DOCUMENT RESUME

ED 471 963 JC 030 068

AUTHOR	Villeneuve, Phyllis, Ed.
TITLE	Academic and Vocational Integration.
INSTITUTION	Faculty Association of Community and Technical Colleges, WA.
PUB DATE	1996-00-00
NOTE	32p.; Published annually. Theme issue. For the Spring 1997 issue, see ED 460 683.
AVAILABLE FROM	For full text: http://northonline.sccd.ctc.edu/jwu/FACTC/FACTC%20Focus/focus96.htm.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	FACTC Focus; Spr 1996
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	Business; Community Colleges; Computers; *Outcomes of Education; Social Behavior; *Team Teaching; *Technical Education; Technology; Two Year Colleges; Violence; *Vocational Education Teachers
IDENTIFIERS	*Washington

ABSTRACT

This manual describes pilot projects designed to explore and support academic vocational integration. In conjunction with the Washington State Board for Community and Technical Colleges, FACTC (Faculty Association of Community and Technical Colleges) sponsored an array of pilot projects during the fall of 1995. Vocational and academic faculty from several campuses participated in the integration activities, which ranged from producing and exchanging videotapes to team-teaching for specific projects, rethinking assessment for admission to vocational classes, and designing entirely new programs. This publication offers 18 articles that either report on those projects or describe programs that have already been in place for some time. The articles include an introduction by Cal Crows, which explains the statewide context for academic and vocational integration; a summary of notes taken by the editor at Cal Crow's morning workshop to prepare for the projects; and a final article looking ahead by Bill Moore, coordinator for student outcomes assessment through the Washington State Board for Community and Technical Colleges. An article by Rose L. Pugh reports on the integration of technology and curriculum, arguing that the ties between academic and vocational faculty need strengthening. Mike Towey reports on the value of teaching social skills as a means of curbing violence. (Author/NB)

FACTC focus

SPRING 1996

Academic and Vocational Integration

Faculty Association of Community and Technical Colleges (FACTC)

The Faculty Association of Community Technical Colleges is an organization composed of faculty representatives from all participating community colleges and technical institutions within the State of Washington - dedicated to the task of improving communication between the various campuses and to the other members of the community and technical college system. As one of its purposes, FACTC undertakes projects such as this publication, designed to support faculty participation in the operation of the community and technical college system.

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INTRODUCTION

To explore and support academic and vocational integration, FACTC in conjunction with the State Board for Community and Technical Colleges--sponsored an array of pilot projects during the fall of 1995 and hopes to expand those efforts next year. Vocational and academic faculty from several campuses participated in the integration activities, which ranged from producing and exchanging videotapes, to team teaching for specific projects, to re-thinking assessment for admission to vocational classes, to designing whole new programs. Cal Crow from the Center for Career and Work-Related Education, housed at Highline Community College, served as project facilitator.

The following articles report on these projects or describe programs already in place for some time. Also included is an introductory article by Cal Crows explaining the state-wide context for academic and vocational integration, a summary of notes taken by the editor at Cal Crow's morning workshop to prepare for these projects, and a final article looking ahead--an appropriate millenial activity--by Bill Moore, father of seven year old Taylor and coordinator for student outcomes assessment through the Washington State Board for Community and Technical Colleges.

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NO MORE PATCHES, NO MORE BANDAIDS, NO MORE FADS: SYSTEMIC CHANGE

Cal Crow, Center for Career and Work-Related Education at Highline Commumity College

BUT FIRST A CONTEXT FOR INTEGRATION

There are at least two major developments that have contributed to the emphasis on integration in education. One is the move from an industrial to a postindustrial economy. Mass production and standardization required that work be broken down into a few manageable, discrete tasks. Position descriptions were developed to ensure that people knew what was and was not expected of them, and each worker performed clearly delineated tasks. "I don't know anything about that," and "That's not my job," were common responses to requests for information or services. From this industrial perspective, people were viewed as interchangeable parts or as cogs in a large, well-oiled machine. They were not expected to see the big picture or to think about how individual parts were related to each other.

Educational institutions often reflected this same viewpoint. We developed discrete departments, separate administrative structures and categorical funding streams. Some community colleges were organized to ensure that academic and vocational programs were separated geographically. Regardless of their disciplines, ...ictors rarely talked with each other about educational philosophy or strategies to improve learning.

Students could go from one fifty-minute class to another without ever seeing how they were related.

The second major development emanated from research in the cognitive sciences which tells us that individuals do not predicatably transfer information from the classroom to everyday practice, do not predictably transfer sound everyday practice into the classroom, and do not predictably transfer their learning across subjects. Simply stated, people do not automatically make connections either among content areas or across learning sites.

Combining this information with the current emphasis on performance or competency based education creates a strong case for an integrated approach to education. If we are to evaluate education based on **performance,** i.e. on how well students apply what they know in everyday practice, then we must help them transfer their learning among a variety of

disciplines and settings

SYSTEMATIC CHANGE.

Systemic change in education is on its way. No educator or institution will be able to avoid it. When the demands of a postindustrial economy are examined from a technological perspective--which is a difficult task for many of us--and research from both the cognitive and physical sciences is thrown into the mix, it becomes clear that our decades-old, industrial model of education needs an overhaul.

Olympia lawmakers recognized this in 1993 when they made Washington the only state in the U.S. to combine school to work legislation with sweeping education reform. The results are already visible: K-12 educators throughout the state are developing career pathways for high school students; are exploring and testing ways to integrate curricula, especially those traditionally labeled academic and vocational; are gearing up for performance-based instruction and assessment; and will soon be designing strategies to make a certificate of mastery a requirement for graduation.

Each of these will have a significant impact on students entering Washington's community and technical colleges which are undergoing changes of their own. Some of these changes are philosophical and long-term while others address more pragmatic, here-and-now issues. For example, colleges that recently had full classrooms and waiting lists every quarter now find that student recruitment and retention have become major priorities. What worked just two or three years ago is no longer attracting and/or keeping students.

The need to customize programs and services is being discussed in many quarters. Strategies to increase distance learning opportunities and to award credit for prior learning are cases in point. Skills standards and competency or performance based instruction are part of the lexicon on many campuses, divisions between instruction and student services are being softened, and academic-vocational curriculum integration is being tried on many fronts, depending on the interests and backgrounds of participating faculty.

NOTED NOTES: FROM STANDARD EDUCATION TO STANDARDS EDUCATION

from the FACTC Sept.30, 1995 Workshop

led by Cal Crow of the Center for Career and Work Related Education

--Phyllis Villeneuve, South Puget Sound Community College

PERFORMANCE BASED EDUCATION IN WASHINGTON proposes a Certificate of Mastery at age 16,

similar to an Eagle Scout badge where we know what has been accomplished. This competency based education would allow students to progress according to performance rather than "seat time." Those students who earn the Certificate of Mastery can move to the Running Start or Tech Prep programs. To accomplish performance based education big changes are needed:

1) customization (not mass)

2) diversity (more ways than one to get there; i.e. learning styles)

3) assessment (i.e. not standardized testing)

4) generalization (Train people to be multi-skilled and to broaden their perspectives. Job titles have changed these days; and if titles have not changed, the work is different anyway. For example, in horticulture workers used to mow the grass and dig weeds but now need to know design principles, management, equipment purchase and maintenance and human relations.) Ron Crossland noted that there is a push nationally toward a blending of the traditional academic programs and vocational programs. There is talk of seamless education between K-12 and college. To accomplish this, there needs to be an integration of performance objectives which blend the typical academic and vocational outlooks. Businesses, such as Boeing, speak of "applied academics" and expect students to learn in a "job content" way.

--Who's the single biggest private employer? Manpower Temps is first and Kelly Temps is second. All kinds of professions are "temp" and some can actually make good money.

It is an old idea that the industrial complex creates jobs and workers go "find" them; it is not true anymore. Maybe we're going back to the way it was one hundred years ago where workers market their skills and provide service or goods on a contract basis. Workers have to figure out how they can contribute.

-- Jobs are changing. In 10 years, 85% of all fast food jobs will be gone because of computerized automation. One fast food store in NY is all computerized. The manager had to be hired from outside the town because no one in town was skilled enough to do the problem solving, troubleshooting, or highly technical work. His starting salary was $62,500.

-- The question was raised about how to get students more self-directed. They need to be motivated to succeed and to learn new skills. A manager at Weyerhouser works with student interns who come with good G.P.A'.s, but after their orientation session, they wait for the manager to tell them what to do next; in effect they are waiting for the syllabus. This waiting for someone to tell them what to do has to change. The primary focus of educational reform is for students to **take responsibility.**

-- One possible change would be not to ask what courses or credits are completed at the end of a program. Instead, ask what the students can do. This could address the huge problem of students not transferring their classroom knowledge to work and vice-versa. In education we must help students see how all that they know already can be brought into the classroom. Go into any institution at any level and ask students about a particular task: why are you doing this? Most will say "I don't know" or " I was told to" or "it's required." We must change that response to "I am working on such-and-such a skill." However, there is a concern about "losing the humanities" when we emphasize skill building because humanities are harder to quantify or to say what a student can "do."

