, and this reaction is a valuable tool for the writers as well.

Linda Flowers, in her essay entitled "Writer-Based Prose: A Cognitive Basis for Problems in Writing," discusses the works of Jean Piaget and Lev Vygotsky with regard to "inner speech and egocentrism" (127). She feels that writer-based prose is a major cause of the problem of communication breakdown between writer and reader. By studying the qualities of this writer-based prose, she states that a transformation can be achieved. Teachers of writing can help writers convert to reader-based by pointing out the mechanics of both. Most young writers, and many adult writers as well, write for themselves and assume that the reader will be as familiar with the subject matter as they are. The reader is not given the correct information at the correct moment, in the correct fashion. Flower feels that teaching students to recognize the qualities of writer-based prose will allow these same students to make the transition into prose written for readers, a prose designed to communicate.

Donald Murray touches upon the same concept in his discussion of student writers being taught to write for the "other self." With this goal, he maintains that the student will write for his reader and not for himself.

Teachers of writing, by using the approaches set forth by Flower and Murray, can help their students become better listeners and readers. By learning to "read" and interpret their own writing more effectively, students can write more clearly and address the concerns of their readers.

According to Murray and Flower, the teacher must act as coach and guide his or her student into learning and thinking. In this way, the student will use his own writing process as a means to learning analytical thinking and the ability to communicate effectively with writing.

As Murray states, "The teacher helps the student find the other self, get to know the other self, learns to work with the other self, and then the teacher walks away..." (122).

The writing teacher must become this coach and help students develop a writing and learning process which is comfortable for them. Linda Flower would agree that the writing teacher must become invisible: "By recognizing transformation (from writer-based to reader-based prose) as a special skill and task, we give writers a greater degree of self-conscious control over the abilities they already have and a more precise introduction to some skills they may yet develop" (150-1).

Another valuable asset in the teaching of writing is the use of peer response groups, whose response is as important to student writers as is the teacher's. Just as student writers learn to write for a reader, and in this way improve their writing, these same students will now become the readers for their fellow writers.

Heather E. B. Brunjes writes that a collaboration writing group is important for student writers. "One reason is to create a classroom environment based on the assumption that literacy is acquired as readers and writers engage in composing meaningful texts for functional and relevant purposes" (21). In other words, when writers and readers converse, they exchange ideas which broaden both of their horizons.

When working with students who are unfamiliar with response groups, the writing teacher must be certain that the proper approach is taken to the material being read. With early drafts, the "readers" must help the writer discover his or her meanings and directions. The writer may not be completely aware of his her focus, and the group will point the writer in the proper direction. The writer must then re-focus the piece, with later drafts, and arrive at his or her meaning by developing the "message" into an effective piece of writing.

As students become better readers, they can effectively help fellow students improve their writing skills, because as Brunjes writes, "Response groups help students develop a keener sense of communicating their meaning effectively" (21). In this way, they are also taking more responsibility for their learning which in turn makes learning more meaningful for them. The goal of teaching is to create literate individuals, and learning to communicate effectively through the use of response groups is a step in the right direction. Writing groups force students to write for their readers by allowing them to become readers themselves.

Murray and Flower would agree with Brunjes that "peer collaboration is the norm by which knowledge is constructed in most social and work communities, even though it has been noticeably absent from work in the classroom — a suspiciously missing component considering the power of peer influence in adolescent relationships and behavior" (21).

As writers communicate, they need the response of their readers. By receiving this help, they become more literate. As teachers of writing, we must guarantee this response is available.▼

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THE ANALOGY AND THE MOMENT OF INSIGHT

Bill Warnken

My family was in a festive mood, gathered around the television after a Thanksgiving dinner in the early 1970's, watching the traditional football game - the Dallas Cowboys vs. the Washington Redskins. When the Cowboys won on a "Hail Mary" pass on the last play by quarterback Clint Longley, playing for the injured all-star Roger Staubach, the room erupted. Everyone jumped up - cousins, aunts, uncles - everyone except my eighty-year-old grandfather, the family patriarch, who was self-exiled in his rocker over in the corner. A 1914 German immigrant and a lifelong baseball "purist," he had shunned all other sports in deference to baseball. But, struck by the hysteria of the moment, he beckoned me. Like a knight in search of a quest from his liege, I complied. When he asked me if something really significant had transpired, I replied with a question. What would he think if his beloved New York Mets were trailing 3-0 with two outs in the bottom of the ninth inning, then loaded the bases and had a reserve playing for an injured star hit a game-winning grand slam home run? "It was that good?" he responded. When I assured him that it was, he nodded knowingly. My analogy had given him a frame of reference, had brought him back into the fold, back into his own family with a common basis of understanding. The analogy had provided for him a moment of insight, if not earth-shattering at the very least informative, revealing, and responsive to his needs of the moment.

Shouldn t such simple, everyday examples of the value and power of analogies lead us who teach writing to want to harness that power in our students' writing, to welcome them to this wonderful world of creativity where we seek "le mot juste" to drive the analogy? In so doing, we heed the Aristotelian dictum that "we learn above all from metaphor." If pushed, I think we'd confess a desire to do so, to admit students into a world we sojourn in. However, discovering and delivering the necessary pedagogy may be an impediment. After several years of experimenting, I feel I've honed a method.

For starters, we need to demonstrate to students that they are surrounded, even inundated, by analogies and are already using them. Analogies are so often the language of the world - from conversation, advertising, sports, and entertainment to politics, religion, business, and literature, to name but

a few areas where analogies hold sway. And then we must establish a loose working definition of an analogy. From the Greek "analogos," meaning "equality of ratios," the analogy, at its most fundamental level, is comparing situations. It explains or describes one entity or idea by comparing it with another, usually more familiar entity or idea, to lend a universality, even a poignancy to that idea. Similes, metaphors, and personifications all deal in analogies, either explicit or implicit, and provide common denominators of understanding. The writer employing analogies is appealing to the language and his audience to partake in a clearer communication, to simplify his message via a complex creative function. He is doing as a writer what I did for my grandfather. In some magical way an act of love - for language, for audience (in my case, for my grandfather) is the unspoken impetus for these actions.

While all of this is fine in theory, how do we enlist students in the service of the analogy, how do we make analogies accessible to them as writers? A few simple assignments will provide a start. After furnishing them examples of analogies, ask students to record for a week all the analogies they incur - in conversation, in reading (assigned and otherwise), and in the media whether at home or at the workplace. Encourage them to add analogies they find themselves using. Their initial lists may smack of sports terms, pop music lyrics, workplace jargon, or Madison Avenue sales pitches, but as you renew the assignment and refine your handout analogy lists, you'll see students discovering analogies in more subtle, sophisticated settings - in drama, cinema, history, and literature (especially poetry). The "rifle of an arm," and "leader of the pack" will give way to "a cancer on the Presidency," "the slings and arrows of outrageous fortune," and "no man is an island."

Next, you discuss as a class why an analogy works, breaking down its elements into their basic equations, reverting to the mathematical connotations of the original Greek. Here, you also offer Coleridge's admonition that the analogy "need not crawl on all fours," that every element of "A" and "B" need not correspond. You can also re-emphasize the prevalence of analogies by citing their use in defining themselves, as occurs in Coleridge's maxim. Indeed, the elusiveness of an apt definition engenders a wealth of analogies on the way to defining the analogy itself. Thus, students realize that analogies tend to reproduce themselves in a literary mitosis.

In no time at all, students develop an appreciation and an eye for the analogy. They see it as the phrase that rivets the reader's attention, a phrase that is not only inherently pleasing and often beautiful, but is also entertaining and instructive - even sometimes predictable. Students will also realize a more elemental fact - analogies are fun to explore. It is this realization that propels the class to the next stage in the study of the analogy, a fascinating part of the unit. We will call this "analogy blanks." The teacher lists analogies on the blackboard, derived from literature, student writing, daily life, etc. One analogy is presented at a time with its key terms omitted and bare context provided where needed. Students will be amazed at how quickly they will supply the missing terms and vehicles of the analogy by logical deduction. This, in some small way, might have been what E.M. Forster had in mind in his famous epigraph "only connect."

The following is an example I use:

"The bullets flew like A s (birds) in the B (air) and whizzed by our ears like the C (wind) through the D s (trees) in E. (winter).

Students realize that "A" and "C" are pivotal here. The verb "flew" triggers the initial equation just as much as the noun "bullets" does. Each word narrows the range of options for the words to follow. The "analogy charade" produces "birds" for "A," and "air" is produced for "B" by a process that likely first eliminates "sky." Once the logic of bullets flying like birds is clear, "whizzed" and "ear" then imply a different network of possibilities, one in which "birds" is less likely to appear. "Wind" evolves for "C" as something that whizzes by ears. Wind whizzes through what? "Trees" emerges as "D." When would wind make a whizzing sound through trees? When they are bare, of course. And that would be in "winter," for "E." This approach invokes questioning and reasoning and builds incrementally to demonstrate the coherence and logic of the analogy.

A string of analogies follows and students continue to "fill the blanks," sometimes before the entire shell of the analogy has appeared on the board. It should be pointed out here that their ability to complete these analogies suggests that there is something "right" or "apt" about a good analogy in an almost objective way. It is also noted that moments of insight have punctuated their completion of the various analogy blanks presented and have encouraged them to continue, facilitating their recognition of patterns in language and meaning. They have uncovered the common properties of seemingly disparate entities.

A very useful exercise here is "de-clawing the analogy," i.e., presenting an analogy and then re-writing it literally. The creative void is obvious in the diminished ability of the "stripped-down" version to speak to the reader, in its utter lack of poetry, and in its failure to excite. Serving as a wonderful example is a passage in Loren Eiseley's "The Brown Wasps." Eiseley's setting is a great urban railway station, where homeless congregate on benches and must be periodically urged to move on by a policeman on his rounds, who in reality is "looking the other way." After one such round of gentle prodding, during which the officer has actually handed one man a coin, the cyclical process of the policeman's ritual passing is presented thus:

"In his wake, like birds rising and settling behind the passage of a farmer through a cornfield, the men totter up, move a few paces and subside once more upon the benches."

A "de-clawed," literal version of the above might read, "When he leaves, the men sit down again." Students immediately see the merit of Eiseley's thirty-two words and the vapidity of the "de-clawed" eight-word sentence. The objective "rightness" of a good analogy is further stressed here. And the simple equation that fostered it is broken down:

policeman	=	farmer
old men	=	birds
station	=	cornfield

Interestingly, there is even an analogy available to explain the phenomenon of the objectivity of the analogy . Ask students to recall how they went about problem-solving in plane geometry. They will agree that the problem was solved once they discovered the relevant theorem (s). The arithmetic, supplied by the theorem's formula, to discern the final answer was then incidental to the moment of insight when the proper theorem was deduced. The writer, too, enjoys the fulfillment of discovery when the terms of the analogy become clear. An equation evolves and becomes pivotal; the words to complete the sentence flow easily. Thus, the moment of insight when the theorem/terms are discovered transcends the working out of the mathematical formula or the fleshing out of the sentence. So, in a very real way, writers are indebted to Euclid and his school of Greek mathematicians every bit as much as the analytical geometricians who followed him were.

Now that students have been able to master analogy blanks, it is time for them to create their own analogies in the "abtract - concrete" defini-

tion drill. The instructor prepares a handout in which abstract entities are defined concretely, avoiding the "life is a bowl full of cherries" cliches for more fine-tuned, original thoughts. Books of proverbs, parables, and famous quotations may help. I find Native American writing very helpful here and have also employed abstract-concrete definitions from student/inmate writers whom I have taught. A wonderful opening example is a statement from the Blackfoot orator Crowfoot, reputedly made on his deathbed in 1890. When a young brave asked him to define life, he responded,

"What is life? It is the flash of a firefly in the night. It is the breath of a buffalo in the winter time. It is the little shadow which runs across the grass and loses itself in the Sunset."

The sense of life as fleeting is discussed as is the beautiful simplicity of Crowfoot's statement. Moreover, students are reminded that for native Americans, English was at best a second language and possibly a third or fourth, depending on tribal dialects and earlier patterns of European colonization. Yet, despite this handicap, or perhaps because of it, the native writer historically turned to analogies, employing that which he knew best - nature - frequently in very critical situations where clarity was paramount. The inevitable conclusion reached by the class is that one need not possess profound linguistic skills to call on the analogy. It is indeed natural.

When students have absorbed these abtract-concrete definitions, encourage them to create their own - both in and out of class. Students will then circulate these definitions and evaluate them. They routinely recognize the sharpest analogies and will readily explain what makes these analogies fly. (Please see appendix for sample student analogies). They will also dissect those analogies that missed the mark, exploring why some analogies assume the feel of uneven parallel bars - were they ambiguous, misleading, denotatively weak, incongruous, etc.? Both parts of this exercise are equally instructive. Have students then attempt to build paragraphs around analogies to provide the philosophy inherent in the abtract-concrete definition a context, a narrative storyline so to speak. This expansion in itself is a macrocosm of the initial drill, both using similar associative skills.

Another insight to share with students is that in creating their analogies they have placed a foot in the world of fiction and should see that the distinction between fact and fiction is often blurred. For, in fact, the analogy cannot be literally true although it certainly will help propel an essay that is factual. This literal "lie" of the analogy is most striking in the case

of metaphors, which in deleting "like" or "as" boldly proclaim themselves reality. Thus, "fate is a hunter," not "like a hunter." The implied analogy also carries the literal lie as the reader automatically completes the unstated equation. Thus, in the phrase, "the presentation crept at a snail's pace," the presentaion is equated with a snail, in at least one of its characteristics - pace. And, of course, the verb "crept" supports that equation, serving as bridge or equal sign, by invoking a quality of the snail. So we can steal the tools of fiction to build our factual essays because in reality all writing shares all tools.

Through this process, students will see that analogies can help readers concentrate at the peak moments of a piece. A feel for these moments will invite the analogy and energize the writing. And when using analogies to entertain and instruct, our students align themselves with an ancient art. So much of oral tradition was preserved through analogies. The New Testament is almost wholly dependent on them. Much of what audiences take away from literature is in the form of analogy and often outlives plot in our memories. Without remembering all the dynastic intrigue of King Lear's realm, we are unlikely to forget Gloucester's striking line, overheard by his son Edgar, just after Gloucester has been blinded: "As flies to wanton boys, are we to the gods; they kill us for their sport."

It now must be emphasized that analogies can overtake us at passive moments, can subtly suggest themselves. Our immersion in the study of analogies will dispose us to receive them just as the student of dreaming heightens his own dream awareness. But even when the writer appears to be the passive receiver of an analogy, he quickly becomes active when he sees the avenues that open to him. One analogy, written or read, often suggests another. Thus, the writer leads the analogy even as it leads him. He leaves his apprenticeship, the world of denotative meaning, which he must master to validate his analogy equations, and begins to dwell in connotative realms. Once the habit of thinking in equations is deeply rooted, analogies bombard us in an involuntary manner - we start to sense them all around us.

After students are comfortable seeking and receiving analogies and are buoyed by the ease with which their creative capacities are expanded, other related classroom exercises may follow. The "adjective paragraph" and the "sensibility trip" are natural corollaries to analogy drills and continue to cultivate the student's creative powers.

The adjective paragraph replaces each adjective in a given paragraph with the same adjective. The word "good" is useful here. The student reads the paragraph three times - once for content, a second time to replace the universal adjective by instant association, and a third time to settle on the best adjective for each situation (which might well be the one arrived at during the second reading). The vital role of the adjective will become apparent as will its ability to establish an implied analogy.

The sensibility trip stresses description and detail. It replaces analogy blanks with vague outlines of scenes. Instead of completing the blank terms of the analogy, the student infuses the bare scene with detail and action - often around a central analogy. Walks through fields or along the shore, or simple car rides, all featuring changes, work well as scene shells. The instructor dictates open-ended scenes, with intervals between the four or five sentences of a "trip" to allow students to "see" the scenes forming. Student visualizations are then talked out before the writing begins. This exercise usually produces pieces rich in detail, description, and imagination with analogies center stage.

The analogy remains at the descriptive core of all these exercises. And the moment of insight - that moment when the equation at the core of the analogy is discovered/received - is the creative basis of the analogy. These moments help sustain the writer, who may find them serving him anywhere from his introduction through his body to his conclusion or at moments of climax or transition.

After completing the analogy unit, usually a two-week process, the students are aware that analogies flood the universe and that they must orient themselves to them, in effect re-creating them, either as readers or writers, giving to "airy nothing a local habitation and a name," capturing in print a truth that is not timebound and that existed always, in a platonic way. In doing so, the writer briefly usurps the role of the deity by seeing the patterns that link the essences of things. When we employ the analogy, our service to the reader is invaluable. Through the analogy we illuminate meaning, broaden our base of communication, and invite our audience to share the creative process. The analogy can transport the reader and open myriad possibilities. Indeed, there are very few times when writer and reader connect as well as they do when sharing analogies. And when students have the opportunity to discuss the nature and use of analogies, the will always elicit other analogies in the very discussing of those first

presented. In this unique way, the analogy seems to validate itself as a literary device, justify its own existence, and stimulate a self-perpetuating cycle of definition.

Ultimately, the analogy, which students undoubtedly at first saw as Samuel Johnson's "violent yoking of disparate images," now also has the purpose and meaning he ascribed to it as well, as it leads the writer to simple truths through the beauty and poetry of language and moments of insight. All we as instructors have done is supply the pan and the sifter to student prospectors already wading in streams of gold.

APPENDIX

The following are student/inmate reactions to the abtract - concrete analogy definition exercise. It should be noted that these were all derived from an in-class exercise and composed within fifteen minutes.

"Anger is like the wind; at times a passing breeze, barely disturbing the leaves; at times a raging hurricane of indiscriminate destruction."

"Hate is love boiled to a bitter tea."

"Mercy is the forming of a rainbow."

"Death is the sunset of questioning and the sunrise of explanation; the permanent imprint of a Goodyear radial across the sunken chest of a squirrel."

"Imagination is the fragile flower prospering in the desert, the three-week old kitten pouncing upon its invisible prey, the determined lemming anticipating flight."

"Faith is a Christian Scientist with appendicitis and a Catholic without it."

"Disappointment is praying fervently for salvation and being reincarnated as a yak."

"Evil is a lighthouse in the night."

(from *Notes from the Greystone Hotel*, ed. by W. Warnken and P. White, Burgess Publishing Co., 1980)

A DIFFERENT PRESENTATION OF A DIFFICULT SUBJECT

Andrea G. Gordon

Henrietta Hemoglobin was designed to assist second year medical laboratory technician students in understanding a complex and difficult subject. Written in a non-traditional format, this piece presented difficult technical concepts in language already familiar to the student. As a result the students were able to take the concepts and apply them to the language of the medical world.

The piece was tested for effectiveness on a group of seniors who were enrolled in the Hematology course. The group was randomly divided in half, with one half receiving the paper. Students who received the paper were asked to read the material to supplement text and lecture notes, and to not share the paper with the other half of the class. The entire class was then given a quiz on the material covered. Students were told the results of the quiz would not affect their final grade, and participation was optional.

All students chose to participate in the evaluation. The results of the quiz demonstrated a 10 point higher test score of the group who received Henrietta Hemoglobin. According to feedback from the students, all appreciated the different presentation and the level which the material was presented. As a result Henrietta Hemoglobin has been used every year since its creation. Plans are now underway to add to Henrietta's family.

Henrietta Hemoglobin

Introduction

My name is Henrietta, and I am a hemoglobin molecule, very small, but very complex. Created through a complicated set of chemical reactions within a red blood cell, I will live out my life in this red blood cell with my many siblings. Together my siblings and I weigh only 27-32 picograms (there are ~373 trillion picograms in one pound), and we take up one third the total volume of our cell.

Function

Hemoglobin is a very important element in the red blood cell. One might say that I am the reason the cell exists. Just as the human body must breathe oxygen in through the lungs, and release carbon dioxide, all the cells of the tissues do the same. The job of the red blood cell is to carry me around

the body so that I can deliver oxygen to the tissues. When enough of my siblings are present and functioning properly, the cells breathe (called respiration); if not, the tissues could suffocate.

Structure

My structure consists of two main parts: four molecules called heme attached to two pairs of globin chains (I guess that's how I got my name).

Formation of Heme

Heme is made up of a ring of molecules with iron inserted in the middle.

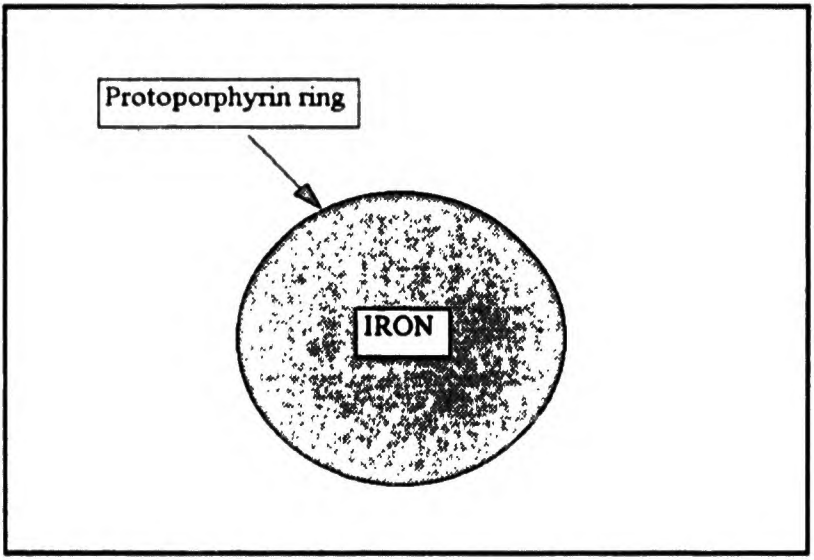

Figure 1: Author's view of Heme

The ring, called a protoporphyrin ring, has protoporphyrin IX as the last molecule of a series of reactions. Protoporphyrin IX formation begins in the red blood cell's mitochondria. With the help of Mickey Mitochondria, the molecules glycine and succinyl coenzyme A (CoA) condensate and form another compound, delta amino levulinic acid.

Mickey then kicks the delta levulinic acid out into the red blood cell's cytoplasm. Within the cytoplasm, enzymes chew chemical bonds apart and bind others together to form protoporphyrin IX. Lastly, the protoporphyrin is once again brought back to Mickey Mitochondria, where iron is incorporated into the molecule.

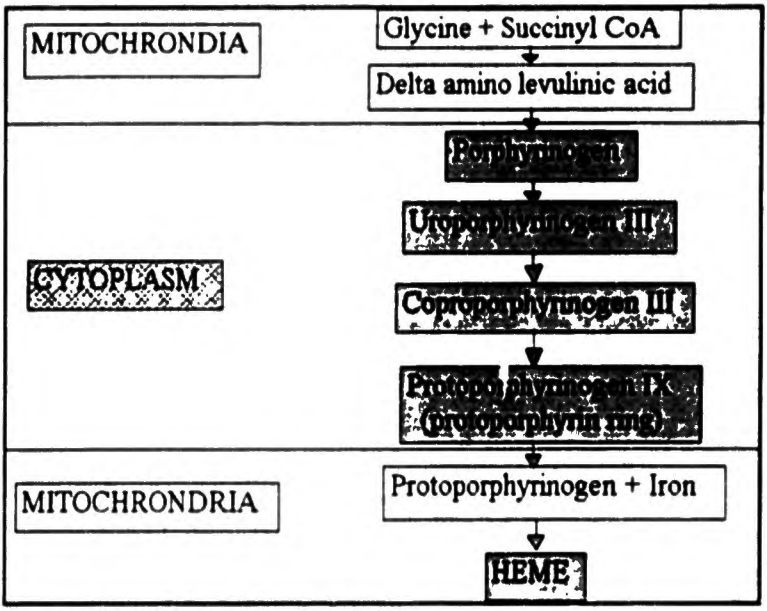

Figure 2: Heme synthesis flow chart

Formation of Globin

My globin chains are nothing more than two sets of matching chains of amino acids called polypeptide chains. One set called alpha chains contains 141 amino acids in a specific sequence. The other set has 146 amino acids, in a different sequence, called beta chains. Since my polypeptide chains are both alpha and beta, I am described as hemoglobin A_1 (Hb A_1) (Figure 3).

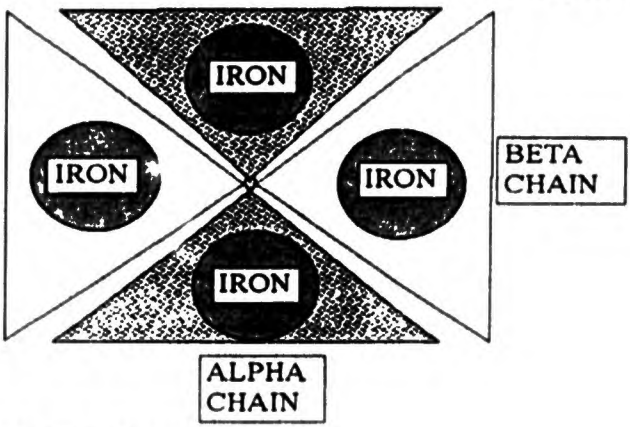

Figure 3: Author's view of hemoglobin A_1

Some of my siblings' globin are made up of other kinds of chains. For instance, those which have alpha chains with a set of delta chains are called hemoglobin A_2 (Hb A_2). Others have alpha chains and gamma chains, making them hemoglobin F (Hb F). Both gamma and delta chains have 146 amino acids in their specific sequence.

Normal Hemoglobin

In a newborn, 70-80% of the hemoglobin molecules in a red blood cell will be hemoglobin F (Hb F). About 20% of the molecules will be Hemoglobin A_1 (Hb A_1), and less than 0.5% is Hemoglobin A_2 (Hb A_2). By six months of age, the Hb F is replaced by Hb A_1 and an adult will have mostly Hb A_1, with a little Hb A_2 and even less Hb F.

Table I: Normal Hemoglobin concentrations

Hemoglobin	Structure	Newborn	Adult
A_1	a_2b_2	20%	97%
A_2	a_2s_2	<0.5%	<2.5%
F	a_2y_2	80%	<1.0%

The total amount of hemoglobin in any red blood cell varies from person to person. I live in a cell which will spend its life in a female. As the female matures, her hemoglobin level will change in response to her health and her environment. My siblings and I together constitute 14.0 gm/dl of total hemoglobin. As a rule, males have more total hemoglobin than females, children have less hemoglobin than adults, and newborns have more hemoglobin than anyone.

Table II: Normal values for hemoglobin

Newborns	16.0-23.0 gm %
Children	10.0-15.0 gm %
Adult Males	13.0-17.0 gm %
Adult Females	12.0-16.0 gm %

Total hemoglobin values will vary depending on age, sex, lifestyle and environment (Table II). People who live at high altitudes require more hemoglobin because there is less oxygen available. When there are many of us around, we are more efficient at picking up the oxygen molecules and carrying them around the body.

Abnormalities of Hemoglobin

It is important that my structure be correct in order for me to carry out my functions. For example, my iron molecule must be in the 2+/ferrous state (which means it must be missing two electrons) in order for me to effectively carry oxygen. Sometimes, iron gets changed to the 3+/ferric state. If that were to happen I would be called methemoglobin and I would be unable able to carry oxygen.

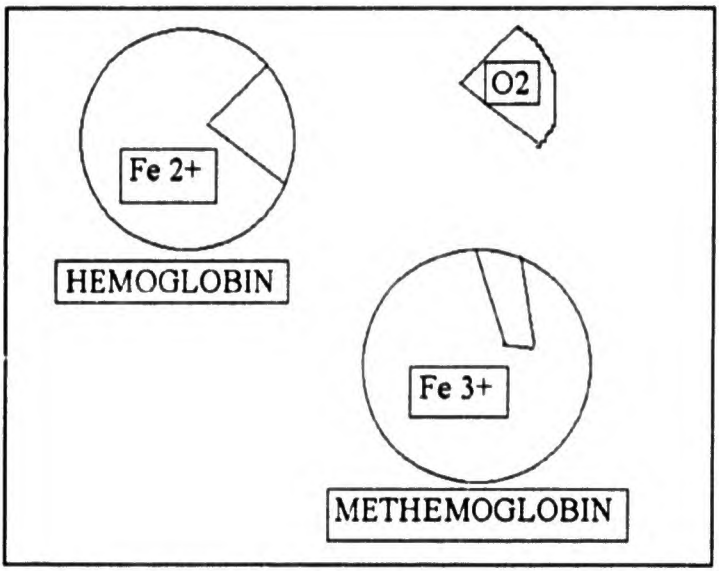

Figure 4: Hgb - Oxygen interaction

Because there are so many amino acids in each of my globin chains, like a factory with production problems, it is not uncommon to have them occasionally out of sequence. Some of my siblings have amino acids which have played "musical chairs" and have switched positions, but can still carry oxygen and carbon dioxide.

There are certain switches which should not happen because they affect our ability to function. For example, if my beta chains had the amino acid lysine instead of glutamic acid at the sixth place on the chain, I would be called Hb S which is found in large amounts in people with the inherited disease sickle cell anemia. When that switch happens, the hemoglobin is not very stable, and will crystallize (polymerize) if too little oxygen is available. Once the hemoglobin crystallizes, it changes the shape of the red blood cells and they get stuck in the small capillaries and eventually are destroyed.

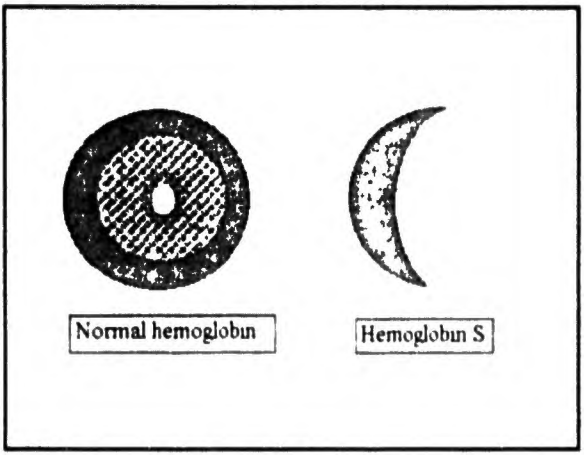

Figure 5: Normal RBC vs RBC with HbS

There are other examples of this type of inherited problem and as a group they are called hemoglobinopathies.

A different type of inherited problem found in some hemoglobin molecules is a decrease in the number of globin chains or their complete absence. These conditions are called thalassemia, and if they involve alpha chains, an infant may not live past birth since all postnatal hemoglobins require alpha chains.

I can also be altered by environmental factors that change my structure and make me less efficient. Carbon monoxide, a gas produced by cigarettes and automobiles, can bind to me 210 times stronger than oxygen. Once a carbon monoxide molecule has attached to me, I am unavailable to bind with oxygen and cells can die. This is why smokers become short of breath easily, and also how people can commit suicide through carbon monoxide poisoning.

Every cell needs oxygen. Functional hemoglobin, in adequate concentrations, is necessary to provide oxygen to the cell. When cells can stay alive and the whole body can breathe, I know I am doing my job!