-- A system called **SCANS** has been designed to describe competencies and is now being used by many companies for hiring and/or evaluation. The K-12 system is looking at these competencies too. It divides skills into three areas. First are **basic skills,** including reading, writing, arithmetic and mathematics, listening, and speaking. Second are **thinking skills**, including creative thinking, decision making, problem solving, seeing things visually and graphically, knowing how to learn, and reasoning. Third are **personal qualities**, including responsibility, self-esteem, sociability, self-management, and integrity and honesty. Five main areas of

competencies are listed. First is **resources** (identifying, organizing, planning and allocating resources): managing time, money, material and facilities, and human resources. Second is **interpersonal** (working with others): participates as member of a team, teaches others new skills, serves clients and customers, exercises leadership, negotiates and works with diversity. Third is **information** (acquires and uses information): acquires and evaluates information, organizes and maintains information, interprets and communicates information and uses computers to process information. Fourth is **systems** (understands complex inter-relationships): understands systems, monitors and corrects performance, and improves or designs systems. Fifth is **technology** (works with a variety of technologies): selects technology, applies technology to task, and maintains and troubleshoots equipment.

-- An example of the need for competency based programs is a good student in writing in college who was devastated when a memo she wrote on the job was all wrong. Students need flexibility and adaptability to see how to apply skills already learned. Students need to understand WHY each skill needs to be learned. One possible solution is internships as a transition between classroom and job.

-- Brent Chapman, new horticultrual instructor at South Puget Sound, shared that Florida eliminated the boundaries a long time ago and has an integrated curriculum. They convince the students by citing prospects of better pay and a better chance at competing with an increasingly large pool of applicants. For example, he has done a "backward process," bringing in a job position and posting it and asking students what skills are necessary to be able to apply and do the job. One list was horticultural skills, and one list was all the other skills necessary. Then they had a grapic display generated by the students showing that only 1/4 of skills needed were horticultural! Florida requires that you take 15 credits of general education. The degree given is called Associate of Science, not Associate of Technical Arts. Programs are not labelled as vocational or technical. In addition to the 15 general education credits, general education skills are incorporated into every class--pruning, construction, whatever! It was added that Oregon has eliminated the term vocational too, now saying professional/technical.

-- A relatively new term is **applied learning** which includes working in groups, discovery hands-on learning, and always asking: what did we learn from this and having learned it how can we use it out of the classroom? How does it relate to personal life? to work place? to community?

-- Chuck Weeden suggested a miniquiz, similar to the "Am I a Great Lover?" quiz in popular magazines: 1) What am I learning? 2) Why am I learning it? and 3) How can I use it? These three questions should be answered every class day to explain the lesson.

-- Proposed alternatives for integration of vocational/technical and academics:

Interdisciplinary

Applied

Projects

Capstone projects

Co-operative learning (internships) etc.

-- Finally integration needs to occur in the minds of the students! Students need to know how to deal with the unfamiliar. They also need an appreciation of the arts, etc., so they are not "just workers" but are well-rounded citizens bringing skills and flexibility and creativity to the marketplace. The state of Washington has a School to Work grant where community colleges are doing work-based learning, that is getting out of classroom and learning on the job. There is also money for skills standards. Apply soon.

THE BUCK TOP HERE: MIXING LITERATURE WITH BUSINESS

Wendy Gray, Jill Fugate, Skagit Valley Community College

"The Buck top Here" is a learning community on the Skagit Valley College Mount Vernon campus that brings together BA 222 (Current Issues for Business Management" and Lit 110 (Introduction to Literature). The controlling theme of the course revolves around the ways work and the world of business influence who we are and what we do as well as how our identities reflect the work we do and our attitudes towards work and business.

The course was designed by Wendy Gray of the Business Administration Department and Jill Fugate of the Language and Literature Department in response to the needs of vocational students for a learning community to meet the requirements of our general education program. Once they decided on a theme, the two instructors set out to find connections and complementary aspects in their two disciplines. They found elements in their original classes that could be used to develop the learning communities theme while still providing the students with the essential skills, material, and information they would get in stand-alone courses. Once they had decided on the major concepts they needed to include (styles of leadership, for example, or poetry), Gray and Fugate were able to select readings and design activities that helped develop the class theme.

One assignment in particular illustrates how the two different disciplines worked together. Students read selections from Studs Terkel's book *Working*. The selections were discussed in class both in literary terms--non-fiction prose, oral tradition, theme of work--and in business terms--business structure, types of jobs, motivating factors. Then, students each contacted two people working in the community, interviewed them much as Terkel had interviewed his subjects, transcribed their interviews, and provided a written and oral report of their discoveries.

Student response to this assignment and indeed to the course in general was positive. For many of them, the study of literature was new. And many of them had never had the opportunity to discuss in a structured way the world of business and how it affected them. They often reported their enjoyment at class readings and discussions, and by the end of the course, the could see how the literary selections reflected the daily concerns of work and business and vice versa.

Not only did the students learn from the course, but the two instructors learned as well. Fugate reports that working with Gray gave her new themes to consider when reading. In addition, she feels that watching her teaching partner work inspired her to work more activities into a given class meeting to increase interest and energy. Gray discovered through Fugate's selection of readings, that literature and business were not mutually exclusive but were frequently interconnnected. It was especially rewarding to see vocational students being turned onto literature by Fugate's engaging teaching style that made it easy for the students to understand and learn literary terminology.

Both instructors agree that the course was not only satisfying in educational terms but that it was personally exciting as well. They point out that courses like "The Buck top Here" which ask us to see our disciplines in new ways and that engage students so positively, rejuvenate faculty as they go about their daily work.

Texts used are *Contemporary Business* by Boone and Kurtz, *Working* by Studs Terkel, *Storming Heaven* (a historical novel about unionizing coal mines in the southeast US) by Denise Giardina, and *Death of a Salesman* by Arthur Miller. Other selections include traditional work songs and contemporary poetry and short stories which deal with the role of work in people's lives. The class also watches two films: *Major Barbara* based on lay by G. B. Shaw and *Citizen Kane*.

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WHO SAYS WE CAN'T DO IT THAT WAY?: THE "LOOSE LINK" FOR ACCOMODATING LINKS OF CLASSES OF DIFFERENT CAPS

Robin Jeffers, Sandra Anderson Bellevue Community College

At any community college discipline courses have much higher enrollments than composition classes. A "loose link" provides limited interdisciplinary instruction without limiting enrollment in the discipline class. Not all discipline students take composition-only enough to fill the composition section. The two courses run on separate but parallel tracks, sharing only writing assignments. In our case these included an analysis of a print advertisement, a case study, a marketing brief and a marketing plan.

The link we did was also a little bit tighter, since the two classes met in the same room, one after the other. With this arrangement we occasionally sat in on each other's classes or alternated teaching days, so we could have two-hour blocks devoted to one class.

We worked best together when we were talking to our students about the writing assignments. We'd both be in class so we could translate each other's remarks into the vocabulary of our own classes. For instance, before any writing had started, the marketing instructor would go over the assignment guidelines-she might say something like (for the marketing brief), "You should summarize and evaluate the article." At that point the composition instructor would jump in to explain that evaluating is a specific kind of theory-making (something we would focus on throughout the quarter). The composition instructor also functioned as a master student (she always positions herself as an expert at academic writing but a novice in the discipline field). She'd talk to the class about what she thought the marketing teacher wanted, ask the teacher questions, request clarifications-do all the things most inexperienced students are afraid to do.

Once students had submitted drafts, we'all work together again. If the students had had misinterpreted assignment instructions, we could explain to them why they'd gone wrong. We could reinforce successful strategies and suggest different approaches for unsuccessful ones. At this point we could also, outside of class, revise the assignment to avoid confusion when we next used it.

After an assignment had been submitted and graded, the marketing instructor would go over the papers in class, and the composition instructor would again translate the criticisms into composition vocabulary.

We did run into problems (any link does on the first go-round)-but the biggest one was bureaucratic and easily fixable. A scheduling glitch gave us 90% Running Start students, so there weren't enough mature, experienced students to model college classroom behavior and writing attitudes. That really hurt us. Then one assignment went awry. When we got into the ad analysis, we discovered that this youthful batch of students lacked the cultural vocabulary to understand all the references the ads were making. But these are just the usual sorts of problems-nothing unsolvable.

Will we link our two classes again? Two things make it hard. First, the composition teacher is now concentrating on a different use for the links. And second, we seem not to have totally recovered from the Running Start experience. But we know we could do this link again and do a better job were there world enough and time. . . .

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VOCATIONAL TRAINED INFORMATION ILLITERATES? : GIVING STUDENTS A JOB MARKET EDGE BY RESEARCHING TECHNICAL INFORMATION THE ELECTRONIC WAY

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North Seattle Community College

Eric Beatty came to North Seattle Community College from Bowling Green State University in Ohio at the start of Fall 1994 quarter. That experience proved to be quite a culture shock. Not only was the average age of the students nearly double what it was at BGSU, but most of them were so-called "second time" students. They had previously gone through some type of post-secondary program, but now they were back to obtain training in a new area. Others were there to update their knowledge and skills, having reached a plateau in their career and needing more education to advance. The one strong difference that Eric noted between these students and the ones that he had taught at BGSU was in their lack of acceptance of the importance of the non-technical aspects of the CAD and drafting program here at North Seattle.