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STUDENTS AS ASSESSORS - II

Nancy Marashio

"The gathering of intelligence is a strange business."
Frederick Forsyth

Why teach research writing? English faculty system-wide agree that to produce a researched document students need to determine a preliminary direction or focus, to devise a research strategy that works for the researcher, to move from a working purpose of the paper to redefinitions of both the paper and the plan, to multiple draft emerging patterns so that purpose and paper synthesize, to rewrite to make the best statement, and to finally determine what research process will work best in future research writing.

Claremont centers our second English course on reflective research writing, expecially on integrating evaluation and assessment throughout the changing work. Our students spend a whole course working through the unique characteristics of a complex research topic - changing goals, plans, research, paper, assessments and the reflective research writer again and again. Why is all that work worth it?

Ask Tina Stearns whose unexpected June 4, 1996 letter led me to again revise this piece. Tina wrote:

> *I did it! I now have a published piece!*
>
> *I have enclosed a copy of my paper that appeared in* ***Full Cry.*** *I mailed it to the editor hoping he would publish a portion of it and to my delight he published the entire paper. Now people throughout the United States and Canada will be reading my research paper.*

Notice that Tina's excitement is not just about publication; at the heart of her delight is that people "*will be reading*" the research she wrote. The seed of her first statement of her goal - "*To write a paper that I find interesting and the reader finds interesting*" - has flowered. The evidence for Tina of that flowering came only at the end of the course when she documented the response of the class to her paper:

> *My intent for my paper was to have the reader see a separate side of hound hunting bear. I wanted them to see that for me it is a sport and is not a cruel way of hunting. The reaction from the class proved that I achieved what I wanted.*

Publication reinforced that evidence, for the published "Restore Order to Hound Hunting Bear" is introduced by Tina's note to the editor about converting her outsider classmates to insiders about her topic.

> *With all the recent attacks by antis on bear hunters, I was compelled to write a research paper on that topic for one of my college courses. When I told the class what my subject was, I received many raised eyebrows and disgusted looks.*
> *I am pleased to report that when I read my completed paper to the class, I definitely had everyone's attention. I heard many comments after from the nonhunters that they had never thought about why hunting was done. Most, at first, thought I was cruel for using dogs to chase a poor, helpless, fuzzy bear but after hearing my paper had different thoughts in their minds. I'm not saying that I converted my entire class to pro-hunting but I gave them some insight from our point of view.*

That final sentence is evidence for me that College Composition II leads students to know their own points of view, to articulate of their insights, and not only to inform about but even to convert others to acceptance of "*different thoughts in their minds.*"

In final course assessments, most students differently make the same kind of point. Deb Mohr, for example, expresses:

> *As far as achievement goes, I did convert a non-believer into wanting a homepage for herself, and two other people have asked me for copies of my paper. I was able to put HTML as a skill on my resume which has improved my interviews due to employer interest.*

Converting non-believers and interesting employers have become ultimate student goals. As assessors, students have learned to reach for and achieve even more than I would have expected of them.

Goals

On day one of College Composition II students write first drafts of their goals. After examining course outcomes and competencies as well as System core outcomes and competencies, they then articulate their needs, concerns, and issues about how they will move between expectations and achievements.

From then on double arrows ⇄ control their work. The back and forth movement, the changing of either side or both sides of the arrows are a journey that transforms student assessments of both research writing and of their own abilities as assessors. Questions produce answers that require new questions. Writing raises goals that require more writing, changing the goals again. *What was I supposed to do?* becomes *what am I trying to do? How well am I writing?* becomes *how could I write better?* Reflections are written about relationships between drafts of research and drafts of goals. As in math, students hope to answer what a draft has solved, only to discover new questions that the solving raises.

Most progress comes, however, as students learn to better focus on their evolving goals.

"*This class made me realize some of the goals I chose at the beginning of the semester aren't the goals I actually needed to focus on. They had already made me focus on them by bringing them to my attention,*" noted Kate Lucius as she drafted understandings toward what soldiers experienced but what she could only falter toward about the Vietnam conflict.

"*The first goal was a fairly global look at the World Wide Web, HTML, and home pages,*" recognized Deb Mohr, "*but as I sat and thought about this broadness, I got frightened at the prospects and knew I had to trim. Focusing was the hard part - trying to decide which corner I wanted to take a bite from and chew the hardest. Knowing my ultimate goal was to create a homepage for myself, I trimmed down the aspirations of my paper to meet the needs of someone with similar knowledge of computers and the Net - basically a paper I could have read to accomplish what I wanted to do.*" Her paper only found direction when she used it fully for her own ends.

Patricia Henderson discovered that changing her goals was the heart of her learning:

> *The goal I set for myself at the beginning was to do a paper about Alzheimer's disease. To just let the public know more about this disease. I did know that I did not want the paper to be boring like most of the books I was reading. But now my goals have reached higher standards. I want my paper to go on to help people understand the disease, to realize that there is a need for love and support. I want people in the health field to use it when they are discussing this disease.*

Writing

Research writing struggles between embracing and engaging complexity or oversimplifying thesis statement and support. This is not a struggle between either the forest or the trees but a selection of which forest or forests and which trees. As students gather the intelligence, the information, they find both too much (some that they can't use) and too little (gaps in what they need). Their guide to final choices becomes whatever - at that point in time - each writer is able to master and connect in a coherent way.

"To stop researching was hard, but to master what I already had collected made sense, because once I started writing I found it more difficult than I expected to write what I wanted to say," confessed Lisa Brown.

Writing and rewriting the collected intelligence uncovers "chunks" of material. Like the rock mined from dark earthen tunnels, these chunks are probed for the veins of "gold" that might sparkle within. Mining these chunks, students often become dispirited, for the work is hard; more dust than gold seems evident; the hidden discoveries often are different from what a goal had proposed, so even the "strikes" feel uncontrollable to the claimant.

David Perra assessed what led toward his success as:

> *the ability to manipulate a lump of information into a meaningful piece of written material... the point in the paper when you know enough as the turning point where you have to bring the pieces together... the knowledge, dare I say the expertise that my search has given me.*

Searching leads students to really know and understand their material; their own personal investment becomes integrated to infuse the paper with a life of its own. Allowing their work to lead them, they then struggle to lead their readers.

But this too is not easy.

"I had always had an easy time with research. Read it and spit it out on paper. It didn't matter if it was boring because all research papers were boring. Then I took this class, where I found out just how difficult and FRUSTRATING it is to do a good research paper." - Kerry Hull

Her paper becomes, however, good, and through ongoing assessments students develop not only fine papers but also a deepened range of what it takes to develop fine papers.

"I have come to realize that the occasional bits and pieces can fill in holes in the paper or even make up the entire paper... The most difficult portion of the paper is the link, the link that holds the pieces together, admits Belinda Clarke. Moving between their insights in the paper and expansive responses from others, addressing how other views must be considered in order for the gathered expertise to become meaningful, each writer learns to make the efforts to understand the responses and to **accept**. Willingness to look at all, not just at what the writers originally were looking for, illuminates final steps.

Open minds bring together whatever can be connected within the limited time of a semester. Frustration, healthily, remains.

Sandi Dion's end-of-course results about her paper on Fibromyalgia Syndrome are typical:

> *In the past I had done research papers and gotten A's on them despite my procrastinating habits. I'd go to the library, look in the local encyclopedia, write it all down and spit it back out in my paper. At the most it would take a month.*
>
> *Now, I know differently. Never before did I have to worry about the information not being readily available or the information I received being so contradictory. Going in I knew what I wanted to do... prove FMS is a scam. But, the more I talked to people the more I knew there was more to it than I had seen before. So, I thought I'd prove it was a reality. I couldn't do that either! How was I to write a research paper and not prove anything? The next goal was to play neutral and to just show both sides and let the reader make up their own mind. Well, this paper definitely worked on my open-mindedness, but not that much. I couldn't get through it without favoring here and there. Finally, not by choice, I had to take the stand I did, because that's where my research was leading me. I decided that I thought FMS was out there, but if someone wanted to take advantage of the system, they could very easily this way. Still neutral, but I had to accept that FMS is new and the information limited. Unless I had a lot more time and medical knowledge I wasn't going to magically find the solution.*
>
> *I did a LOT of personal growth with this paper. I am always opinionated. Either for or against. Seeing both sides of the issue and staying neutral is NOT my strong side. I feel bad that I*

couldn't help the FMS patients more than I did. I wish I had found answers for them and I guess that's what's bothering me.

In a more broad view I think my paper is effective in that it has opened up the eyes of other PT students. Just to start the process of taking the blindfolds off is a great start in giving the FMS patients the benefit of the doubt. //

Reflective research writers learn to let their material lead them. As do experts, each student begins with a question that matters to him or her, a question that emerges from the previous living and learning the student brings to College Composition II. Between the question and discovering of its significances, what continues to matter - what comes together in the mind and heart of each researcher - shapes the goals the writing brings to light. With no imposition of any one research form, each writer is guided and supported in finding a design s/he thinks is best to shape and convey insight.

Each student struggles to animate insight; each student moves from the initial question to an interim lead, pointing toward the actual goal and then to the actual lead the final deadline allows each to reach.

In The Deceiver Frederick Forsyth wryly concludes:

The gathering of intelligence is a strange business. Rarely does one single coup provide all the answers, let alone solve all the problems... Mostly, the picture appears as if a jigsaw puzzle is being carefully assembled, piece by piece. Usually, the last dozen pieces never appear at all; a good intelligence analyst will discern the picture from a collection of fragments.

Immersed in this "strange business," students learn that reflective research writing works. Evidence that it works can be viewed through these same three lenses of writing, researching, and reflecting. Each lens slants the product (the paper and the learned expertise) through a different light. All are seen in the progression of: 1) Initial Question; 2) Interim Lead; 3) Actual Goal; 4) Actual Lead; and 5) Title of Paper.

Writing

Breakthroughs of Brian, Belinda, Sharon, Marie-Christine, and Joni were led primarily by the writing and rewriting and revising.

- *Brian LaBelle* -

1) Initial Question	**2) Interim Lead**	**3) Actual Goal**	**4) Actual Lead**	**5) Title of Paper**
What are some of the mysterious stories of ghosts in New England?	*People who have died suddenly from a freak, violent sudden accident may not realize they're dead and might say, "I suddenly realized who was lying at the bottom of the stairs."*	- to entertain and entice the reader *- to introduce some evidence that ghosts exist*	*Are spirits, spooks and things that go bump in the night ghosts, or are they just old houses settling?*	*"A Ghost's Tale"*

- *Belinda Clarke* -

Who will care for our elderly?	*Blossoming is nurtured with love to maturity and wisdom*	*- to show how health care services are obtainable for elderly to get what they need*	*On a brisk spring day I was taught the art of chasing rainbows.*	*"Rainbows/ The Magic Within: A Guide To Elderly Services"*

- Sharon Gilbert -

1) Initial Question	**2) Interim Lead**	**3) Actual Goal**	**4) Actual Lead**	**5) Title of Paper**
What makes Disney World the most popular attraction in the world?	*In the late 1950's, Walter Disney had an idea for a new theme park.*	*- to show how customer satisfaction makes Disney World so successful*	*The name "Walt Disney World" brings to mind images of an enormous, sunny theme park, smiling tourists of all ages, famous Disney characters like Mickey Mouse and Goofy mingling in the crowd, and a wide selection of rides.*	*"The Magic of Walt Disney World: A Success Story"*

- Marie-Christine Fahrner -

What is an Indian powwow and what does it mean?	*Powwows which involve several events are mostly a way to keep the Indian's tradition alive.*	*- to show how powwow is a way to keep Native American culture alive, keep tradition going*	*When I asked Mali Keating if she knew the origin of powwow, she replied that she had no idea, but as far as she knew, Native Americans have always had gatherings.*	*"Powwow: A Song To Victory"*

- Joni Bell -

1) Initial Question	**2) Interim Lead**	**3) Actual Goal**	**4) Actual Lead**	**5) Title of Paper**
Why do so many marriages end in separation/ divorce?	*In order to survive a relationship one must understand that there are critical steps to be taken and credit given for those already climbed.*	*- to convince new couples that relationships are hard work but rewarding*	*As a young woman, one year away from repeating the marriage vows to my financè, I can't help but think about the divorce rate and wonder what makes Jim and I think we can last forever!*	*"Building Blocks: The Foundations of A Solid Relationship"*

Researching

Insights of Angela, John, Dagmar, Amy, and Deborah surfaced from the researching of layer upon layer of detail and of threading the maze of discovering significances within each layer.

- Angela Johnson -

Why is dyslexia more common in males than in females? brain effect? percentage of people?	*Ben is my younger brother. Now that I am older, looking back at our relationship, I realize one of the biggest reasons I was so protective of him.*	*- to understand and accept that dyslexics experience life from a different point of view*	*My brother Ben is three years younger than I.*	*"DYSLEXIA"*

- John Callahan-

1) Initial Question	**2) Interim Lead**	**3) Actual Goal**	**4) Actual Lead**	**5) Title of Paper**
What is the reticular anatomical system?	*The brainstem is the neurological equivalent of a railroad switchyard in which the nerve impulses are the train cars, the ascending and descending "tracts" are the "tracks," and the RAS is the yard master controlling the destination and ultimate result of the various cars*	*- to explain the RAS so that entry level neurology students can understand it and still get a decent grade from the program professor*	*The reticular activating system (RAS) is a poorly understood system within the brain stem, the primary functions of which are receiving and integrating information, to and from the brain, involved with states of arousal and attention*	*"The Reticular Activating System"*

- Dagmar LaRue -

1) Initial Question	**2) Interim Lead**	**3) Actual Goal**	**4) Actual Lead**	**5) Title of Paper**
How does a child with special needs benefit from main-streaming?	*Everyone has a potential - let it unfold - support it with love - give it a chance to grow*	*- to give parents an understand-ing about why it is important to include children with disabilities into regular classrooms*	*If children with disabilities are to mature and function in our "normal" world, if they are to become productive citizens in our society, should we not educate them together with all children rather than isolating them in special education classes or institutions?*	*"Let All The Children Blossom"*

- *Amy Young-White* -

1) Initial Question	2) Interim Lead	3) Actual Goal	4) Actual Lead	5) Title of Paper
How do I successfully and efficiently relocate?	*The ultimate goal of moving is to be as content and settled as possible when it is all over.*	*- to provide valuable relocating information in an easy to use format*	*So, you know you're moving.*	*"Relocating: Making A Place of Your Own"*

- *Deborah Mohr* -

Web, Hypertext, Home Pages?	*Just as every snowflake is different from the rest, in a blizzard of homepages allow yours to glisten.*	*- to help someone (with basic expertise in computer knowledge) to create a basic personal home page*	*Imagine being a house builder without blueprints or a seamstress without a pattern.*	*"Your Place of the World Wide Web: A Brief Guide to Personal Homepage Creation"*

Reflecting

Illuminations by Kate, Kelly, Marcia, Lisa, Lynn, and Patricia shone through the reflecting, the mirroring of parts and wholes of selves and others.

- *Kate Lucius* -

What kinds of effects are left in Vietnam vets?	*The Vietnam War, though full of youth, left quite an impact on the Vets. They will never forget what they saw, heard and felt over there. It will stay with them in the back of their minds forever.*	*- to establish a setting and to try and feel as Vets felt/feel*	*It is almost impossible to get any sleep around here with the bombing, gunfire, and just knowing the Vietcong are all around me.*	*"Truth? Of The Vietnam War"*

- *Kelly Kendall* -

1) Initial Question	**2) Interim Lead**	**3) Actual Goal**	**4) Actual Lead**	**5) Title of Paper**
What is all the mystique about Alaska?	*When I was a young girl, my father took me to a place that I became attached to.*	*- to see the connection that is made from a person's soul to the earth in a specific spot*	*When I was a young girl, my father took me to his boyhood haunt, a favorite swimming hole, and a place that I became attached to.*	*"Stomping Grounds of the Soul"*

- *Marcia Dubey* -

Angels?	*Have you ever felt like you were sinking? No one around to help or that cares. Think again!! Don't let the darkness, despair, trials overcome you. A higher power is just waiting for your call to send help.*	*- to create an awareness/ belief in someone's thought process that they're not alone in the world, that God sends his angels*	*"Should I chance it and continue home?" I questioned myself.*	*"God's Angels On Assignment Around The World"*

1) Initial Question	2) Interim Lead	3) Actual Goal	4) Actual Lead	5) Title of Paper
		- Lisa Brown -		
What happened/ what is happening now to Native Americans?	*Opening the blinds on a spring morning, I notice more snow has melted, uncovering various articles in the yard. The more I look, the more I see.*	*- to bring people up to date about the beauty in the simplicity of what the Native Americans did and do*	*Dark clouds blanket the sun, shielding its light, blocking the warmth.*	*"Clouds of Illumination"*
		- Lynn Patriquin -		
How do Native Americans view their heritage and retain their identities in our world?	*I had become an island separated from all others.*	*- to find my spirituality through researching Native Americans; to enlighten others that what a person needs is within reach*	*I stand outside of myself*	*"Native Americans: Happily I Recover"*
		- Patricia Henderson -		
Alzheimer's - true or false?	*Over the past few years, my experience dealing with people who have Alzheimer's Disease has gradually increased*	*- to explain Alzheimer's and show why its victims need love and support*	*An 87-year old man, Alan, demanded to live an independent life, not having to rely on the help of others*	*"The Silent Epidemic"*

Talking about a poem that was inspired by a shadow, Don Murray smiled as he noted, "*Without shadow, there is no light.*" The inspiration, he insisted, came through being led by what we DON'T understand and being allowed and encouraged to write what and how we DO understand.

Reflective research writing allows self-assessing students to descend into the darkness of the unknown, to change goals until they discover what sparks their real focus, to painstakingly uncover significant details, to animate insights, and to emerge as illumined experts, each shining their unique light for themselves and readers to see. ▼

EVALUATING THE EFFECTIVENESS OF A TELECOURSE

William A. McIntyre and John J. Carlisle

Distance learning today is a viable delivery system, and many 2-year colleges consider it to be a vital part of education. A few colleges have taken the distance learning concept further and now offer entire Associate degree programs through telecourses. Further, several states have installed distance learning networks in an attempt to equalize educational opportunities where there is a wide disparity between socio-economic areas or remote geographic regions.

The New Hampshire Community Technical College at Nashua has offered telecourses for several years, but it was never determined how successful they were until an informal study was undertaken to look at the courseware and student reactions. This New Hampshire Community Technical College-Nashua course was called EC110, *Personal Finance and Money Management.*

The responses from student evaluations were studied along with student feedback during the course. The focus of these evaluations was on reaction to the independent learning, the amount of faculty interaction, and the pace of the course.

Background

Telecourse instruction was readily available since the Postsecondary System had a license with PBS (Public Broadcasting System), satellite technology was in place, and most students could view the programs simulcast from Channel 11 in Durham. The PBS membership provides reduced costs for most of the programming as well as the viewing and recording rights to many free programs. Costs are usually assessed per program. Additionally, there is a small fee per student enrolled in each telecourse.

The telecourses provided by PBS have 26 half-hour programs, and a textbook accompanies the programs. The subject content of all PBS telecourses and exams are written and approved by panels of subject experts. The exams included in the faculty materials have been tested for reliability and validity, but frequently individual professors construct their own tests.

The self-paced aspect of telecourses is important as the usual time constraints of regular classes disappear. It does not matter if a student watches the video programs at midnight or 2:00 in the morning. Everyone

in the class had access to a VCR at home, and most of the participants thought that learning subject content by video offered the advantage of being able to watch the programs as many times as desired.

There is however, a significant caveat that applies to telecourses: they *may not* be for everyone. Telecourses are not easy; they are every bit as rigorous as traditional courses. A student who is self-directed and motivated will probably do as well in any other course. Students who need the direction and structure of regular classes may fall behind with this independent learning and, consequently, may not do as well in a telecourse. Also, the student loses out on some positive aspects of classroom socialization and peer learning.

The Telecourse: "Personal Finance and Money Management"

Twelve students registered for the telecourse *Personal Finance and Money Management.* This course covered the basic skills of managing money including budgets, income taxes, investments, insurance, wills, and trusts. As it turned out, most students taped the program themselves at home to view at their own convenience! The programs were also taped by the college library so that students could borrow the tapes if desired. Each student was given a course schedule with completion dates for viewing the videos and doing the reading assignments.

This telecourse was fundamentally different from a traditional college course since students learned at home from the video, textbooks, and study guides rather than on-campus classes. PBS provided a *Facilitator's Manual* for the instructor. It included suggested guidelines for faculty interaction. The class met at mutually convenient times, usually in the evening. The meetings were held bi-monthly to clarify the course content, discuss course materials, pass-in assigned work for assessment, conference discussions with the faculty facilitator, and to take scheduled exams. Since faculty interaction was limited, the faculty facilitator was available to meet as needed for special meetings and extra help.

Students could complete the coursework around their own work and personal schedules. The class meetings provided a forum for discussing course content in light of current events and business news where appropriate. This helped to keep the course content up to date. The tests were constructed from the pre-packaged materials with some customization by the faculty facilitator.

Mid-semester Panic

By mid-semester, panic had set in when the students realized that most of the work would be done on their own. It had taken this long for the realization to set in! This was more of an emotional reaction to a new educational format rather than legitimate fear of the course content. They were beginning to feel the isolation from the traditional classroom format with frequent interaction. By that point, the number of students had dwindled to ten. Two students dropped the course citing a lack of personal commitment and self-discipline. Students were expected to: (1) read a chapter in the textbook, (2) view the corresponding videotape, and (3) complete the workbook assignments relating to that chapter. The workbooks provided self-study exercises that consisted of matching, fill-in-the-blanks, multiple choice, true/false, and essay questions. Additionally, students were given comprehensive case studies in their workbooks that were related to several chapters. The completed workbook assignments were turned in to the faculty facilitator for critique at the class meetings. The course grading scheme included these individual assignments, midterm exam, and comprehensive final exam.

Students Evaluate the Telecourse

Course evaluations were very useful in assessing the viability of the independent approach to learning. While the students seemed to enjoy the freedom from not attending regular classes, they overwhelmingly agreed that they missed the frequent faculty contact and classroom interaction. One of the comments a student made on the course evaluation was, "I didn't realize until now how much I get out of the traditional classroom experience." Several students mentioned that they looked forward to the class meetings, if just to compare everyone's reactions to the taped broadcasts.

The role of the faculty facilitator is important since it is the only link between the information and the student. It was a challenge to provide help to students when the facilitator was not the lecturer. The lecturer was on video, and the students could not ask questions. They felt that it was difficult to listen to the videos without the availability of discussion and the opportunity for the clarification of course content. Although some of the students found the tapes to be monotonous, at the same time, they also found the textbook to be excellent.

Conclusions

1. With the interest in self-paced learning today, telecourses may be a good fit for a well-rounded mix of course offerings. Telecourse offerings must be on very popular topics, or they probably will not get the necessary student enrollment.
2. Telecourses must be carefully marketed. Educating people about telecourses is important, and it takes a considerable amount of effort. Many people are not familiar with the concept, or they think because it is televised, it will be easy.
3. Technical support is necessary to downlink and duplicate tapes.
4. Overall, student reaction to this particular telecourse was both positive and negative.
5. The availability of a faculty facilitator is a paramount consideration. Learning is not done in a vacuum, and interaction with other students and a faculty facilitator is important.

In retrospect, this method of distance learning has some value for students unable to attend regular class sessions. However, for faculty members concerned with maintaining academic credibility, we feel that any course can be only as good as the person(s) teaching it. The textbook and the study tools are important, but overall, the accessibility to a faculty facilitator for student questions and simple give and take of information is a key factor in helping students to understand and to learn.

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A CURRICULUM REFORM PROJECT: Using Voluntary National Skill Standards in Performance-based Curriculum Design

Dr. Keith W. Bird and Ann Weddleton

Introduction

In the Spring of 1994, the New Hampshire Community Technical College System was awarded a three-year (1994-97) grant from the Fund for the Improvement of Postsecondary Education (FIPSE). In the FIPSE project, the New Hampshire Department of Community Technical Colleges will implement a performance-based distinct program in four industry areas: Automotive Technology, Electronic Engineering Technology, Biotechnology, and Human Services. This project represents a marriage of two independent initiatives, a local effort to introduce performance-based learning and core competencies within the Community Technical Colleges of New Hampshire and a national effort to define a set of voluntary, industry based skill standards for point-of-entry, skilled occupations in diverse industries. The model evolving in New Hampshire is not tied to one technical professional program in one industry. The four programs, each located on a different campus, prepare students for skilled, professional employment in four very different industries. Each industry is an important sector of the New Hampshire and New England economy: automotive, electronics, biotechnology, and human services.

This design will yield insights into the process of such reform initiatives as well as concrete lessons in how to improve the 2-year programs providing technical education for careers in specific industries. The Project was also designed to integrate with the Statewide School-to-Work (Career) initiative funded by the U.S. Department of Education as part of an overall K-16 school reform initiative. Skill Standards developed through the process utilized by this goal could in fact serve as the de facto Certificate of Advanced Mastery which the New Hampshire School-to-Work team envisions being adopted at the postsecondary level.

The attached provides basic information about the four programs including highlights of lessons learned from the perspective of the four lead faculty, an abstract of the case studies completed in October 1995,

and a summary of findings and recommendations. For additional information or to obtain a copy of The Interim Project Profiles Report in its entirety (53 pages) contact Ann Weddleton 603/271/6364 or e-mail a_weddle@tec.nh.us. Contact information for individual lead faculty is also included below.

Highlights of Lessons Learned by FIPSE Lead Faculty (March 1996)

* Infusion of National Skill Standards will have a far greater effect on the teaching/learning process than just assuring that the subject matter is current and up-to-date as it relates to industry need
* As the instructional process is developed we see more of a shift from instructor centered to student centered learning activities and a marked shift from time-based activities to competency-based activities
* Conventional accrediting agency guidelines of one hour lecture equals one credit and three hours of lab equal one credit needs to change
* The ability to replicate this educational environment in other colleges will depend upon each of the instructor's willingness to change
* There are many common elements between the 22 sets of Skill Standards developed thus far, particularly in the attributes category
* As more sets of standards are developed, common features will become more evident
* Skill standards facilitate ability of students to clearly connect what is learned in the classroom setting to the competencies required in the work place setting
* Use of skill standards provides a more consistent, objective and standardized means of granting credit for prior work/life experience.
* Skill standards help to assess attitudes and values in less subjective terms by asking the question, "What do we see behaviorally when a student is demonstrating a particular attitude/value?"
* Skill standards have spawned the creation of a "virtual workplace" in which advanced technology skills training can occur and provide students an accurate picture of what the industry is like.
* The virtual workplace is attractive to industry and results in more aggressive recruitment of students for jobs
* The correlation of specific training modules with skill standards allowed us to identify assessment strategies
* Skill standards can have a role in the development of curriculum for an entire degree program since they address the entire knowledge base required for skills mastery

The Four Cases

Electronic Engineering Technology.

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The centerpiece of the reform plan is to transform the core course classrooms into virtual workplaces within a virtual electronics company called "ESETCO" (Electronic Systems Engineering Technology Curriculum Organization).

Students, for example, do not enroll in the course; they apply for a position in "the ESETCO company" by submitting a cover letter and a resume. Also, student projects are designed with real "customers", i.e. manufacturing specific components for a commercial product, to meet practical needs, not academic exercises culled from a textbook. For example, one collaborative project involves the development of a process control monitoring system for Elektrisola, Inc. in Boscawen, New Hampshire. Students develop the system to meet these specifications and work with Elektrisola personnel to install the system and integrate it into the production control systems. This type of professional experience is proving to be invaluable in preparing students with the Skills Standards based capabilities necessary for entry into the workplace. Additionally, this type of experience is inherently performance based. The measure of the success involves performing job junctions utilizing the skills of industry to develop a real product. These are exactly the performance criteria used to evaluate performance on the job.

The lead faculty member is drawing from a number of published standards. The primary sources are the two national skill standards sets for the electronics industry, i.e., the company-focused set of the American Electronics Association and the individual-focused set of the Electronics Industries Foundation.

In addition, he is also incorporating the standards of practice outlined in IS09001, the quality management and assurance standards of practice for creating a high-performance, quality-driven workplace.

Biotechnology

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The program in biotechnology is a new program within the Community-Technical College system of New Hampshire.

The goal of the lead faculty member is to simulate, in activity and technology, the laboratory of a fully functional biotechnology firm.

In translating the national standards into course curricula, the program director has created a series of key industry protocols and standard operating procedures, i.e., discrete biotechnological procedures.

A related instructional innovation using the national standards is to offer the core biotechnology courses over the internet, i.e., students would participate in distant or synchronous (distant) learning.

The skill standards enable the lead faculty member to incorporate industry practices as benchmarks in curriculum design. Achievement of skills in performance-based curricula involve successfully performing tasks which require mastery of those skills.

The synchronous learning project will be an attempt to connect those workers to the course, so they can receive credit for their experience and engage in guided instruction to cover gaps in their knowledge base, submitting samples of their work as proof of skill attainment.

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The automotive technology program at New Hampshire Community Technical College at Laconia prepares students to be automotive repair technicians. It is a National Automotive Technicians Education Foundation (NATEF) certified and a GM-Automotive Service Education Program.

In contrast to their program certification criteria, NATEF placed an emphasis upon the general educational skills implied in the work of a skilled technician. The rapid development of automotive technology and computerized systems means that technicians need to be life-long learners. The skill standards emphasize this need.

The lead faculty member is working with the general education faculty to improve the integration of those courses with the technical courses required for graduation from the program. The national skill standards are his tool of communication with these other faculty members. He is also using the national standards as a tool of communication with the local employer community and regional high schools.

In the former, the goal is to improve the work-based learning component of the program and give the employers a clear idea of student capabilities. In the latter, the goal is to initiate curricular reform in the vocational high school so as to improve the pathway to professional development at the college level, i.e., to the program at Laconia.

Human Services

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The program in Human Services at the New Hampshire Community Technical College at Berlin has been employer-driven from the start. The program has always had a very significant work-based learning component through a variety of internships and site visits to a variety of human services agencies.

The national standards provide a comprehensive list of the "people" and administrative skills required of the human services worker, along with

illustrative activities and scenarios, i.e., mini-dramas wherein the skills are called into play. In this manner, the skill standards are presented as performance-based.

For the lead faculty member, the national skill standards confirmed and validated the content of the existing program. The greatest challenge in the FIPSE reform initiative is in documenting and assessing the attainment of the standards through performance. To address this challenge, the lead faculty member is introducing student portfolios.

Students will document their attainment of the skills by entering the "performance indicator" in their portfolio. Here, the student is expected to record what they have done in order to successfully carry out the stated activity.

Each course is structured to provide students with ample opportunities to cover all the activities related to the achievement of all the skill standards addressed in the course. Most opportunities will occur through role playing exercises in class and/or internship experiences.