For these students, a quality education means the opportunity to start a new, hopefully more lucrative and more stable career. Time is seen as a major obstacle. Many have been unemployed for extended periods of time. Understandably, they are anxious to learn the technical skills that they need to get a job and get on with their lives. As one student adamantly declared, "All I wanna learn is CAD! I want an engineer job and all of them use CAD. All that other stuff is just so much fluff. Save it for somebody who really needs it." Similar sentiments are probably echoed by other vocational/technical students all over the United States.

Interestingly enough, just the opposite is true. That student does indeed need "...all that other stuff." Before the start of the Fall 1995 quarter, the *CAD for Industrial Applications* program faculty, in conjunction with members of our Technical Advisory Committee, industry representatives, and Jennifer Wu, the liaison librarian to the EET Division, conducted a DACUM (Developing a Curriculum) focus group to identify key curriculum issues. **Students are stunned to learn that industry representatives ranked communication (written and oral) and information literacy skills (knowing how and where to go to get information) more highly than the core technical skills.**

Coming away from the DACUM meeting, Eric determined to do what he could to incorporate these skills into his curriculum. As the FACTC/SBCTC Vocational-Academic Integration Project was announced, Jennifer and Eric decided to develop projects in the information literacy areas. Jennifer had done similar work with other technical programs at both Seattle Central and North Seattle. She just completed a project including Internet resources with Lyle Margulies of the BioMedical Equipment Program and was eager to work with the *CAD* program. However, Eric was a bit perplexed in the beginning. CAD and drafting classes don't normally lend themselves to library research.

Eric's dilemma did not last too long. The Department recently upgraded some of the AutoCAD software to the latest version, Release 13. Most of the students had either been, or were being trained, to use Release 12. Some students were purchasing affordable student copies of Release 12 or an even more inexpensive version, AutoCAD LT, for use at home. Questions were constantly swirling around Eric from a dozen different directions -- "What's the difference between Release 12 and 13?" -- "If I do my homework with LT will I still be able to work on it here at school?" -- "The place I'm working at is thinking about upgrading to Release 13. What kind of hardware upgrades will we need?" ...and so on. Students were asking even more questions that applied only to very particular situations. This presented the opportunity for Eric to weave information literacy skills into the introductory AutoCAD class. Eric designed a research project that required them to find for themselves

the particular answers that they needed. For their project, the following question was posed: *What are the primary differences between AutoCAD LT, AutoCAD Release 12 and AutoCAD Release 13 as they apply to your work or home computing situation?*

Jennifer provided the library support for this project. A class session was set aside to introduce the project to the students. A brief pre-survey was conducted to assess where students were in the development of their information literacy skills and to gauge their perceptions of library capabilities. Jennifer gave the class an overview of the library resources at the campus library. The thrust of her presentation was that libraries aren't at all what they used to be. Many have reached out beyond their walls and can be accessible electronically twenty four hours a day. Besides books, videos, newspapers and magazines, many libraries now offer CD-ROM and online databases. More and more libraries are providing gateways to the Internet and the World Wide Web. With the addition of these new powerful tools, we can seek out information at a much faster rate and within a much broader range.

For this project, Eric and Jennifer decided that the use of SCCAN (Seattle Community College Area Network) CD-ROM databases for journals, trade magazines and newspapers would provide the appropriate source for the types of information the students were seeking. Jennifer outlined several search strategies, among them:

* Search several databases for articles. Recommended ones include *Computer Select, Expanded Academic Index, Applied Science and Technology Index,* and *National Newspaper Index.*

* Do a subject/topic search if applicable

* Combine meaningful keywords using Boolean operators (and, or, not) to broaden or narrow your search.

*Take advantage of the database contents. Some databases include only a citation, some include a brief abstract (summary of the article), whereas others contain a citation, an abstract, and the full text of the article.

* For databases that contain the full text, consider downloading the file to a disk rather than printing it out or searching for the hard copy on the shelves. Oftentimes, libraries do not have all the periodicals that you are looking for.

* Evaluate the recency, relevancy and accuracy of the information.

How did students react to such a project? At the time the project was assigned, there was the customary grumbling about the necessity of research papers for a CAD class. After the papers were turned in, however, the mood had changed. Several students remarked that they had actually had fun working on the project. They hadn't been aware of the capabilities of the online databases and they were excited to explore their potential even further. Two students informed Eric that they used what they learned in this project to help them prepare for an oral presentation in their speech class. All in all, we were heartened by the results. Many students felt that, not only had they gotten the specific answers that they needed to their AutoCAD questions, they came away with a new awareness of the information world and a new set of useful skills to help them in their academic work and in their careers.

Where do we go from here? We plan to develop more information literacy activities for Eric's *CAD for Industrial Application* courses. As information proliferates at an exponential rate, we need to emphasize critical thinking skills in our process, so students can learn to discern the gems from the spurious items. Potential projects are accessing online government codes, troubleshooting information, industry standards, company homepages, job banks, transferring files, and exploring other Internet and Web resources. Students in groups may also construct a homepage for their selected Web sites as a final assessment tool to demonstrate their information competency: the ability to access, evaluate, organize, present and apply information. Although time and lab facilities are factors to be reckoned with, exciting and creative possibilities are bountiful. Most

importantly, we hope to infuse the technical curriculum with these information literacy skills so seamlessly that the students won't even recognize them as "research projects" but rather accept them naturally as part of the day-to- day work necessary to get the job done.

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BRINGING THE MOUNTAIN TO MOHAMMED : STUDY SKILLS IN AUTOMOTIVE TECHNOLOGY

Ramon Burton, Chuck Cox

Big Bend Community College

The Fall 1995-96 quarter has been different for Automotive Technology students at Big Bend Community College. Students in Chuck Cox's Automotive Engine Service class have received study skills training every 2 weeks throughout the term. This has had a positive impact on student motivation and success.

The Automotive curriculum already requires 132 quarter credits of study; students need a College Survival Skills course but cannot find the time. Due to this, the "Chemeketa model" of bringing the study skills training to the students in 1/2 to 1 hour units throughout the quarter was adopted. A total of 4 visits were made by a College Survival Skills instructor who presented study skills by application to the Automotive Engine Service content.

The instructor provided information on course topics for the week of the visitation and was present to clarify application to content by using examples from the discipline. Instructor prep time is minimal, consisting basically in scheduling and pointing out applications throughout the rest of the term. Study skills instruction requires about an hour of prep for each visitation; this is based on a thorough discussion beforehand between instructor and study skills person on the objectives of the workshops.

Topics covered included learning styles, note-taking/effective learning, active reading, time management, test preparation and critical thinking. These topics were chosen based on the perceptions of both the instructor and students as to critical areas. Students have now started to use time to their advantage, grades appear to have risen and they are much more focused. The number of late assignments has also been greatly reduced. A survey of students at the end of the course determined that 76% of students in the class rated the workshops "Useful" or "Very Useful." All but one recommended that new students in the program should receive study skills training.

Assessment Coordinator Ramon Burton cooperated with the instructor and students in selecting the areas for study skills visitations. All involved felt that the time dedicated to improving the learning process from the "student side" was worth the payoff. Ramon felt that "It's basically an investment in the students." Chuck, who masterminded the plan, said that "Our field is becoming more challenging all the time and many of our students may not have acquired the study skills needed to succeed. We now need to help students to master electrical theory, computers, and interpersonal relations."

The Industrial Technology fields have become more academically demanding at the same time that the demand for highly-trained technicians has raised the salaries paid to graduates. Most graduates at the Associate level find that they will continue their training in Automotive Service Excellence (ASE) certification upgrades. Furthermore, one-third of recent survey respondents were continuing their studies academically.

The vocational-technical fields are becoming much more academically demanding, requiring a larger knowledge base and the ability to use higher-order reasoning and thinking skills. Students succeeding in these fields will find high-paying jobs and will be able to maintain their edge even as technology changes. This will be in no small part due to a strong foundation in study skills.

For further information, contact Chuck Cox at 509•762•6255 or Ramon Burton at 509•762•6331. Big Bend CC's address is 7662 Chanute, Moses Lake, WA 98837

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SPEAKING OF GRAND SCHEMES AND PAULINE'S PERILS: TAKING THAT FIRST STEP

Marjorie T. Morton of Highline Community College

It's always amazing how much easier it is to be philosophically in favor of the "Grand Scheme" of things, i.e., the integration of the technical and academic aspects of Community College Education, than it is to actually implement it in one's own classroom. For one thing, where am I going to plug one more thing into a classroom schedule that is already woefully inadequate to cover all the basic required subject matter and from exactly where am I going to steal the time from my personal work schedule to develop whatever it was that I was going to do? Also, as a practical matter, I can certainly see how vitally important my subject, Speech Communications, is to everyone else but it is a little difficult to see what would be in this for me and my class.