Findings and Recommendations of Interim Profiles (October 1995)

* The national skill standards are written in the "language of performance," which, in turn, facilitates the task of incorporating the standards into a performance-based learning pedagogy.
* The national skill standard sets varied considerably with respect to their treatment of the cognitive and attitudinal aspects of the skills versus the behavioral, performative aspects.
* The use of more than one set of skill standards, as in the Electronic Engineering Technology program, complicates the task of selecting which standards will be incorporated into the program.
* Programs which have had a curriculum based upon a well-developed set of industry standards tend to concentrate their FIPSE reforms on making performance-based learning more student-driven and individualized.
* Some of the lead faculty had participated in the development of the national skill standards prior to the FIPSE project. This involvement has facilitated their ability to effectively articulate their FIPSE initiatives to other audiences such as employers, administrators, and other faculty members. It has also reinforced their commitment to those initiatives.
* The national skill standards have proven to be valuable tools for communication and planning, especially with employers. Every lead faculty member reports an enthusiastic response from employers. With the national skill standards, all the local stakeholders are operating with the

same set of benchmarks. The standards, however, remain silent on how students are to learn the necessary skills to achieve the standards This silence is an opportunity to draw employers and other stakeholders into the curricular reform planning process.

* In the case of the Biotechnology program, the national skill standards played an important role in justifying and legitimizing this new specialization to the college administration.
* The shared reform objectives across four very different program/industry areas has created an exciting educational reform dialogue among the lead faculty, who meet to discuss different ways of approaching these tasks, share problems and solutions, and analyze results.
* Each program is experimenting with new forms of documenting and assessing student progress, all of which are more labor-intensive than traditional methods. This aspect of the new pedagogy could impede the spread of the current reforms.
* The extension of biotechnology courses over the internet is, in part, facilitated by the emphasis in the curriculum upon performance-based learning and the use of national skill standards. If successfully implemented, this internet course would be a true educational innovation.
* The initiatives to create a performance-based curriculum grounded in industry skill standards forces a redefinition of the boundaries between classrooms and workplaces as learning sites. In effect, they become much more closely integrated with each other.
* The FIPSE reforms will not be able to take hold and spread without continued support from system-wide and college administrators, equipment purchase, training for faculty, flexible scheduling, etc.
* The lead faculty in all of the programs are utilizing the national skill standards to initiate closer articulations with other educational institutions: four year colleges, high schools, or both.
* In the automotive technology and the electronic engineering technology programs, the articulation with related specializations in the vocational technical high schools has the potential of transforming them. Instead of terminal vocational programs for the non college-bound student, they would become an entry point for a career path with would take them into college and onto a skilled career. If successful, the programs of the New Hampshire Community Technical Colleges would provide the essential bridge from school to work currently missing for so many young people. In this respect, these programs will promote the goals of the School-to-Work initiatives, now beginning with force throughout the state of New Hampshire.▼

ASSESSMENT AND PREDICTION FOR SUCCESS OF COMMERCIAL ART STUDENTS

Jere Turner

The focus of this study centers on the hypothesis that assessment instruments measuring personality, attitudes, and aptitudes of entering freshmen can be used to predict their future success. Assessment is accomplished by using a battery of six tests to determine: (a) personality characteristics, (b) aptitude, (c) cognition, and (d) attitude characteristics. A factor analysis is conducted at the end of the testing program to determine which variables show patterns of correlation to the student grade point average (GPA). Predictor variables are used in a discriminant analysis to determine high-success and low-success classifications. Personality traits found to correlate to the student's GPA using this model are (a) following self-image, (b) alienation, (c) creative thinking, (d) self-concept, (e) idealized self-image, and (f) introspection.

Identification of creative thinking as a variable correlating to the commercial art student's GPA is not surprising, and this factor is what the study initially sought to corroborate. The personality traits correlating to the student's GPA were unexpected. Curriculum development in commercial art has not considered the areas of alienation, introspection and self-concept as factors in student success. Development of technical skills has been the focus of the curriculum at the two-year technical college level. When you consider the student as a whole person, not just a technician, then the personality factors of self-concept, idealized self-image, and alienation become apparent as important to the student's future success.

Sandra Russ (1993), in her book *Affect and Creativity*, identified the following personality traits as important to creativity: (a) openness to experience, (b) tolerance of ambiguity, (c) independence of judgement, (d) preference for challenge and complexity, (e) self-confidence, and (f) risk taking. Her findings are consistent with the personality trait research, with a specific focus on traits of creative individuals, of Barron and Harrington (1981), who listed a set of core characteristics of creative individuals that emerge in different domains. The core characteristics of creative individuals are: high valuation of aesthetic qualities in experience, broad interests, attraction to complexity, high energy, independence of judgement, au-

tonomy, intuition, self-confidence, ability to resolve antimonies or to accommodate apparently opposite or conflicting traits in one's self-concept, and a firm sense of self as "creative" (p. 453).

Initial research for this assessment project centered on the components of creativity and how important its possession is to success of the student in the commercial art program, where students are expected to devise creative solutions for specific topics or assignments. Students are evaluated both for their technical accomplishments and originality. Therefore, possession of creativity and its characteristics could, if known, be a factor in assessing students' predicted success. Assessment of students entering the program can be used to develop criterion for performance based outcomes. It is critical to have some idea of the characteristics of students if they are going to be evaluated for outcomes on comprehensive exams prior to graduation. This assessment program is helpful for student advisement and curriculum development.

Background

The study of creativity in psychology began with the search for the basis of genius. Galton published a statistical study of eminent men of genius which supported his view that the unusual natural ability these men possessed was inherited. Genius was a matter of intellectual power and temperament: both 'capacity' and 'zeal' were needed to achieve eminence. Intellectual powers or natural abilities could be either general powers or special aptitudes such as ability in science, poetry or art (Gilchrist,1972).

Interest in natural ability led to some of the earliest attempts to produce tests to measure ability. Cattell devised the first mental tests used in America, but it was not until 1905 that the French psychologist, Binet, produced the first successful tests to measure ability tests of general ability or intelligence (Drummond, 1988). These tests covered a variety of intellectual skills such as abstract reasoning, comprehension, skill with words and numbers, and general knowledge. Their method of construction and the purpose for which they were first developed were more in the direction of measuring scholastic ability.

In 1927 Spearman, a leading British psychologist, stated that creative talent involves no special factors beyond intelligence; he suggested that creativity be defined as useful creative activities. Most British investigators, at that time, seemed to agree that general intelligence is an essential, and indeed the most important, constituent of creativity (Gilchrist, 1972). The view that creative ability involves skills apart from those measured

by most of the tests of cognitive ability received impetus from the work of Guilford, an American psychologist who had been interested in the analysis of human abilities. Guilford disagreed with the opinion that "the creative person is peculiarly gifted with a creative quality that ordinary people do not have" and argued that creative talent is distributed in varying degrees throughout the population (Guilford,1968). He questioned the identification of genius with high I.Q. and pointed out that although Terman's child geniuses had performed credibly in their adult years, they had produced few outstanding creative accomplishments.

In the 1950s, research into creativity in scientific and other fields accelerated. Getzels and Jackson selected a group of children who had scored well in intelligence tests and compared them with children who scored well in creativity tests of the kind suggested by Guilford. Highly creative children expressed values which differed from those of high I.Q. children and teachers. The former were less concerned with the development of personal qualities commonly associated with success, and their career aspirations were similarly unconventional (Gilchrist, 1972). The study produced considerable information about the performance and characteristics of highly creative children and demonstrated the humor and imagination of which they were capable. Torrance followed up this study with research on elementary school children in which he confirmed some of their findings. He devised an extensive battery of tests called the Minnesota Tests of Creative Thinking. These tests and the methods used were scored for fluency, or, the number of appropriate responses given. Where many responses could be made and several kinds of responses were possible, the tests could also be scored for flexibility (Torrance, 1964).

A different kind of test for creativity, the Remote Associates Test, was developed by Mednick. In this test, subjects are presented with sets of three isolated words and asked to find a word associated with all three stimulus words. For example, the words might be 'rat', 'blue', and 'cottage.' The required response tying the three together is 'cheese'. (Mednick, 1964). This test differs from other kinds of creativity tests in that it requires a series of right answers which are predetermined by the examiner. The test is used to discover cognitive complexity and creative thinking abilities.

Research into creativity in the 1960s and 1970s reflected a change in social climate, which some writers have attributed to the demands of an increasingly technological society or the need to equip individuals to adapt to an accelerating rate of social change. Educators have become concerned

with the extent to which formal disciplines in education provide adequate opportunity for developing creative potential, and much has been written on the need to foster creativity in the educational process. Various techniques such as 'brainstorming' and 'synergism' have been devised for fostering creative thinking in adult groups. Programs have been designed to increase creativity among scientists and engineers.

Defining creativity or determining the nature of creativity has become a complex issue. Many psychologists who study creativity, agree on the criteria of novelty and appropriateness. Creativity is not the same as talent or intelligence. There must be novel and appropriate behavior involved in the process. Some elements of creativity are inborn, some depend on learning and experience and some depend on social environment (Amabile, 1989). Can these personality traits be assessed for students in commercial art? Can results of student performance be validated to prove assessment test scores can be used as predictors of success in the commercial art field? A list of personality traits necessary for success in the Commercial Design and Illustration (CDI) program was compiled by the faculty and used to identify and rate those characteristics thought to be important.

Method

The goal of this research is to be able to assess freshman college students and to make predictions, based on the assessment, of their future potential for success in the commercial art field. Assessment is done by administering the following tests: (a) the Sixteen Personality Factor Questionnaire, (b) the Differential Aptitude Test, (c) the Remote Associates Test, (d) a Semantic Differential, and (e) the Srole Anomie Test (see figure 1). A linear discriminant analysis is used to classify each student into a category of high-success or low-success as measured by the student's GPA. The scores from the battery of six tests are the predictor variables and the student's future GPA is the criterion variable.

Since the correlation coefficient between these two variables is imperfect, some of the predictions will be correct (hits) and others will be incorrect (misses). The hits include students correctly predicted to be either high success (true positives) or low success (true negatives). The misses include students wrongly predicted to be high success (false positives—students scored high on the tests but were below sample mean GPA) and students wrongly predicted to be low success (false negatives—those who scored low but were above sample mean GPA) (Isaac, Michael, 1989).

Discriminant analysis is similar to multiple regression in that both statistical techniques involve two or more predictor variables and a single criterion variable. Discriminant analysis, however, is limited to the special case in which the criterion is a person's group membership. The student's classification in a group labeled high-success or low-success will be determined by the student's GPA. The discriminant analysis equation uses a student's scores on the predictor variables in an attempt to predict placement of the student in the high-success or low-success group. The mathematical basis for multiple regression is an equation that links the predictor variables to the criterion variable:

$$Y = C + bX1+bX2+bX3+bX4+bX5$$

Y= criterion variable (predicted GPA), C= dependent variable y intercept, and b= the predictor variables. Each *b* value in the multiple regression equation is a regression weight, which can vary from -1.00 to +1.00. This analysis is preferred because it yields a single equation linking the predictor variables and the criterion variable.

Results

Assessment was conducted with a sample of 148 CDI students. Their ages ranged from 17-46, years with a mean of 23.9 years. Subjects were evenly divided by gender. GPA scores ranged from1.79 to 4.00, with sample mean of 2.98. Students were correctly placed in high-success or low-success categories 66% of the time. High-success is defined as at or above sample mean GPA and low-success is defined as below sample mean GPA. Students were identified as false negatives 22% of the time, and false positives 12% of the time (see figure 2). The personality traits found to correlate to the student's GPA are (a) following self-image, (b) alienation, (c) creative thinking, (d) self-concept, (e) idealized self-image, and (f) introspection.

Characteristics are similar to those identified by Russ (1993) as being important to the creative process. Successful in the CDI program is not just a matter of creativity; it is also a result of personality traits associated with the creative process. It is possible to measure and identify personality traits that correlate with student's future GPA. Assessment of students' strengths and weaknesses can be shared with the student to aid him/her in achievement within the program. This information is also used to identify competencies necessary for graduation from the CDI program and for success in the field. The findings are used for further curriculum development, student evaluations and classroom assignments.

(Author's note: I would like to acknowledge Dr. Mervin Lynch, of Northeastern University, for his inspiration and continued support for this research project.)

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figure 1.
CDI Assessment (student self-rating)

predictor variables	measures	instruments
abstract-thinking introspection following self-image group-oriented	personality	1. 16 Personality Factor Questionnaire, Form A, 1986, Edition R, 187 items, 3/4 hour
visualization space relations	aptitude	2. Differential Aptitude Tests, copyright 1980, space relations, 35 items, 1/4 hour
creative thinking cognitive complexity cognitive flexibility	cognition	3. Remote Associates Test, Institute of Personality & Research, Mednick & King 1959, 30 items, 1/4 hour
idealized self-image self-concept self-esteem confidence alienation	attitude	4. Semantic Differential, 8 items, 7 step rating, 1/2 hour 5. Srole Anomie Test, 9 items, Likert scale, 1/8 hour 6. Motivation Scale, 8 items, Likert scale, 1/8 hour

Methodology:

Multiple Regression Equation: $Y = C + bx_1 + bx_2 + bx_3 + bx_4 + bx_5 + bx_6 + bx_7 \ldots$.

Discriminant Analysis.

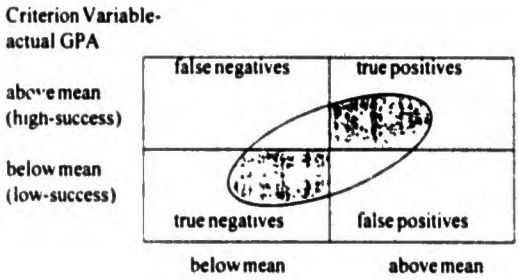

figure 2.
Regression Data for Predicted Grade Point Average
Commercial Design & Illustration Students (N=148)

independent variable	regression coefficient	rxy	R	RSQ	change in RSQ
p15 (following self-image)	.039	.274	.274	075	075
anom (alienation)	- 028	-.321	.364	132	058
rat (creative thinking)	017	.168	381	145	013
d2 (self-concept)	-.072	-.192	.394	156	010
d1 (idealized self-image)	.040	-.048	.416	.173	.017
p5 (introspection)	- 013	- 100	425	181	008

(dependent variable y intercept = 3.300)

Multiple Regression Equation

$$y = 3\,300 + 039p15 - 028anom + .017rat - .072d2 + 040d1 - 013p5$$

Analysis of Variance

	DF	MSQ	F
regression	6	2 043	5.18
residual	141	.394	

Discriminant Analysis

Criterion Variable- actual GPA

equal to or above 2.98	11	𝍸 𝍸 111 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
below 2 98	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 111
	below 2.98	above 2.98

Predictor Variable- predicted GPA

mean GPA = 2 98
N = 148
66% accurate predictions
22% false negatives
12% false positives

JOURNEY THROUGH CHOICES, CHALLENGES AND CHANGES

Tyler S. St.Cyr and Denise S. St.Cyr

Education has always been a process.... A synergistic experience which continues throughout a lifetime; the need is constant; however the setting, the sequencing, and the degree of formality changes over time. (Giorgio 1995) Liberal arts courses, one of the many areas of a college education, "provide the basic skills necessary to adapt, to grow and to change". (Botstein 1995) Under this umbrella is Human Growth and Development, a course about respect, responsibility, relationships, choices, challenges, changes and lifelong learning.

Giorgio also posits that choices and decisions are made easier if one can draw upon a rich and fertile knowledge base. Thus, a Human Growth and Development course must consist of activities that promote lifelong learning. The authors advance a series of writing assignments that include but are not limited to those described herein.

At the onset of this course, students must write their own autobiographies. The purpose of this activity is to help them examine their lives along some sort of continuum. For some of them, this can be very painful because it is sometimes here that they confront the ghosts that have haunted their lives over the years. For others, this is a warm handshake that greets them and ushers them into the funny and matter of fact moments of their lives. For all, this piece provides perspective.

Later, when the chapter on adolescence is investigated, students are required to write a letter to a real or imaginary adolescent. This document usually describes for the young person "how awkwardness will taunt his or her pubescent years". Usually, students will travel down memory lane and freely describe how their own emotions raced to an all time high and swung both delightfully and carelessly on the trapeze of hormonal changes. Students' trip down yesterway shows teenagers that it is indeed possible to dip one's big toe into the sometimes icy waters of adolescence and survive.

DIRECTIONS is the next writing assignment in the sequence. It is teamed with the students' chapter on early adulthood. Here, they learn that this is a "neo" period of development, new everything; new freedoms, new responsibilities, new values, new relationships, and the list goes on.

Students explore questions about where their own lives are or were during this period. Concerns revolve around issues of family, relationships, money, career and educational paths, etc. This is an I'm looking for ? and can I help myself ? They realize the answer is a healthy "yes".

The "Moving On" assignments refer to the chapter on middle adulthood. Students seem to want to or think they will continue to make progress with their lives. **Forward direction** is their focus. Initially, they write about a vexing problem of middle adulthood and present their solution to it. From that point, they reflect on their achievements to date. They then discuss their goals and expectations for the future. In a very real sense, this piece is an extension of "Directions".

At the end of the course, students are required to write a "thank you" letter to a person to whom they are grateful. Presumably, this individual will have had a positive impact on students' lives and will have influenced them significantly. Students reflect that indeed there have been supportive people along the way who have extended their hands in partnership with them and who have assisted them in searching the vast theater of their thoughts, just as Piaget's uncle, Samuel Cornut, did with him.

Botstein (1995) contends that the study of philosophy and religion offer a useful framework for our personal struggle to achieve a sense of meaning in life. So too does Human Growth and Development. How? The answers are readily found in Botstein's article: "Why Study the Liberal Arts"? The authors of this article have borrowed from it and offer quotes in part that clearly summarize their convictions regarding this course. It must help students to "solve problems better, to conceptualize issues and to vindicate tradition." This brings both writers and the reader to Giorgio: "The qualitative impact upon lifestyle, values and personal enlightenment defy quantitative assessment. Lifelong learning is learning to live and living to learn." (1995) ▼

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EDUCATING FOR ORGANIZATIONAL CHANGE

Theimann H. Ackerson and William V. Wheeler

This article describes the authors' use of a method of involving students in a process of critical social analysis that is collaborative, creative, and empowering. Using this method, students identified what they believe to be a pattern of discriminatory allocation of educational resources caused by underlying social prejudices embedded in the organizational culture. The events described illustrate that pedagogies can support or challenge, reinforce or reform the distribution of power in an organization and are important resources for institutional change and mission fulfillment.

The lessons learned and the realities exposed by our students do not just apply to NHCTC at Laconia. The setting could have been any of the institutions in the System, or any educational organization in the New England region and beyond. All organizations import the patterns of conscious and unconscious thinking and acting found in the surrounding society. The meaning of the events described here has universal application.

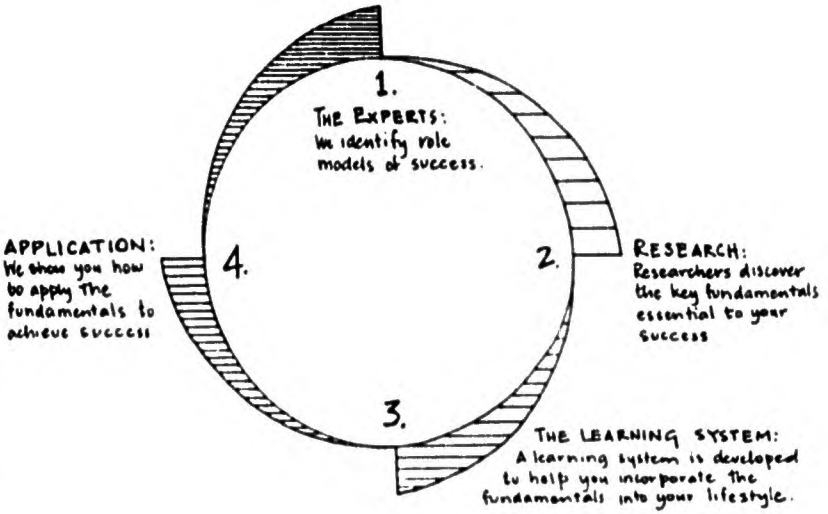
THE SITUATION:

HUS 228.0 Social and Political Issues in Human Services is a required course for an Associate Degree in Human Services at NHCTC at Laconia. It consists of three units. The first unit analyzes social problems using writings by social scientists. The second unit is comprised of histories of peoples' movements (civil rights, women's rights, disability rights). The final unit is intended to promote student activism and involvement in social change activities. Taken sequentially these units move from the general and the abstract to the specific and the concrete: from first reading about what 'experts' think are the causes for social problems, to next examining what ordinary people have done to collectively analyze and change their situations, to finally becoming personally involved in community based efforts to achieve social change.

The third unit, however, had not worked successfully. Students did not seem to see the connections between larger social problems studied in the first two units of the course (e.g. civil rights, disability rights, gender and age discrimination, etc.) and social problems in their communities. After reading about global social problems students seemed to feel disconnected, overwhelmed, apathetic or pessimistic. They were not motivated to be-

come personally involved in promoting social change. Reading what 'experts' had to say and knowing that even the 'experts' failed (most of the time) to solve social problems did not help students generate the motivation and self confidence required to involve themselves in local social change activities.

Pedagogically, the method we had been using in this course can be described as the 'banking' model (Arnold, et. al., 1991) of instruction and can be diagrammed as follows:



This model suggests that:

1. learning begins with the experts, who are our role models;
2. teachers have the information consumers need to succeed;
3. success means conforming to the role model, which means becoming like the experts; in other words, supporting the status quo.

The banking model works well when 'expert' instructors keep careful control of the learning situation. Learners respond according to requirements laid down in advance by instructors who closely control the learning organization. This model does not work to empower people to change their social situations.

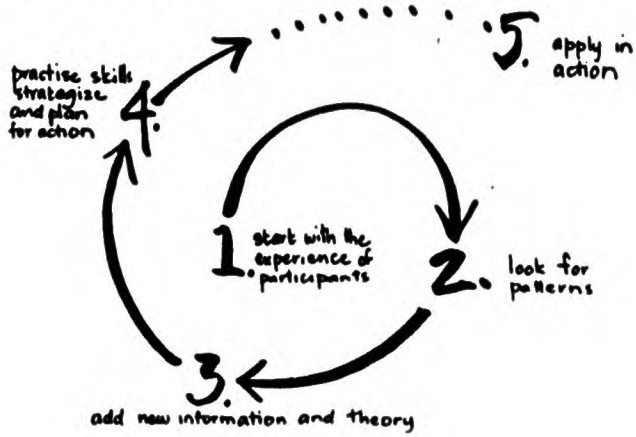
The intent of this model is to socialize the learner into roles that have been structured and determined by the 'experts' in education, business, industry and government. This model is powerful. It is an efficient method of training people to perform complex tasks repeatedly and reliably. The 'banking' model has a role in education, but there are limitations to what it can accomplish. It cannot educate people for empowered, collective participation in determining the existence, structure, aims, and methods of the organizations and associations that comprise their communities and their lives. In other words, the 'banking' model does not enable the learner to develop abilities required to participate in democratic processes of collective self-determination. It tends to foster passivity.

We suspected that the third unit of the course was failing because the students were being taught the first two units according to the 'banking' model. Relying on 'expert' opinions to analyze social problems provided students with many interesting insights and concepts, but did not help them to develop abilities to critically analyze, interpret and change their own social experiences. The first two units developed a dependency on the analyses and interpretations of others.

We decided to change the approach for the third unit of the course and use the 'spiral' model (Arnold et. al., 1991) of instruction, a variation on a method of learning first developed by Paulo Freire (1970). We studied instructional techniques based on Freire's methods (Arnold et al., 1991, GATT-Fly, 1983), published by Between the Lines, a Canadian publisher of books about social change.

The object of the 'spiral' method is to enable groups of people facing common problems (that usually stem from a lack of power and influence), to share their experiences, analyze their situations, and develop strategies for change.

The 'spiral' model can be diagrammed as follows:



The 'spiral model' suggests that:

1. learning begins with the experience or knowledge of participants;
2. after participants have shared their experience, they look for patterns or analyze that experience (what are the commonalties and what are the differences?);
3. to avoid being limited by the knowledge and experience of people in the room, we also collectively add or create new information or theory;
4. participants need to try on what they've learned: to practice new skills, to make strategies and plan for action;
5. afterwards, back in their organizations and daily work, participants apply in action what they've learned in the workshop.

The 'spiral' model assumes that everyone is an 'expert' in describing and analyzing his or her social situation and in assessing the need for change. Control of the learning situation is shared among participants and the distinction between 'instructor' and 'learner' is collapsed. Each participant is both instructor and learner.

THE PROCESS:

What follows is a description of how we implemented each stage of the spiral model for the third unit of HUS 228 Political and Social Issues in Human Services.

1. Defining the social experiences of the participants.

We began by explaining that the next four class meetings would be a laboratory experience, a different approach to education about and for social change. We compared and contrasted the 'banking' and 'spiral' models of education, discussed the distribution and exercise of power in the classroom, and the uses and misuses of each method to challenge or maintain inequities of power between classes of people.

Next we facilitated (and participated in) an exercise using the 'Identity Triangle', a device to help participants think about organizational, political and social attributes that form key aspects of their identity.

The Identity Triangle looks like this:

Discussion and sharing helped students and instructors identify similarities and differences that unite and divide them. Instructors' identities included the following attributes: white, male, faculty, college educated, sources of knowledge, authority, professional, middle class, social worker, former socialist. Students' attributes included: white, female, evening student, AFDC dependent, working two or more minimum wage jobs, single parent, disabled, divorced, living in poverty, survivor of abusive relationship, etc.

Immediately obvious was that instructors possessed many attributes that are socially valued, whereas students possessed many socially devalued attributes. Discussion followed about how students experienced devaluation[1] in their everyday life from family, agencies, school faculty, staff, and students. What had been abstract themes of age, gender, and class discrimination read about earlier in the course began to be seen as operative in daily life. The immediate result of this exercise was that we found ourselves *really listening* to one another with sensitivity to one's own and others' values and vulnerabilities.

2. Looking for Patterns

The second class meeting continued the previous class discussion of participants' experiences including how the possession of valued and devalued attributes influenced communication in the classroom. Students and instructors became sensitive to how closely the classroom replicates discriminatory and oppressive features of society. For example, students who were employed shared their negative opinions about students who receive AFDC. These opinions caused them to pay less attention to, and be more inclined to disagree with statements made by AFDC recipients. AFDC recipients talked about their tendency to withdraw and not be active participants in class once it was known to other students that they were receiving AFDC.

Discussion included how gender and class differences influence communication between teachers and students. The male, middle class, college educated instructors held extraordinary power in a class of poorer, less educated women. The students were inclined to not question and disagree with the instructors, and the instructors tended to discount students' opinions about social problems.

[1] "devaluation" as it is used here refers to negative social judgments about an individual based on categorical negative judgments about the class of persons the individual is perceived as belonging to. The socially devalued person is not perceived as an individual but as embodying the undesirable traits and qualities of the class.

3. Adding factual and theoretical information.

During the discussion, the instructors would sometimes use theory and research to validate the students perceptions and to build students' confidence in their ability to interpret their experiences.

During this second class meeting, time had been set aside for all human services students in the building that evening to meet (without instructors present) and discuss their College experiences. The meeting was facilitated by three graduates from the Human Services Degree Programs who were now attending Springfield College School of Human Services. They had been invited by the Chairperson of the Human Services Department to survey past and present students and suggest program changes.

This meeting, originally scheduled for fifteen minutes, lasted for almost an hour. When our students returned to class, they began to process the meeting. Apparently much of the student discussion in the meeting centered on the lack of College resources and services available to evening students and the shared impression that Human Services students are not as important to the College as other students are. Suddenly one of the students asked, "Do you think that we get inferior treatment because we are socially devalued?" It was a moment of discovery. Everyone knew immediately that the root of the problem was that **students who are socially devalued outside of the College are devalued within the College.** It was an uncomfortable moment, a discovery of a painful truth: Human Services students are accorded fewer College resources because they are perceived as belonging to a less worthy social class.

4. Planning for action.

This class began with a lot of student anger directed toward the College. Students reiterated their belief that their discriminatory treatment was a reflection of their status in society: devalued, powerless and exploited.

In order to facilitate a transition to the next phase, planning, and to avoid getting 'stuck' in feelings of anger, resentment and discouragement, the instructors asked each student to consider the following questions:

- What is our struggle?
- Why do we bother?
- What makes the struggle worth the time and effort?
- What sacrifices have we made and continue to make?
- What makes us sometimes want to give up?
- How do social structures help/hinder?
- What are other helps/hinders?

The results were shared among the group and the answers were surprisingly consistent. A picture emerged of a motivated, caring, dedicated group of women in tenuous financial situations who struggle to achieve better lives for themselves and their families. These are students who earnestly believe in education as a means of self improvement and believe that our colleges are committed to helping them to obtain their education. The irony is that instead of being respected for their struggles and supported in their pursuit of self improvement, these women find themselves devalued and unsupported.

Responses to the questions about 'helps' and 'hinders' included the following:

Helps

Employers who flex with school schedule
Supportive husband
Life's lessons
Financial aid
Stress management
Learning Center - PACE Lab
Growth as a person
NH Job Training Council
Transportation assistance
Child care assistance
Internal awareness
Women's networking and friendships

Hinders

Lack of plan for continuing education or work
Marriage problems
Single parent
Children
Disability & lack of handicap accessibility
Need for daycare
People not really listening
Limited access to library
Lack of information re: scholarships
Cost of transportation
Age
Lack of respect
Financial struggles

No way to get emergency messages after 8:30pm
Lack of sleep
Lack of counseling services
Stress related illness
Parental anxiety about children left at home
Gender discrimination
Talked to as if you are slow and stupid
Not included in school activities
Pay same $ as day students but get fewer services
Lack of money
Adult students not treated as adults
Lack of time
Lack of flexible class schedules
Women have unfair burden of family concerns
Lack of single parent assistance
No social life
Prejudice

These helps and hinders show the kind of effort the students expend to obtain an education, and their awareness that they frequently do not receive needed and reasonable assistance.

During the final class, the students turned their attention to what they could do to change their situations in the College. This was difficult because it was the end of the academic year, a time of diminishing energy for non-essential school activities. The task of organizing other evening students seemed daunting. The class went through some brainstorming about actions that could be taken. They discussed what leverage they had, and what some short term goals for change might be. A student made the suggestion to call and invite one of the Springfield students into the class for consultation. The call was made at once and later that same evening the Springfield student came to the class. After discussion it was decided that the students would form themselves into a steering committee, organize other evening students and collectively consider what actions to take. They are currently engaged in these efforts.

Are these students right? Are they organizationally devalued? We believe that if it is the collective perception of a significant number of students then it is probably true.

It can of course be explained away by reinterpreting the students' experiences so that it seems that although they may perceive that they are

devalued, they are really just victims of their own mistaken perceptions and thinking. This is called 'blaming the victim'. As faculty we have the power (as 'experts') in colleges to do that and to get away with it. But reinterpreting students' experiences to avoid confrontation is socially, intellectually and educationally unethical and, we believe, immoral.

THE ORGANIZATION

In judging whether the students' claims are plausible or not, it is helpful to look at the organization.