At Highline Community College, Speech Communication is, and obviously rightfully so, a requirement for the Associate of Arts Degree. The students aren't always crazy about this but God, the Administration and the Faculty, in their infinite wisdom, have decreed it so, and the students by and large have, with moderate grace, accepted it. There are, of course, some spoilsports who feel compelled to make comments such as, "Why the do I have to make a speech? I never will again in my life," "Persuasion! I'm not going to be a salesperson," "Waddya mean negotiations? I'm not in no union and, Groups? What's the big deal about groups??" I wondered if there were anything in the technical area that could speak to these less than graceful comments and make life easier for me.

I met with Doug Whipple, my colleague for the past 25 years, who heads up our Printing Program and whose students are responsible for the annual publication of the award winning *Arcturus*, a collection of the year's best student writings, art and design. [Editor's note: Doug and his students also published this *FACTC FOCUS* this year. Thanks!] As we discussed our individual areas of responsibility and expertise, Doug and I found that we had some areas of concern which overlapped and which were in need of integration.

His students, as publishers of the *Arcturus*, had to meet with the student authors, artists and designers and negotiate formats, parameters and timetables in order to meet their publishing deadlines. At times they lacked the communication skills, especially the negotiation skills, to do this effectively. They either had not had the Basic Speech Communication course in which the theories are taught and the basic skills developed or they had not been able at that time to see the importance these skills would have in their personal and work lives and therefore had done little or nothing to develop or retain them.

After much discussion, we decided to each produce a video for the other to integrate into his or her classes. will produce a video for me showing the publication process and outlining the speech communication

skills he deems necessary for successful publication and I will produce a video for him addressing these needs both theoretically and practically. He will then be able to show my video to his students to help them with the specific problems they face and I can show my classes that there really is life after a speech class and that perhaps the skills developed in the speech communication class will translate into more dollars in the work force and/or a more successful personal life.

It is our hope that this project will accomplish three things: 1) to provide Doug's class with some specific help at a time when the students both need and can use it; 2) to provide my class with more impetus to now work on the development of skills for which they may see little immediate need but which will be of help in their future; and 3) to initiate in at least some of the students a beginning awareness of the importance of basic knowledge between the academic and technical (or "real-life") aspects of education.

Will it work? Who knows? In a way I feel like an episode from "The Perils of Pauline," i.e., "stay tuned for the next episode of the real life integration of the academic and technical appearing soon at your local community college." It's a long way from the "Grand Scheme" of things, total integration of the technical and academic aspects of community college education, but we are working on it.

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A RECIPE FOR STUDENT SUCCESS:

*MEASURE EQUAL PARTS WRITING, TECHNOLOGY AND SCIENCE

*INTEGRATE THOROUGHLY, SERVE HOT

Rose L. Pugh, Bellevue Community College

The integration of technology and curriculum was a hot topic of discussion at a Fall 1994 college wide forum on institutional organization at Bellevue Community College. At the close of this discussion, Anne Jackson, who heads a vocational program in a technological field, shared with me her perception that the ties between faculty in "traditional" academic programs and those in vocational programs -- especially vocational programs involving technology -- need strengthening. I agreed!

Consequently, as FACTC launched the Fall 1995 Faculty-to-Faculty Academic/Vocational Integration Project, Anne was the first person to come to mind for a team mate. Anne responded enthusiastically to the invitation. After explaining the FACTC project to Anne, she shared her idea of linking a technical writing course offered by the English Program with a networking course offered by the Technology Support Program. Anne and I both feel an Interdisciplinary Studies course linking academic and vocational classes is an exciting way to integrate academic and vocational faculty, students, and topics. Thus we chose the creation of such an Interdisciplinary Studies course as our FACTC project.

Interdisciplinary Studies (IDS) courses at Bellevue Community College typically contain three distinct components so that one IDS course is a 15 credit load for the student. Anne and I needed an additional course to integrate with the English and Technology Support components. Since my background is in mathematics, I naturally lobbied to include a math component. However, as Anne and I discussed the curriculum of her networking course in greater detail, it became clear that a literacy level physial sciences course would be a better "fit". The more we discussed this combination, the more excited we became.

Since neither Anne nor I had previously taught or created an IDS course, we needed to learn how to pull the pieces together. The first step was to recruit faculty from the various disciplines. Linda Leeds, who teaches technical writing, was our first convert. Finding a physical science instructor with the interest and skill to teach science at a literacy level was a bit more challenging. Luck was with us when Don Heins, who teaches developmental science, agreed to work with us. With the team assembled, we began to create an Interdisciplinary Studies course which integrates "hands on" technical training, technical writing, and basic physical science.

The inclusion of a science component in this course created a number of obstacles to overcome. The first obstacle was the need to convince key people on and off campus that the science component is a well integrated, essential ingredient of the proposed course. Most students taking Information Technology courses do not have a working knowledge of basic science. It is a novel idea to include topics in physical science that are related directly to the hardware with which the networking students will be working. In order to sell this idea to the Technology Support Program's business advisory groups, the team visited various technological firms in the area, including Wall Data, US West, and Spry/CompuServ. These site visits benefited the team in two ways -- the idea for the proposed course received enthusiastic support from these business contacts and the dialog with these contacts assisted the team in refining the science and communication topics most needed by Technology Support personnel.

Other obstacles are logistical in nature. Don Heins is not full time faculty, so the typical teaching load adjustment for a faculty person involved in an IDS course does not apply. Also, since the science component may require a lab, there may be scheduling and class size problems. Workload and class size problems in turn create funding issues. Addressing these issues will call for creativity and the cooperation of the Science Division Chair and Executive Dean of Educational Services.

In order to test student interest in the proposed course, Anne described the course to some of the students in her program. The response has been positive and encouraging. We believe we will be able to attract enough students to support the course, should it be offered. Program advisors for related programs, such as Information Technology, have also expressed interest in this course. The more our team works on this idea, the richer and more exciting it becomes.

We hope to offer this course Fall Quarter 1996. The following is an outline of the proposed course.

Beyond the Pocket Protector: Data Communications and Networking for the Information Technician

Information Technology 219

(Data Communication and Networking)

English 270 (Technical Report Writing)

Chemistry 100 (Concepts of Energy and Matter for Technology Majors)

Goals:

1. Make connections between academic and vocational faculty by bringing together faculty with different backgrounds and expertise:

a) Anne: vocational (technology); business contacts; experience in industry

b) Don: academic (science); author of basic science text, coordinates tutorial program for developmental students

c) Linda: academic (English); experience teaching IDS courses, expertise in technical writing

2. Create a course which addresses the SCAN Skills meaningfully:

a) By integrating 200 level information technology and 200 level technical writing with 100 level science we hope to create a cohesive course which polishes the students' technological and writing skills while exposing them to basic science at the literacy level

b) The course will model "real world" integration of different skills to create clear linkages between seemingly disparate topics

c) The course will strengthen the students' ability to creatively problem solve because the students will understand the "why" behind the "how" (e.g., cable attenuates for a reason -- the student will understand why rather than just memorizing figures).

3. Enhance connections between the college, the students, and the business community:

a) Students and faculty will make site visits to local business firms utilizing or servicing networks, (e.g., CompuServ, Wall Data, and US West)

b) Guests from industry will be invited to speak to the class

4. Utilize faculty as role models:

a) The faculty team will be a working model of the reality of work teams where it is necessary to join with others of different expertise in order to solve a problem or do a job

b) The faculty team will be a working model of the importance of continual learning -- each faculty member on the team will be learning the materials and skills presented by the other faculty team members.

A word of advice to others who pursue such a project -- be aware of political boundaries on your campus and be sure to get on board early in the process all persons who must approve the course. Our idea nearly derailed near the end of the proposal process because we inadvertently excluded an essential person from the initial loop. As of this writing, our proposal has tentative approval from all necessary persons. The team will continue its efforts in order to make the proposal a reality.

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MIND SHIFTS IN THE FACE OF UNLIKELY PROSPECTS: A STORY OF CARPENTERS ON KEYBOARDS WHERE GLITCHES AND HITCHES STILL EQUAL SUCCESS

Susan Davis and Lotus, Green River Community College

In planning our joint project, we were looking for a way to combine our skills in accounting and carpentry and to expose our students to another discipline. Since Susan is on sabbatical leave this year, we designed a project that Lotus's students could do with Susan's help. Lotus seized the opportunity to get her students into the business computer labs and try a simple bookkeeping project. The students build a house every year, and by the end of November 1995 they had completed a garage and were halfway through framing a house. Since many of want to be in business for themselves someday, it seemed the perfect time to get them interested in the

recordkeeping aspects of running a business.

Lotus had been wanting to do simple bookkeeping with her class for some time and had thought that it could only happen if money could be found for computers in the carpentry classroom - a fairly unlikely prospect. It was during the discussions in September that the idea surfaced to simply bring the carpentry students up to the business computer labs. What an amazingly simple revelation. We wonder how long it would have taken to come to that without the Faculty-to-Faculty Integration Project. The plan we put together was to bring xeroxed stacks of actual invoices from the completed garage and have Susan teach the class how to set up and use a spreadsheet that would categorize and total the costs. We didn't expect all of the students to be able to complete the project, but we wanted them all to have some experience on the computer and some involvement with the invoices and costs.