NHCTC at Laconia is a traditional technical education institution. A key aspect of its mission is to support New Hampshire industries by training students to be good workers. The majority of students are male and the most prominent programs are fire science, graphic arts and automotive technology, programs that train mostly male students for traditionally male occupations. Less visible are the business programs that have more women than men enrolled in them.

Within the organization being male is a requirement for access to significant power and influence. Important administrative positions in the College are occupied by males, while most support positions are occupied by females.

As in most traditional educational institutions, day faculty, students and programs enjoy more organizational prestige and support than their evening counterparts. Irregularly included in college activities, evening students chronically feel disconnected and neglected.

Evening students have periodically expressed their need and desire for more student services and inclusion in day school student activities and events. Little has been done to address these concerns. Three years ago a group of students were able to persuade the former president of the College to provide a modest increase in services for evening students. This gain was temporary: today there are less services than before the increase three years ago.

Within evening programs there is a hierarchy: computer and business programs and their students enjoy greater status than Early Childhood Education or Human Services programs and students. Alone among programs, Early Childhood and Human Services have neither dedicated lab nor dedicated classroom space, and receive little of the College resources although they generate significant revenues. Most of the students in these programs are women, a significant number are single mothers on AFDC

support, and many face a lack of means to provide for child care and supervision. It is interesting to note that in spite of several years of demonstrated need for it, creation of a child care facility to serve children of students (predominantly women) has consistently been assigned a low priority.

Like most social entities, educational institutions mirror the norms of the society in which they are set. Is it surprising that classes of people devalued in society are devalued in our colleges? Or that the programs to educate and train people to serve devalued persons are also devalued? Societal devaluation takes place in our classrooms and is implicit in our language, thought, methods of instruction, curriculums and organizational policies and practices. And because devaluation obviously works to the benefit of those in control, efforts to empower people to collectively analyze their situation and implement solutions are met with active and passive resistance.

What will happen as a result of these students' efforts is uncertain. As their list of 'helps' and 'hinders' illustrates, they do not have time and energy to spare. Nor are the students experienced organizers. Their success will depend on how willing the College is to listen with understanding and to respond in a manner consistent with its stated mission of "providing the highest possible level of technical, academic, and professional preparation to *all* people in New Hampshire", a mission that requires the College to serve students "regardless of financial need, academic standing, and *social condition*"(authors' italics) (Rafn, 1992).

The challenge of this mission is faced by the entire Postsecondary System. To translate this mission into reality the System and its component institutions must engage in critical organizational analysis and planning with staff, students (including those segments of the population currently excluded from the colleges, e.g. persons with serious disabilities), faculty and administrators. As educators we talk a lot about 'empowerment'. We create teams, appoint students to task forces, create community advisory boards, and still fail to achieve fundamental change. We seem to forget that as educators we can empower only to the extent that we use pedagogies and create conditions for full and equal participation by all persons. And in the process we must be willing to listen to uncomfortable truths and give up organizational privileges obtained and retained at others' expense. ▼

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THE LEARNER'S JOURNEY

Paul Marashio

...we learn to understand how our minds work and how we can use different aspects of our being to learn in different modes.

"Awakening The Heroes Within"
Carol Pearson

Recently in several of my classes, after being introduced to a new learning activity emphasizing higher learning levels in the cognitive domain, a student blurts out, *"I can't do this; I'm a CE (Concrete Experience Learner)."* An involuntary wry smile slowly presses on my lips connoting I'm impressed that they know their learning style, and I respond, *"Yes, you can. Trust me."* The class doubters offer me their temporary conditional trust with a smattering of *"show me how"* thrown in.

How learners learn remains a mystery begging to be demystified. Educational scholars toil daily in search of revelation and, from their meager discoveries, offer us only teasing morsels to whet our intellectual appetites. Two of these morsels, the learning process and learning styles, transport the learner on a learning journey from the secure comfort zone of the known onto the path of the insecure, uncomfortable unknown. Simultaneously, the instructor travels into the precarious unknown, attempting to unravel the mystery of learning through the art of teaching.

The Call: The Learning Process and The Learner

Early in my teaching career, Jerome Bruner's "The Process of Education" influenced my thinking on and approach to teaching and learning. When I teach a new course, I automatically search for the discipline's process. To uncover the discipline's process a teacher must ask, how does a historian work? how does a writer write? how does an engineer work? etc. The answer to the question allows us to strip away every layer until the discipline's skeletal structure is exposed. The learning process requires every learner to walk in the shoes of the historian, the writer, the engineer, the scientist, or the technician by performing the professional's tasks and by honing the professional's skills - gathering/collecting data, formulating interpretations, etc.

While the learner learns in the learning process, the learner works like a detective searching for information, facts, clues, leads, formulating hypotheses/interpretations to be tested and retested, to be changed, to be modified, or to be validated. With continuous reinforcement of the learn-

ing process from course to course, the learners graduate from our higher education institutions with a sturdy learning framework to wend their way through lifelong learning.

Crossing The Threshold: Learning Styles and The Learner

Students walk into our classrooms with a deeply rooted learning history. During their formative years each learner nurtured, cultivated and reinforced their individual learning style. Consequently this style becomes their security blanket, their comfort zone, the origination of all their learning.

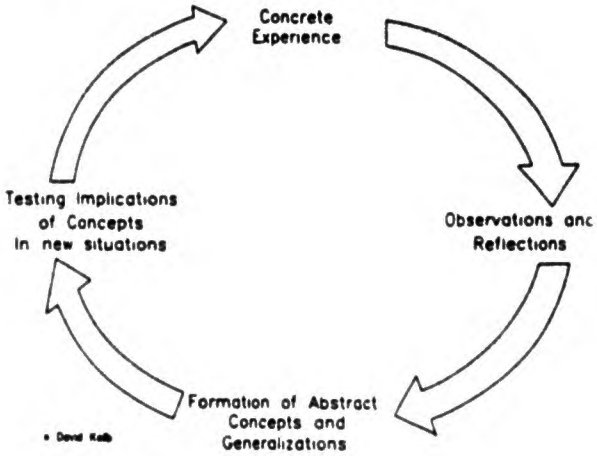
Learning-style research has identified four learning styles:

* Concrete Experience: can view a problem from a variety of personal perspectives.
* Reflective Observation: easily uses deductive reasoning.
* Abstract Conceptualization: searches for practical uses of ideas and theories.
* Active Experimentation: learns best from "hands-on" experiences and relies on people more than analysis.

Whenever a new lesson is presented by the instructor, the learners will all retreat to the safety of their home base learning style. They are reluctant to leave the familiar place to venture off into strange learning lands. However it is essential for each learner to experience every learning style if they are to experience a complete education. The challenge for the instructor is not only to learn about the four learning styles but also learn about several teaching styles. Equipped with this knowledge the instructor can design lessons and methods that meet the students' needs yet expand the students' learning.

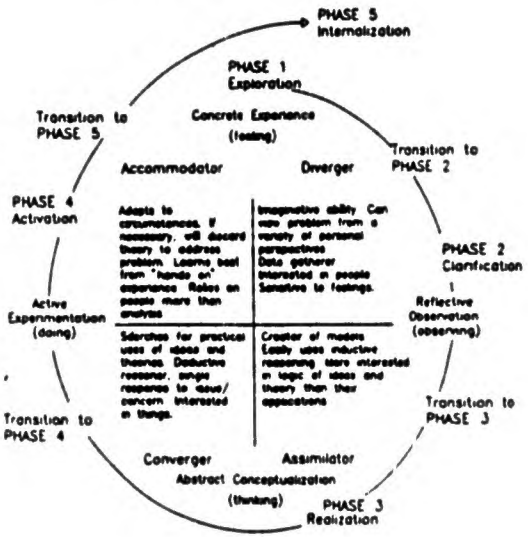
(Following pages - Figure 1. David Kolb's "The Experiential Learning Model" and Figure 2. "Comparison of The Experiential Learning Cycle with the Service Learning Mode").

Figure 1: The Experiential Learning Model*



* David Kolb

Figure 2. Comparison of The Experiential Learning Cycle* with the Service Learning Model.



* David Kolb

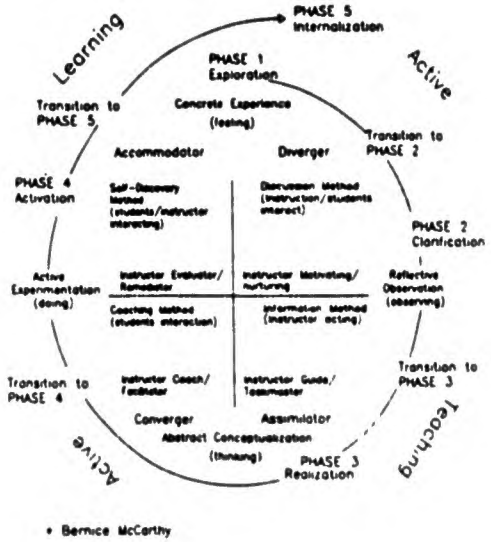
Mentors: The Instructor's Role

When the instructor learns a Concrete Experience Learner is most comfortable collecting data and telling facts, a Reflective Observation Learner reflects on judgements, interpretations by experts and in turn constructs judgements and interpretations, an Abstract Conceptualization Learner focuses on themes and reasons behind the writer/author writing the story/account, and an Active Experimentation Learner speculates on how characters or people would handle certain situations, the instructor is better equipped to tailor learning activities to simultaneously accommodate all four learning styles.

To accomplish this mix and match, the instructor complements each learning style with an appropriate teaching style. Teacher as Coach is an appropriate teaching style for the intuitive Concrete Experience Learner's preferred learning through new experiences, games, role-play, etc. Since the Reflective Observation Learner's learning strengths are perception and observation and he/she learns best through lectures and observing, the instructor's role is Guide/Taskmaster. Communicator of Information is the most effective teaching style for the Abstract Conceptualization Learner's use of deductive thinking and preference for a clear, well structured presentation of ideas. With the Active Experimentation Learner learning by doing and favoring small group discussions and self-paced projects, Teacher as Role Model is the most compatible teaching style.

All four learning styles attend our classes simultaneously, posing a challenge to our teaching. In order for the instructor to teach effectively to all four learning styles, the instructor must utilize a multi-facted methodology. From this comprehension of learning and teaching, the instructor can build a reserve of instructional strategies to accommodate each learning style and to encourage every learner to cross the threshold into unfamiliar learning worlds. *(Figure 3.)*

Figure 3 The Instructor's Role *



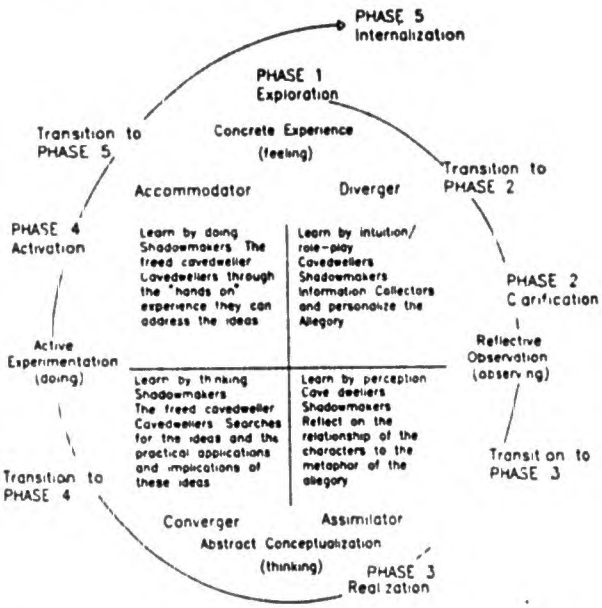
* Bernice McCarthy

Coming To Knowledge: The Learning Process, Learning Styles, Teaching Styles and the Learner

Re-creation is often my methodology of choice to match teaching styles with learning styles. Several examples of re-creation activities I use in my humanities course demonstrate my point.

Plato's "Allegory of the Cave," a beautifully written yet challenging text, is a great opening reading for a traditional Western Culture Humanities course. Even though the reading is difficult for most students, a re-creation of the Allegory makes the text accessible to the students. Every learner volunteers for a role - chained cave dwellers, shadowmakers, or observers. *(Figure 4. "The Allegory of the Cave" - following page).* The re-creation script follows Plato's Allegory - chained from birth, the cave dwellers only know life from projected shadows on the wall. An unannounced Socrates walks over to a surprised cave dweller, unfastens the chains and leads the unfettered cave dweller to see the other cave dwellers, the shadowmakers, and the brightly sunlit world outside the cave. During the Allegory re-creation learning occurs primarily in the Concrete Experience mode. During the debriefing session, the learners then travel to the other learning styles.

Figure 4: "The Allegory of the Cave"

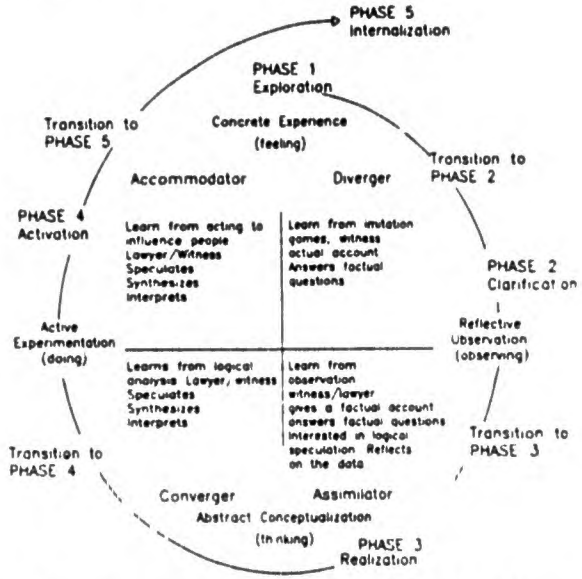


A Mock Trial is also an effective learning process activity that snugly fits the Experiential Learning Model. "The People v Satan" is the first Mock Trial. *(Appendix A).* After selecting their legal teams via the "cup of fate", the two teams' members volunteer to work as either lawyers or witnesses, guaranteeing compatibility of role with the learner's learning style. Each legal team uses "The Book of Job" to build their respective cases.

During the pretrial preparation, the dynamics of the legal teams emphasizes team building where conversation, collaboration, and cooperation abound. The challenging text demands the learners search for clarity and information used to formulate inferences, analyses, and interpretations for the purpose of building their respective legal cases. Meanwhile, I eavesdrop on the learners' interaction determining when they need me. At times, I intrude by sitting in on the legal teams' strategy sessions listening, observing, motivating, informing or facilitating when appropriate. These Mock Trial roles conveniently match the four learning styles. In addition, the debriefing is designed for the learners to again travel freely from one learning style to the other for a visit.

(Figure 5. "Mock Trial: The People vs. Satan" - following page).