With a few phone calls and voicemail messages we set the date for the session and arranged for the lab time. Then we met the day before in Green River's new Teaching and Learning Center for three hours to plan and run through the lesson. All went smoothly. We designed the spreadsheet, entered some sample information such as dates, vendors, and some categorized dollar amounts. We then sorted by date, formatted numbers as dollars, froze the titles, entered formulas and functions for totals and a grand total, copied and pasted, and saved and printed the completed spreadsheet, all the while making notes on what the students needed to know about each procedure. Then we went to the actual lab where the lesson would take place to test the software and the printer. We only had ten minutes between classes, so we only tested one machine. All seemed to be fine.

On the day of the computer lab session Lotus spent an hour with the students before the lab time going over the xeroxed invoices and practicing deciphering them. They discussed the abbreviations used for materials, the units used for pricing (everything from dollars per 1,000 board feet to dollars per piece). The students learned a lot about materials and invoices and were asking great questions about the supplies and the suppliers.

Then we all met in the lab for the two hours that were available for us. Susan began with a discussion of what a spreadsheet is, and what it is for. She sketched the skeleton of the spreadsheet on the whiteboard, asking the students what should be in the headings and what should be in the different columns. Susan then projected the logging-on procedure from the teacher's station and began the spreadsheet by entering the headings. The students were turned loose.

The first glitch was logging on: after the fourth student was in Lotus 1-2-3, the rest were refused access. The lab assistants didn't know what was wrong and didn't have time to investigate, but suggested we use the Microsoft Works Spreadsheet for the other 10 students. That worked, but of course we then had two different sets of commands to teach (and learn). The second glitch became apparent after we had finished helping everyone log on. The students who had logged on first were well on their way, entering data - but it was in every conceivable arrangement. Some of them were manually totalling the amounts from the stack of invoices so that they would only need to enter one number. We had failed to really communicate what a spreadsheet is and does. Lotus could have talked about that in class before the lab session but took it for granted as "common knowledge." Susan could have carried her demonstration one step further by demonstrating the actual entering of an invoice or two. Instead, we dealt with it one student at a time.

The students spent about an hour actually entering data on the computers. Susan and Lotus both walked around helping solve problems and making suggestions. Many of the students had never used a computer or a typewriter. We were prepared for computer-illiteracy, but we hadn't really thought about the ramifications of the students also being typewriter-illiterate. Some students needed coaching to know how to get a capital letter or an "@" sign, and most of them hunted the keyboard for each letter. It was painful to watch and hard to keep from jumping in. The students had a wide range of success: one completed the project, and one had entered only three invoices in one hour. Most were somewhere in between. The students were remarkably patient and persistent with the new technology. Several expressed an interest in taking some computer classes.

Towards the end of the session we decided to forego sorting, formatting, freezing titles, copying and pasting,

and saving and printing, and instead just demonstrated entering formulas to total the columns. The students were definitely impressed: "Wow! It's so fast!" We would both definitely do this again, and, having learned from this experience, we assume it could only be better. Specifically:

* In addition to talking about the invoices, we would have the students do a manual spreadsheet before attempting the computer spreadsheet.

* We'd make sure the lab was fully functional, and perhaps try to schedule a time when we could have four hours instead of two. It would be nice if more of the students could complete their projects, and we'd have more opportunity to demonstrate the power and flexibility of a computer spreadsheet.

* We decided that we can't tackle the students' keyboarding problems, except to take them into consideration as far as setting our goals, and to suggest that they work on their keyboarding skills.

Neither of us had ever taught in a classroom with another instructor, let alone with one from a very different discipline. We would both certainly do it again. It was a lot of fun, and it felt good to have a partner. The fact that we were across disciplines also meant that we didn't have to resolve any differences of opinion or approach within our discipline. We also were not surprised to find our teaching styles very similar. Our main recommendations for future alliances are to start small, and to choose a colleague you are comfortable with and whose subject you are interested in.

The day after the session Lotus asked her students for some feedback. Most were impressed and intrigued and could see the usefulness of the project. One student (the one who had entered only three invoices) said that this was really a job for a secretary, but not for a carpenter. Others were interested in learning more about computer applications for business and wanted to know what courses they should take. All were remarkably patient with the technical problems. When Lotus asked the students their advice about whether this was a project that she should use again, and if so, whether they would like to work on it again next quarter or if she should wait and use it with next year's group, about three quarters of the class responded that it was worth doing, and several asked if they could work on it again next week!

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TAKING INTEGRATION OUT OF THE CLASSROOM AND INTO THE COMMUNITY: The Value of Learning How to Teach Social Skills

Mike Towey, Human Service Program

Tacoma Community College

Violence has reached shocking levels for our youth. Twenty-five thousand murders were reported last year in the United States. Syndicated columnist George Wills states that life in an embattled area of Chicago is equivalent to living in a combat zone. One example is the number of children gunned down in shootings from high rise apartment buildings. The probability of growing up without knowing a victim of violence is remote.

While many of these shootings are connected to the drug wars, the underlying causes are much more endemic to a way of life that is short on cooperation and long on aggression. Our Pierce County neighborhoods are plagued by random shootings. Nighttime brings the deadly sounds of gunfire. Teachers are faced with serious and often threatening student behaviors. Few students are given the skills they need to behave in socially acceptable ways.

There is a serious shortage of programs to teach children how to have cooperative relationships. What is

available through T.V. and movies is conflict resolution by force. Close your eyes for a minute and test this hypothesis: Think of the last two T.V. programs you viewed and the last movie you attended. How did the characters on T.V. and in the movies relate to each other? How did they deal with conflicts? Were their relationships based on competition or cooperation? What would happen if we put a twist on these plots? What if the characters used negotiation skills so that both sides experienced a positive outcome? How much are we conditioned by the glorification of competition, aggression and violence? The degree of conditioning that exists for anti-social behavior is incredible.

The course we offer opens with a discussion on the climate of violence. The program began in 1990. Students are prepared to go out to community groups who work with young people and teach social skills. Experience has proven that social learning as a major part of the learning process is sadly overlooked. The assumption that children acquire these skills from parents and families has been disproved. Each year more young people in the K-12 system exhibit little knowledge in pro-social interaction and the result is frequently threatening behavior.

Pro-social skill training is an opportunity for young people to learn new ways to meet their needs and form positive relationships. **Rather than assuming that anti social behavior is an indication of a troubled child, we have found that anti-social behavior is the result of social skill deficits. New skills will produce new behaviors.**

The trainers model pro-social behaviors in their interaction with each other and with the children. They reward young people with praise as an incentive for using these skills. This technique which uses encouragement to reinforce social competence results in more encouragement followed by more competence.

The work with participants is in structured learning groups. It includes role playing drawn from situations they experience daily. In the six levels of social skill acquisition, students learn such skills as how to listen, meet others, express feelings, deal with fear, help others, negotiate, keep out of fights, deal with embarrassment, and with group pressure, to plan, and make decisions and other lessons included in a menu of fifty skills.

Most children love to role play and be involved with what they are learning. They thrive on attention and they respond quickly and positively to the encouragement they receive from the trainers.

An outcome study done with one of the trainings demonstrated a reduction in negative behaviors. By the third day a natural relationship is established between the trainers and children. Our students also report this skill teaching is helping their parenting. The training has increased job opportunities for trainers since more of the treatment and educational agencies now teach social skills and are interested in hiring experienced trainers. It is rewarding for the students to watch the children respond to the support they receive as they learn new social behaviors.

An initiative is underway to combine the training portion of the program under a vocational program with an outcome evaluation component through the social sciences. This would assist the students who are trainers by giving them feedback from students who would be learning research methods.

This program is included in "The Student Success Conference" held February 1996 in Portland. For more information on this program please contact me at T.C.C.

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THE THINKING PROCESSES PARTICULAR TO PLANT SALES AND ESSAYS

Brent Chapman, Phyllis Villeneuve South Puget Sound Community College

Could planning and executing a seasonal plant sale for the college and community have any similarity with planning and executing essays in a basic writing class? The answer is of course, but our horticultural class and basic writing class were surprised by the extent of the similarities. The horticulture students sat in on peer groups in the writing class evaluating each other's rough drafts. Then the writing students visited the horticulture students on their turf. The students in each class described the process involved in generating their product. In mixed small groups the students then compared the parameters by which decisions were made, a product produced and the whole process evaluated.

The students' collaboration unearthed the following similarities in producing a plant sale and producing an essay:

1. determining the audience:

Who are we selling to or writing for?

2. determining the purpose:

Why should people purchase our plants/read our essays?

Is there an occasion to buy/to inform, to entertain, to persuade?

3. generating ideas:

How do we start or get unstuck?

Brainstorm/cluster/ just do it

4. working with time restraints:

What can be grown or obtained quickly/researched quickly or is already known?

5. achieving quality:

Do we have quality plants and decorations/ideas?