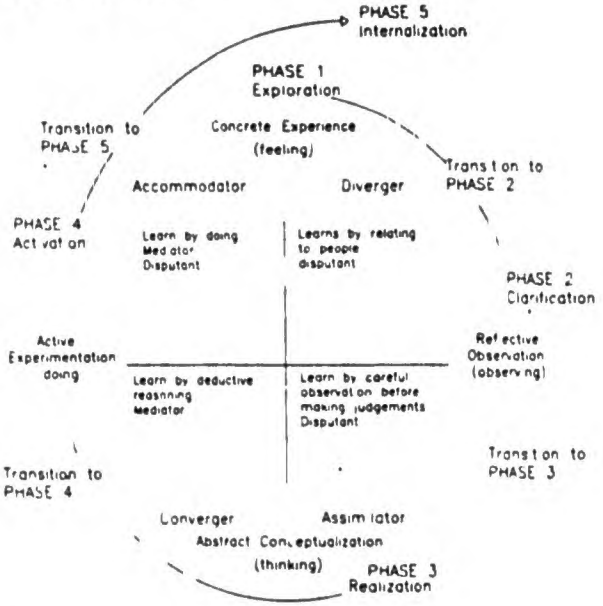
Figure 5: Mock Trial: The People vs. Satan



Two other learning activities, Character Values Profile and Peer Mediation, are used in tandem with Shakespeare's, "The Tempest". I open with the Character Values Profile to help the students to become better acquainted with the many characters. Students are divided into groups of four where they are required to rank-order 22 values for several characters. Following the rank-order task, the groups come back to the seminar to discuss their rationale for their group's rankings. Armed with this knowledge and more secure with who's who for characters, the students are prepared to mediate conflicts between several disputing characters. As with the other re-creations, the learner volunteers for a role - either one of the two disputants or the mediator. The two disputants and the mediator receive a Peer Mediation handout succinctly explaining the mediation rules and guidelines. In preparation for the mediation, the assignment is for both disputants and mediators to review "The Tempest" to sort out the dispute and issues between the disputants. When they come to the next class, the disputants and mediators are prepared to begin the Peer Mediation. *(Appendix B).*

As with the previous re-creations each Peer Mediation role perfectly fits an appropriate learning style. *(Figure 6. "Peer Mediation" - following page).*

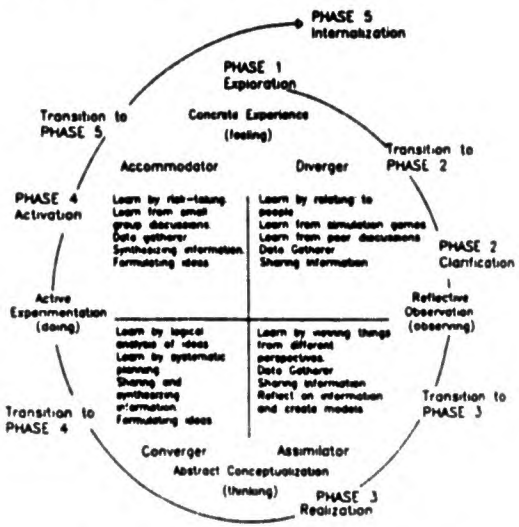
Figure 6 Peer Mediation



Also like the previous re-creations the debriefing is crucial in supporting students in their journey from learning style to learning style.

Simulation games also hit the learning style bull's-eye. I use a self-designed simulation, "Harmony: Designing Utopia", *(Appendix C)* which requires several small groups of students to design an ideal community based on the Humanities texts read and discussed during the first half of the semester. This activity demands understanding and requires midterm synthesis of the texts. Once they have designed Harmony the students, as Boosters, sell their community to prospective settlers. Through both the designing and selling, the students easily traverse the four learning styles. *(Figure 7. "Harmony: Designing Utopia" - following page).*

Figure 7: Harmony: Designing Utopia



Since "Harmony" requires the learners to synthesize previously read texts, every learning style occurs simultaneously. "Harmony" is a cooperative learning experience where learners meld into a tight-knit community. This requires each member of this learning community to be a contributor to the community's success.

To further encourage each student to travel beyond their individual learning style, short written weekly assignments follow each learning activity. In addition, the Final Exam challenges each learner to search for meaning, clarification, and comprehension, leading to the essential critical examination of the texts. As in the other activities, the learners begin in their learning comfort zone with the activity nudging them beyond the friendly confines of their learning style into the strange world of alien learning styles.

The learners' passage through the unfamiliar is fraught with many obstacles, trials, tests, and struggles. Yet, with the aid of helpers (instructor and learners), what the learners gained from their passage from the familiar into the unfamiliar back to the familiar is the bright light of knowledge.

In addition, at semester's end, I ask students to complete a self-evaluation on how well they think they have progressed in their learning journey. Their assessments enthusiastically embrace the learning activities because they recognize that these activities help them to understand the material better, and to easily move through the various learning styles.

132

The Return With Boon

Since the learner's way of learning is dramatically altered with the implementation of these interactive learning activities, so likewise does the instructor's teaching style change from Teacher/Information Giver to Motivator/Witness to Facilitator/Coach to Evaluator/Remediator and Resource.

Learning and teaching are quests. They begin when the learner receives a call. Sometimes the learner refuses the call, but something happens whereby the learner eventually accepts the call. Armed only with several books, the learner leaves behind the familiar surroundings of the ordinary world to cross the threshold into the uncomfortable special world of education. During the arduous journey of tests, trials, and ordeals, the learner meets many mentors and helpers to guide the learner. Also traveling through the special world and faced with the challenges of unlocking the mysteries of learning, the teacher utilizes multiple teaching styles to accommodate the learners' multiple learning styles. As knowledge is acquired, standards are met, requirements are fulfilled, the learner and the teacher travel the road back and cross the threshold into the ordinary world with wisdom for the people.▼

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Graphs plotted by Krista Zielinski, student, Manufacturing Technology Program, NHCTC at Claremont, NH

APPENDICES

A. "The People v. Satan"
B. Peer Mediation: "The Tempest"
C. "Harmony: Designing Utopia"

APPENDIX A
"The People v. Satan"

PEOPLE v. SATAN
A Mock Trial

Paul Marashio

People v. Satan

Introduction

God's faithful servant, Job, resident of UZ, recently experienced a reversal of fortune. His children were murdered, property and animals burned, wealth stolen, and Job assaulted. The alleged culprit, Satan, has been arrested and charged with first degree murder, arson, theft, and assault. A quick and speedy trial is expected.

Objectives

* to frame and support an opinion or assertion about a work of literature and to demonstrate these skills in a mock court and writing an account of the court's proceedings
* to analyze literature: to discover and explore divine justice
* to use textual evidence to support assertions about "The Book of Job"
* to make legal, moral, and ethical judgements
* to learn legal procedures by conducting a mock court using "The Book of Job"

Charges:

The Prosecution charges Satan with five counts:

First degree murder of Job's children
Assault and battery of Job
Destroying Job's livestock
Arson of Job's property
Grand larceny of Job's wealth

Both the prosecution and defense teams are to review "The Book of Job" for constructing their respective cases.

The Trial Team

3 Trial attorneys for Prosecution	(maximum)
3 Trial attorneys for Defense	(maximum)
Witnesses for Prosecution	
Witnesses for Defense	

Conduct of the Trial

Judge's Introductory Remarks	3 minutes
Prosecution's Opening Statement	5 minutes
opening remarks should state what the Prosecution hopes to prove	
Defense's Opening Statement	5 minutes
opening remarks should state what the Defense hopes to prove	
Prosecution's Evidence and Witnesses	20 minutes
Cross Examination by Defense	10 minutes
Defense's Evidence and Witnesses	20 minutes
Cross Examination by Prosecution	10 minutes
Defense's Closing Statement	5 minutes
Defense summarizes their case and attempt to convince the court to make a decision in their client's favor	
Prosecution's Closing Statement	5 minutes
Prosecution summarizes their case and attempt to convince the court to make a decision in the people's favor	
Judge's Deliberations and Verdict	10 minutes

Debriefing:

The students write a position paper using the evidence collected from "The Book of Job" on the charges brought against Satan.

Discussion

Attorneys and witnesses from the two legal teams discuss their feelings on their roles.

Students describe how they constructed the respective positions and what they have learned.

You are to make a copy of your presentation for the Judge.

Procedure for Evidentiary Objections

An attorney may object any time that an opposing attorney has violated the Rules of Evidence. The attorney wishing to object should stand up and do so at the time of the violation. When an objection is made, the judge will ask the reason for it. Then the judge will turn to the attorney who asked the question, and that attorney usually will have a chance to explain why the objection should not be accepted ("sustained") by the judge. The judge will then "sustain" the objection, thereby disallowing the question or disregarding the answer; or the judge will "overrule" the objection, thereby allowing the question to be answered or the answer to remain on the trail record.

REMEMBER: Winning or losing the ruling on an objection is not what is important, but rather how knowledgeable of the Rules the team is and how each team reacts to the decision of the judge. What is important is the presentation of the objection and opponent's response (both verbally and strategically) to the objection and to the Court's ruling. Examples of standard objections are the following:

1. Irrelevant Evidence: *"I object, your Honor. The evidence/testimony is irrelevant to any issue in this case."*

2. Leading Question: *"Objection. Counsel is leading the witness."*

3. Improper Character Testimony: *"Objection. The witness' character or reputation has not been put in issue." "OR" Objection. Only the witness' character for truthfulness is at issue here."*

4. Hearsay: *"Objection. Counsel's question is seeking a hearsay response."* (NOTE: If the witness makes a hearsay statement, the attorney should say, *"The witness' answer is based on hearsay, and I ask that the statement be stricken from the record."*) In responding to a hearsay objection, it may be appropriate for counsel to point out a specific exception or to argue that the hearsay rule does not apply: *"Your Honor, the testimony is not offered to prove the truth of the matter asserted, but only to show..."*

5. Opinion: *"Objection. Counsel is asking the witness to give an expert opinion for which s/he has not been qualified."*

Stipulated Facts: When the court asks the Plaintiff's lawyer if he or she is ready to proceed and call the first witness, the Plaintiff's attorney should inform the court that the parties have stipulated to certain facts and should then offer the Statement of Stipulated Facts into evidence.

Trial Motions: For Mock Trail Competition purposes, a motion for directed verdict or dismissal of the case may not be used nor may a motion for a recess be used at any time during the competition. The presiding judge may call a recess during a competition round at their discretion.

Simplified Rules of Evidence and Procedure, adapted from: Maine Law-Related Education, University of Maine School of Law, 246 Deering Ave., Portland, ME 04102, (207) 780-4159.

PERFORMANCE	CRITERIA FOR EVALUATING PERFORMANCE
Outstanding	Superior in qualities listed for excellent performance. Thinks well on feet, is logical. Keeps poise under duress. Can sort essential from the non-essential and use time effectively to accomplish major objectives. Demonstrates the unique ability to utilize all resources to emphasize vital points.
Excellent	Fluent, persuasive, clear and understandable. Organizes materials and thoughts well and exhibits mastery of the case and materials.
Good	Good, solid, but less than spectacular performance. Can perform outside the script but less confidence than when using script. Grasps major aspects of the case, but does not convey mastery of same. Communications are clear and understandable, but could be stronger in fluency and persuasiveness.
Fair	Minimally informed and prepared. Performance is passable but lacks depth in terms of knowledge of task and materials. Communications lack clarity and conviction.
Not effective	Unsure of self, illogical, not prepared, speaks incoherently, definitely ineffective in communication.

APPENDIX B
Peer Mediation: "The Tempest"

PEER MEDIATION

Conflict Resolution among several characters who appear in Shakespeare's "The Tempest"

Paul Marashio

Peer Mediation

Introduction

Prospero, the main character in "The Tempest", had numerous conflicts with several characters - Antonio, his brother; King Alonzo, King of Naples; Ferdinand, the King's son and lover of Prospero's daughter, Miranda; Caliban, Prospero's slave. Other characters also had conflicts in the play - Gonzalo, the King's Councillor, conflicts with Antonio. Miranda and Caliban have a strong antipathy toward each other. Lastly, there is the ongoing feud between Ariel and Caliban.

Mediators do not solve problems but establish a process through which disputants can air their differences and work out a resolution. Your task is to resolve these conflicts through Peer Mediation.

Objectives

* to understand the characters' personalities and traits from a textual setting
* to verbalize conflicts between characters and through mediation to resolve their conflict
* to interpret the character in a peer mediation role-play
* to apply brainstorming as an aid in mediating conflict
* to write a peer mediation agreement

Application

Wanted! Two dynamic students to assume two characters from "The Tempest" including mannerisms, problems and concerns. The peer mediators will help the two disputants to resolve their differences.

What is Mediation?

Mediation is a way to resolve problems between people. The people who are in conflict are called disputants and they have agreed to ask a third person or mediator to help them solve their problem.

The mediator's role is to allow each party an opportunity to tell their side of the story, to identify the facts and issues that are in conflict and to suggest alternatives that would help solve the problem. As a facilitator, the mediator tries to surface underlying concerns and help the parties arrive at a solution to which both sides can agree.*

*Jo Ellen Ambrose, "Alternatives To The Courtroom Problem Solving Through Mediation"

NHBA Peer Mediation Awareness

Step by Step: Peer Mediation

Opening the Session
1) Introduction
2) Describe role of the mediator
3) State ground rules
4) Get a commitment

Gathering Information
1) Ask what happened
2) Listen, summarize, clarify
3) Repeat for additional information
4) Listen, summarize, clarify

Common Interests
1) Determine interests
2) State common interests

Create Options
1) Encourage flexibility
2) Brainstorm solutions
3) Ask questions
4) Write down ides

Evaluate Options
1) Decide on best ideas
2) Evaluate and improve
3) Check agreement
4) Summarize

Write Agreement
1) Make it specific
2) Keep it positive
3) Make it clear
4) Keep it balanced
5) Keep it simple
6) Make it understandable
7) Make it practical

Mediation Jobs

Build Trust
1. Don't take sides
2. Listen carefully
3. Use neutral language
4. Be honest
5. Be respectful
6. Show understanding

Collect Information
1. How people know each other
2. What happened
3. Why is happened
4. What people need
5. What people are wiling to do
6. Positive things that are said
7. What people have agreed to

Share Information
1. Positive things
2. How people feel
3. Why things happen
4. Signs of flexibility

Problem-solve
1. Encourage flexibility
2. Brainstorm many solutions
3. Ask "what if" questions
4. Look for trade-offs
5. Do some reality testing

NHBA Peer Mediation Awareness

Brainstorming List

What are the possible options – list all of them.

- *What could be done to resolve this dispute?*
- *What other possibilities can you think of?*
- *What might be helpful to avoid a future dispute?*

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

NHBA Peer Mediation Awareness

Peer Mediation Agreement

In an effort to settle our conflict, we, who have signed our names below, have agreed:

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

7. _____

_____

8. _____

_____

Signatures: Date:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Mediatiors:

_____ _____

Debriefing:

Peer mediators discuss their feelings on the role.

Discuss how they brought the two sides together for resolution to the conflict.

Disputants discuss their feelings, their differences and their resolutions.

APPENDIX C
"Harmony: Designing Utopia"

HARMONY: DESIGNING UTOPIA

Goal: The purpose of Harmony is to build a Utopian Community through reviewing, applying, deciding which Great thinkers' ideas are practical and appropriate for a Utopian Community.

Scenario

Through the epochs Humanity has always desired to live in a Utopian Community. They want to live in a safe place to grow up, marry, raise children, make a living. A place where everyone lives in harmony. As a member of humanity you too probably wish to live in Harmony.

Directions

You are assigned the project of planning your community of Harmony. To accomplish this challenging task you will review the semester's readings and choose six (6) great thinkers' ideas and six (6) artists you believe will achieve a Utopian Community.

The Problem: how can order be established that will curb the animal aspects while freeing humanity for its nobler possibilities?

Keep in the forefront of your discussions the social, political, economic structure you desire for your community. How people will be governed? How people will be educated? How will they worship? How people will make a living? How people live? What art works, if any, will be on display? Which of the great thinkers and/or characters would you want to live in your community? why?

Since you are working in committees any conflicts or disagreements must be resolved by consensus.

Boosterism: The Selling of Harmony

Proud of your ideal community of Harmony you want to share this harmonious living experience with outsiders.

As a booster of Harmony you are required to convince prospective settlers to settle in Harmony. In selling Harmony you must

thoroughly explain the guiding principles of your community, the appeal of your community, the intellectual influences, and the assurances that harmony will always exist.

Since there is a possibility the potential settlers will ask many questions be prepared to offer detailed answers.

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