Knowing our product and resources/subject matter and research

6. collaborating:

Is everyone sharing responsibilities/discussion and feedback?

7. attracting and holding interest:

Is advertising effective/reader hooked?

8. putting on the finishing touches:

Are plants attractively displayed/paper edited and free of error?

9. evaluating the final product:

Did we make any money/did the essay earn a passing grade?

The range of student reactions to making the above comparisons varied from not being surprised at the extent of similarities to being completely surprised. Two students were already familiar with sales and writing processes, and a few others had already noticed similarities in process for other projects, so none of them were surprised. The majority of students were not surprised to find some similarities but were surprised at how many we could name. Another handful didn't think there would be any similarities at all between two such seemingly disparate tasks.

What about the faculty impressions, your humble authors? Are we informing you, entertaining you, persuading you, or boring you? Would you buy used plants from these people? What did we learn from this exposure to each others' disciplines? Phyllis has lots of healthy plants in her office and Brent has in his office a paperback Webster's dictionary which we did consult when arguing over the pronunciation of "disparate." Once we dug up these stereotypical observations, we then found that we do share some commonalities. Some of our teaching techniques are similar. For example,we both take a systematic approach in getting students to acquire skills, breaking the skills into steps, emphasizing process in getting to a product, using hands-on active learning, doing frequent evaluations, holding high standards, and encouraging our students to reach for them.

We can share a few notes on the interesting process of writing this article together. Rooting through our notes, scratching for words and arguing over style did not stop us from literally building on each others' thoughts and words to crank out our joint effort. Phyllis noticed that Brent underestimated the time it would take to write this article while Brent found that the writing went smoothly once over the hurdle of facing the blank computer screen. Phyllis was a bit of a bully over fine points of grammar and phrasing. We had a bit of a tug over scientific writing - translate dry, boring -- versus creative writing - translate loosey, goosey. However, it turned out that both of us were comfortably in the middle, striving for accuracy and clarity while maintaining a light touch and writing for an audience who may not know anything about horticulture or writing, or even care.

A final question: did we learn anything about teaching in a vocational field or teaching in an academic field that we didn't know already? No, but Brent confirmed his impression that the writing process is very challenging to teach and that it takes an open mind and persistent effort to keep students from being discouraged. Phyllis confirmed her considerable respect for the multiple challenges of teaching specific skills and preparing students to take on the many responsibilities of employment.

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ON THE ROAD AT YVCC

A Story in Three Parts, from Yakima Valley Community College

THE CONSUMER'S VIEW: EXPENSIVE!

"Hey, nice set of wheels!

So, how much did I pay for this beauty? The average new automobile sold in this country today costs over $20,000 so I'm in the ball park with this one. Glad I didn't lease, because in 60 months this baby will be all mine and I'll run it another 60 months free--no payments. My dealer, Mister Goodjaw, assures me that the modern automobile is good for 150,000 miles and more, and he has the staff to keep this little honey humming like a top (anybody remember tops?) at a minimum outlay for repair and maintenance. Hey, I hope so at close to $50 an hour service charges. At those charges things better be done right the first time or else.... Say, was that a miss I felt as I just merged onto I-5...oh, oh, ..."

Automobiles affect us all--we come home from the hospital in them, go to work in them, are not infrequently conceived in them, ride to the cemetery in them. As their cost and complexity soars, the need for skilled, competent, productive technicians and staff to keep them running well over extended time has increased dramatically. When instructors in automotive (Bob Kern), automotive-diesel (Bob Ray) and speech communication (Chuck Weedin) at Yakima got together for some wide-ranging discussion of the connections between their subject areas and how best to teach our students the concepts and skills they needed into the next century, we found a lot of common ground.

We discovered one mutual concern is how to handle the student "wannabe" who has desire and dedication but lacks the skills and abilities to succeed in his other chosen major.

- Chuck Weedin

THE INSTRUCTOR'S VIEW: BUT ARE THEY PREPARED?

The new Automotive Technology program at Yakima Valley Community College is a modern, very high-tech program that integrates electronics and computers into each of the required courses. Due to the complexity of these courses, high standards were set for entrance into the program. These standards are measured at YVCC using the ASSET as the measuring tool. Students who do not meet the Automotive Technology program entrance standards are encouraged to enroll in Developmental and/or Adult Basic Education courses in the areas they need assistance in. The problem with this approach was that there were no measuring devices in operation to measure the students' progress toward meeting the set standards. The program advisors had no way to know if and when the students were actually ready to enter the program or needed further help.

Because of this need, it was decided to use this problem as the Academic/Vocational Faculty Dialogue project.

In our first meeting we discussed how this problem affected the program and the students. We discussed how we presently used student grades in the developmental courses as a guide to entrance into the program and the problems encountered in using this approach. We discussed the failure rate of students who didn't meet the standards.

At our next meeting it was decided who we should approach for assistance in the academic area to help us develop some form of measuring tool to measure the progress of these students. It was decided that we could contact the Counseling Center, the Adult Basic Education program, the Developmental Education program, the English Department and the Administration for representatives to meet with us and discuss the problem and help find a solution.

The group meeting brought forward several approaches to solving the problem. Suggestions included: develop a new pre-test and post-test, use the Apticon test, or use the ASSET again as a post-test. No final decision has been made. We did, however, agree to work on some other issues and projects that were brought out in the meeting that are of common concerns to both faculties.

By the beginning of the new school year, we expect to have in place a workable post-test that will evaluate the students' progress more accurately.

-Robert Kern

THE VIEW FROM THE SHOP: IS THAT DIAGRAM EASY TO READ?

A typical task that a driveability technician might encounter would be something like this. You, the automobile owner, are driving along in your 1992 Buick Riviera in the middle of July and suddenly your check engine light comes on. You notice nothing malfunctioning, the engine seems to perform correctly, everything seems to [illegible]ion as it always has, except perhaps it may not be cooling the passenger compartment as quickly as when

you first bought the car. Being an obedient, good owner like your automobile has trained you to be, you take your auto into the Buick service center for a physical checkup. The service foreman assures you that they will look into the problem to find why the check engine light comes on and make the necessary repairs to get you comfortably back on the road.

It is now time for the driveability technician to take over. He picks up the work order, reads the complaint, climbs into your transportation pride and joy, and that's the last you see of it for awhile. In the meantime, the technician has driven your automobile to his work station, looking for any obvious standout problems that jump out at him while getting there. Finding none, the next step is to attach the engine analyzer to find out what set code was set by the engine computer when you saw the check engine light come on. A code such as B111 might appear on his screen. This indicates an air conditioning problem and a window such as the one we see in the diagram on the next page might appear on his computer screen. This same diagram might also be found in the service manual. Information on the screen will be a wiring diagram, a brief description of how the system works, checks to make, intermittent problems that will also set the B111 code and a troubleshooting tree, all to better help the technician to correct the problem.

As you can see, this technician has to have far more than a mechanical aptitude and a set of wrenches to repair today's modern automobile. The 3 R's are so important and without them, specifically reading comprehension, this analysis problem would be an impossibility to solve. Today's technician trainers face the growing task of finding trainable candidates with these basic foundation skills. And this is what has lead to the problem of evaluating the progress of those potential students who are sent to remedial reading, writing, and arithmetic courses so that they might qualify to enter this occupational field. -Robert Ray

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COORDINATED STUDIES IN VOCATIONAL/ TECHNICAL AND ACADEMIC FIELDS

--as listed in the Washington Center News--a publication of the Washington Center for the Improvement of Undergraduate Education housed at The Evergreen State College

Fall 1988

- North Seattle: business and early childhood education

- Seattle Central: business and English (Business, Society and the Individual); allied health and humanities (The Health Connection: Learning for Success)

- Shoreline: English 101 and home arts; English 101 and business

Winter 1989

- North Seattle: electronics, English, history; ESL and business; business, English and Math (Business, Power and Communications); law and English (And Justice for All)

Spring 1989

- Centralia: philosophy, business, English on business and ethics

- North Seattle: engineering, English, anthropology: (Technology and Humanities: An Uneasy Marriage)

- Seattle Central : English/humanities, law/business, economics (Taking Sides on the Environment); nursing , English, psychology (Of Mind and Body); business and English (Myths and Realities in the Workplace)

Winter 1990

- North Seattle: English and electronics; English and drafting

- Seattle Central : psychology, English, nursing or anatomy (Of Nature and Nurture)

- Tacoma: English 101, businesss and computers

Spring 1990

- Columbia Basin: humanities, human biology, composition, word processing (women's studies)

- Edmonds: computer science and statistics

- Grays Harbor: fisheries, English, data processing (Man, Machine and Mother Nature)

- Shoreline: business and speech

Fall 1990

- Tacoma received a grant to link business and mathematics

- Edmonds: business communication and office skills

- Green River: Business, Government and Society integrated with Intro to Law

- North Seattle: embedding writing into the electronics curriculum

- Seattle Central : cosmetology courses offered as coordinated studies; dev. English, gen. science, medical terminology, career explorations (Health Care in the 90's)

- Tacoma: business and English (Rethinking the Future)

Winter 1991

- Seattle Central: business math, macro-economics (The Way the World Works)

- Shoreline: international business, history, political science, economics I(nternational Studies)

Fall 1991

- Bellevue: English, economics and accounting

- Centralia Morton Center: photography and chemistry (Seeing beyond the Surface)

- Seattle Central : economics and math (Dancing Bears, Raging Bulls: Tracking Down the Rhythm of Money, Markets and the Economy)

- Spokane Falls: English composition and word processing

Winter/Spring 1992

- Grays Harbor (revision of Spring '90): fisheries, wildlife, microcomputer applications, English composition, and technical writing

- North Seattle: biology, nursing, humanities (Health and Healing across Cultures)

- Spokane Falls: business statistics and advanced English composition

Fall 1992 - Skagit: computer info systems, dev English (The Write Byte)

- Spokane Falls: communications, business (English Comp and Wordperfect)

Winter 1993

- Tacoma: dev math, data processing: (Focus on Success)

Spring 1993

- Seattle Central : English, office occupations, computer science (Production Systems); English, photography, apparel design (Integrated Media Commun. II)

- Skagit: English, office occupations: (Writing for the Workplace)

Fall 1993

- Edmonds: engineering career planning, English comp. (Applied Communication in the Engineering Profession)

- Spokane: English comp, business law (Pen and Gavel: Enhancing Professional Legal Writing)

Spring 1994

- Bellevue: Environmental Design, 20th Century Furniture (Built and Furnished Environment)

- Columbia Basin: welding, technical mathematics (Technical Collaboration); algebra, computer science (Problems, Programs, and Solutions)

- Edmonds: engineering, mathematics (Engineering Problem Solving with Precalculus Mathematics)

- North Seattle: Asian studies, Russian history, contemporary law (Revolutions Revisited:Through the Eyes of the Russian, Chinese, and American People)

- Pierce: criminal justice, English comp (Research with Focus on Criminal Justice Issues)

- Shoreline: Intro. to Law, English Comp.: (You Be the Judge)

- Spokane: English comp., criminal justice, psychology (Murder, She Wrote: Psychological and Sociological Aspects of Violence and Crime); computer applications, English comp. (Computerized Composition: Enhancing Writing with Technology)

Fall, 1994

- Peninsula: criminal justice, English comp

- Skagit: intro to literature, job search skills (Work Life 101)

Spring 1995

- Bellevue: English, marketing (Composing Marketing); art, interior design (The Built and Furnished Environment)

- Edmonds: business, English writing, critical reading (Gaining a Competitive Edge in Business)

- Peninsula: business, English comp (Discovering Business and the Writing Connection)

- Skagit: Current Issues for Business, Literature (The Buck top Here)

- Spokane: business computer systems, English comp. (Looking Good in Print)

- Spokane Falls: chemistry, ceramics

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OF BODY & MIND

David Dawson, Seattle Central

"Of Body & Mind" was first offered in 1989 and was offered for a fifth time in Fall 1995.

In this program, we coordinate anatomy and physiology, psychology, and literature. We explore the "mind-body connection," investigating such concepts as nature vs. nurture and biology as destiny, as well as the language people use to talk and write about body and mind.

Our topics for discussion include the scientific method, alternative medicine, the systems approach to mind and body studies, and concepts of pathology and illness.

We emphasize active learning, discovery, and cooperative group work. One major focus of this program is on enhancing reading, writing, speaking, and listening skills.

This program makes use of lectures and text seminars; small and large group discussions; response paper and essay writing; video, film, and slide-show viewing; psychology and composition workshops; anatomy/physiology lab work; and competency/skills tests.

At mid-quarter, students will select 15 credits (5 in A&P, 5 in Psychology, & 5 in English) from among the following:

- ZOO 113, Human Anatomy (a lab science) (5)
- ENG 101, English Composition (5)
- ENG 135, Introduction to Literature (5)
- PSY 110, General Psychology (5)

TEXTS:

- Martini - *Anatomy & Physiology*, 3rd ed.
- Marieb - *Human A & P Lab Manual* (brief version, 3rd ed.)
- Zimbardo & Weber - *Psychology*
- Diane Hacker - *Bedford Handbook for Writers* (4th ed.)
- Jared Diamond - *The Third Chimpanzee*
- Oliver Sacks - *The Man Who Mistook His Wife for a Hat*
- Mary Shelley - *Frankenstein*
- Doris Lessing - *The Fifth Child*
- Lewis Thomas - *Lives of a Cell*
- Susanna Kaysen - *Girl, Interrupted*
- J.M. Coetzee - *The Life & Times of Michael K*

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TECHNOLOGY AND HUMANITIES: AN UNEASY MARRIAGE

North Seattle Community College, Spring 1989

Taught by Peta Henderson (Anthropology, The Evergreen State College), Rita Smilkstein (English, NSCC), and James Wall (Construction Engineering, NSCC)

The Program:

Our program was presented to the students in the following way:

1. One of the fundamental assumptions of Western culture for the past 400 years has been that technology makes our lives better.

2. The humanities, which believe our lives have a better quality when we focus on values and feelings rather than on things, are, in our society today, generally considered useless and/or impractical.

3. Our thesis for the quarter will be that there should be a better integration or marriage between technology and humanities, that both are important and necessary.

Our Intention:

What we intended to do was to study the interconnection between technology and society by looking at the following issues:

1. The split--and the effects of the split-between technology and humanities in our society, a split promoted and fostered by our educational system

2. The interdependence of science and technology

3. Contrasts between technology-dominated American society and holistic societies such as Native American societies

4. The legal and moral implications of the uses of technology

5. The special impacts on women and minorities

6. Trends of technology in historical context.

We offered the following menu of courses from which students were to select 15 credits: English composition (101 or 102), Introduction to Fiction, Introduction to Technologies, World Cultures. NSCC had no general technology course, so Jim invented the Introduction to Technologies course for this program. Students also had the option of selecting two other credits in independent study in anthropology, English, or technology. Our reading list included a range of texts from Plato's *Allegory of the Cave* and Bacon's *The Four Idols* to Merchant's *The Death of Nature*, Floman's *Civilized Engineer*, selections from Marx, Bruner's *The Process of Education,* Wolf's *The Ways of My Grandmother*, Silko's novel *Ceremony*, selected Native American readings, Huxley's *Brave New World* and *Brave New World Revisited*, and selected Supreme Court decisions.

Some Lecture Topics:

How we learn

History of Western ideas, Plato to modern science

Traditional and scientific world views

Materialism vs. idealism

Overview of three world views: Western organic (neo-Platonism), Tribal Indian organic, mechanical

Western movement in the U.S. and its effect upon Native Americans

Ecological adaptation of Native Americans

Report on Belize (Central America): overpopulation and poverty

Model of a social system

The capitalist paradigm

Renaissance and revolutions, including revolutions in science and technology

Industrial revolution

Gender and science

Roe vs. Wade

History of technology

Technology and creativity

Humans as machines of the rationalization of labor

Human factors in engineering

The process of designing and building a structure

History of structure design and construction

Land ownership, zoning, and building

What Happened:

Our plans, however, while succeeding in opening students' eyes to the issues, were less than fully realized for the faculty. Perhaps the main reason was that Peta and Rita wanted Jim to focus more on "hard core" technology, but Jim felt unable to do so for the following reasons:

1. The program was couched in the discourse of the social sciences and humanities, using their language, concepts, perspectives, and pedagogy. Jim could not find a way into that discourse except by focusing on the history, social/cultural context, and issues relating to technology.

2. The actual teaching of a technology or a technological subject was impossible to fit into this program--especially as conceived in a social sciences/ humanities frame of reference--because of the nature of how technology is taught. Specifically, technology instructors typically teach a cohort of students for two years, five hours a day, five days a week, leading them step-by-step through a linear logical process including both theory and practice. How could such a program be made to fit into one 15-credit program in which the 15 hours are week are shared with instructors from two other disciplines?

3. Only a few students had elected to register for the 5-credit technology course and Jim later said he had felt disempowered by what he had believed was a lack of interest in technology in and of itself and, thus, felt he couldn't ask for more of the 15 weekly hours.

The Problems:

Unfortunately, in our on-going discussions about the program, both in planning and in teaching it, we did not clearly and fully perceive the mis-fit between our different disciplinary approaches. It is only recently that we have come to recognize the seriousness of this mis-fit as well as the obstacles to combining technology instruction with social science and humantities instruction. In our program, because we did not understand the situation, Jim felt he had no option but to adjust to Peta and Rita's frame of reference. Here are some of the specific problems we have now identified:

1. Technology instruction is much more intensive than social science or humanities instruction; it requires detailed, continuous work over a long period of time (some programs are even set for as much as six quarters of 25 contact hours each week vs. one to three quarters of five hours each week). This problem is further exacerbated by three teachers having to share the weekly 15 hours. A technology subject is a whole world in itself; it is deep and complex, and some of the programs can't be taught in a few hours here and there, i.e., in even five hours a week for eleven weeks. In some programs, for technology students to get to high-level content and skill, they need to go through at least a year of preparation during which the basic steps and skills are acquired step-by-step.

2. A technology teacher can go only so far without some basic number crunching or math.

3. Social science and humanities instruction, unlike technology instruction, might often focus on a group of semi-related readings with discussion (especially in learning community seminars) calling for interpretation.

4. Technology focuses on science that's been developed, sees that science as real, and takes the students through a linear progression to a set end--whereas the social sciences and humanities might typically explore or examine layers of meaning, bodies of ideas, and different or conflicting theories, interpretations, and approaches. Technology is about applying what's known, about specific and practical uses, current practice, and being up-to-... the other disciplines are about investigating, questioning, and creating new knowledge and pathways. In

short, there is a great dissonance between technology's factual perspective or mindset and the other disciplines' interpretive perspective or mindset.

5. Writing assignments in technology programs focus on content while those in the other disciplines focus on both content and form.

6. Technology and non-technology instructors have different understandings of what technology is and place different values on the joy of language and of the diversity of cultures.

7. Technology instruction focuses on what's important to know to make the real world work; the other disciplines focus on meaning and value.

Recommendations:

Some of the reaons for our not having confronted--or even seen--the seriousness of the problem are (1) that Jim's background is in the humanities and social sciences. He was interested in Peta's and Rita's subjects and was educated for and attracted to teaching and learning from the humanities/social sciences' perspective; (2) Jim, as noted earlier, felt disempowered by the low enrollment in the technology course and felt he had to rethink his role in the program and consider alternate ways to present technology; (3) Peta and Rita did not understand how intensive the teaching of technology needs to be.

Our recommendations are based on our thoughts of how to work with the problems outlined above:

1. Since all disciplines probably include logical and critical thinking and problem-solving, program objectives could include students improving their use of these processes.

2. Writing assignments could include a strong focus on logical patterns and succinctness, clarity, specificity, and precision.

3. Less focus on reading non-technologically oriented books--i.e., less novels.

4. A focus on a project or projects that require hands-on practice. This would be in the nature of a mini-technology subject, e.g,. how to make something by working through all the steps from beginning to end. In this way, students could appreciate the complexity and step-by-step approach needed for developing understanding and skill in a technology. Discussions and evaluations of these projects in light of the different disciplines would require translating concepts from one mindset/language to another--for a truly coordinated study of the technology and non-technology disciplines involved. These projects could be related to the program theme, e.g., making computer models or constructing the model of a house or public structure in a program whose theme might focus on, as it did in our program, the connection or inter-relationship between technology and human needs and values. Or the theme might focus on the social uses of space looked at historically and using technology's conceptual models. A lab might be added to give more opportunity to focus on the hands-on work.

Some technologies at the community college level could be coupled with social science or humanities topics such as architecture or physical anthropology, where technological aspects become meaningful with interpretation and in social/cultural/historical contexts. For example, carbon dating is an exact technological process based on science and is of critical importance in some social sciences. This technology could be a rich, integral part of a coordinated studies program that included a focus on ancient history, archeology, or anthropology.

We would be excited to teach in a program that applied these recommendations!

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RE-VISIONING HIGHER EDUCATION FOR THE 21ST CENTURY:

CHANGING THE CORE, NOT THE MARGINS

Bill Moore, Coordinator for Student Outcomes Assessment
Washington State Board for Community & Technical Colleges

"In our educational system we forcefeed students. . .tell them what to do, where to go to class, what to learn, how to learn it, what to read, what tests to take. Their role is to react. But the worklife they are entering is one in which they will have to invent their own careers. . .Of course, in any subject there's a basic amount of information you need to know. But beyond thatand very quickly we move beyond thateverything, it seems to me, is up for grabs. There are no right answers to most of the questions. And we've got to make up our own answers, because the questions are always new. . .The core task of education [should be] to improve people's capacity to make a difference in the situations in which they find themselves, using a whole range of skills."

- from " 'UpsideDown' Thinking about the 21st Century Academic Workplacea Conversation with Charles Handy," by Russell Edgarton, *AAHE Bulletin*, September, 1993 [Handy is author of *The Future of Work*, 1984; *The Age of Unreason,* 1990; and *The Age of Paradox*, 1994]

While I see myself deeply involved in educational reform, I don't consider myself to be much of a "futurist"; I'm actually quite skeptical of such efforts. Those of you who are oldtimers like me no doubt remember the predictions in the '50's and '60's that we'd all be jetting around with our personal rocket packs by now. Still, there's something about having children that seems to reorient even hardened cynics like myself toward the future, and combined with the coming of the new millennium, the attraction is almost irresistible. But for me it's not really predictions as much as it is a projection of my personal visions for an educational futurea fundamental "revisioning" of our work, not the incremental, often imperceptible, tinkering at the margins of the enterprise that seems to characterize the daytoday reality we face. If we could turn things "upsidedown," as Handy suggests above, what will my daughter Taylor experience as she turns 16 in 2005? What follows is a briefly-elaborated list of three key components in my own "futurist" scenario..

Active partnerships/ collaborations: high schools, community colleges, universities, employers, civic organizations, etc.

Instead of "seamless education" simply being part of the rhetoric educators use to comfort politicians and the public, Taylor will be able to benefit from structured partnerships among various education providers to explore her options for sustaining and extending learning into postsecondary education and employment opportunities. Upon completion of her "certificate of mastery" in June, 2005, she will have compiled a learning portfolio reflecting her strengths and weaknesses in the essential learnings defined as preparation for citizenship and/or doing collegelevel academic work. This portfolio will reside at a career/ educational planning center with trained counselors who will advise Taylor on her options for educational programs/ packages, drawing on integrated information resources from all sectors of education (including a wide variety of servicelearning, cooperative education, internshiptype offerings at various public or private sector organizations). Regardless of where this center is physically located, it will serve students and the educational system, not individual institutions.

Focus on the individual student and the "portability" of his/her learning, not just on credentials

Like "seamlessness," "studentcentered" will be a reality in Taylor's world and not just rhetoric. The system will attempt to find the best possible postschool pathway for Taylor based on her interests and skills and existing/future opportunities for making a contribution to society through employment and adult life. As it is now, the system functions to serve the existing structure and the convenience of educators in discrete,

independent educational institutions; if students can't "fit" into that framework, they can't participate, or they wind up dropping out when the mismatch overwhelms them. Moreover, the focus is on the acquisition of credentials which serve as screening devices and/or a loose proxy for student learningeven though there is widespread and growing disbelief about this connection. In a studentcentered system, what will matter most to Taylor is not specific credentials or where she acquires them, but what kind of work/learning experiences will enable her to acquire the knowledge and skills she needs for living and working in the challenging world of the 21st century.

Emphasis on skills/abilities and opportunities for performance, not just course titles or acquiring content void of context.

Perhaps most importantly, the postsecondary educational world Taylor will be considering in 2005 will recognize holistic, integrated abilities and performance as the core of learning, not the exchange of isolated, often contextfree packets of information boxed according to disciplines or subject areas. Information, readily available from a myriad of sources other than, but not automatically or totally excluding, lecture notes, will be viewed as critical data to be used in thinking about and addressing problems or issues in various work and life contexts. In Taylor's world, faculty will be mentors and coaches, designing and facilitating problems/ projects/learning communities which focus on meaningful intersections of existing knowledge and the world, as well as opportunities for constructing new knowledge to address unforeseen and unpredictable circumstances. The faculty role will take many formsindividual mentoring, multidisciplinary teams, multiinstitution teamsand given that some or much of Taylor's learning and performance will actually occur in some organization other than the educational institution, faculty work will include close and regular communication with employers and supervisors. The role of Taylor's primary educational institution, whatever that might be, and her faculty contacts within that institution, is to help her manage her overall educational experience so that she addresses her learning goals and then assesses/certifies that she has met her goals at acceptable -- and reasonable -- standards for moving on to a new phase in her adult life.

I hope that this scenario doesn't sound too "Big Brother"ish in its sense of a tidy, managed lockstep process from adolescence into productive adulthood. Even if this were completely desirable (which is a questionable assumption), such a process would inevitably fall prey to the messiness of the world and human will and shortcomings. Obviously, I haven't thought through all the details and ramifications of my projected worldin part because I acknowledge that it's got a" slim to none" chance of occurring, particularly by 2005. On the other hand, I'm convinced that many of the core features I've described can be found currently in some form, however preliminary and embryonic the focus might be at present. This *FACTC Focus* represents one of those beginning efforts in its attempt to rethink approaches to learning through active academic/ professionaltechnical partnerships. We need to continue such efforts and continue to be provocative in raising radical solutions for discussion and debate. Only then can we hope to make real change at the core of what we do rather than at the margins.

ACKNOWLEDGEMENTS

This issue of FACTC Focus is dedicated to all the support staff who give so much service to the faculty and students in this collective enterprise of learning and preparing for the job market. The editor would especially like to thank Jane Freeman, secretary of the Learning Assistance Center at South Puget Sound Community College in Olympia for her remarkable patience in teaching me about discs and formatting, directories and files, margins and columns, boldface and italics, font size and type, printing problems, system shutdowns and various other technological complications and for her assistance in formatting this edition.

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