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AUTHOR	Tichenor, Stuart
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ABSTRACT

This document focuses on the ability of Oklahoma State University-Okmulgee Community College to effectively incorporate technical training with general education. It emphasizes that in the past, technical training and general liberal arts education were seen and operated as two distinct, somewhat unrelated programs. Changes in the demands and needs of business and industry make incorporating the two fields a necessity. Employers believe that one of two things happens in postsecondary education: (1) students graduate from a liberal arts institution with communications skills but no technical skills; or (2) students graduate from a technical school with minimal liberal arts versatility and minimal communications skills. The author asserts that there must be a middle ground, regardless of the difficulty community colleges have convincing technical students of the importance of general education. Technical training, problem-solving skills, audience analysis, writing, computer skills, and general/specialized communication are the most commonly mentioned employment skills presently desired by employers. This document reports that most technical programs have some general education requirements. Dual emphasis on technical training and general studies, which is what Okmulgee is encouraging, is required to ensure gainful employment for community college students. (Contains 12 references.) (MKF)

Technical Training and General Education: Can We Really Provide Both?

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Submitted by:

Stuart Tichenor
Oklahoma State University-Okmulgee

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Technical Training and General Education:

Can We Really Provide Both?

The role of technical schools in training and educating the workforce for the 21st century is constantly changing. Not only are programs and fields of study changing, but so are the expectations of businesses and industries. Many of these businesses are partners in creating curriculum and setting standards for the education and training of students who will eventually work for them. However, companies no longer desire only capable technicians; now they expect capable technicians who have the skills generally thought of as coming from a liberal arts institution.

It is no surprise that expectations are changing when technology has created so many new ideas and concepts—and relatively new ideas quickly become obsolete. The debate between technical and general, between education and training is no longer valid. Many employers now expect college students to obtain *both* from their educators. This, unfortunately, puts some two-year colleges in a quandary. Where their role was once clearly defined, they are now expected to provide much more. Their role as a vocational trainer may now include providing a liberal arts education that will create well-rounded, critically thinking, technically trained employees. It sounds like a lot to ask.

Background Information

Since its creation as a technical school in 1946, Oklahoma State University-Okmulgee has provided technical education for students and worked closely with business and industry in providing relevant instruction, internships and, after graduation, full-time employment. Its mission has always been to provide marketable skills for students desiring to enter the workplace

with an added advantage. In addition to technical courses and a close relationship to the business community, there have always been, under different names, college courses that went beyond technical education and helped provide students with knowledge and skills they would need to make them more well-rounded.

Known as "Related Subjects," beginning in 1947, course offerings included Technical Mathematics, Technical English, Technical Chemistry, Applied Science, and Small Business Bookkeeping. These first general classes were advertised as " 'something extra' for those who aspired to managerial positions as well as helping the students sell their skills" (Davis 139). As technology changed, programs changed or were discontinued, and new programs were added; those once extra "related" classes became part of the regular curriculum and were later added into the course offerings provided by the General Education Department.

Changes in the way these courses were presented mirrored the needs of students and potential employers. When general education courses went from lower-level remedial courses to true college-level, transferable courses, it was because there was a need to distinguish what OSU-Okmulgee provided compared to what area vocational-technical schools provided. When the changes led to granting an associate degree in 1979 (Davis 54-55) the role of general studies classes continued to change. As a result, the school currently grants an Associate of Applied Science degree. Of the approximately 90 credit hours required by automotive and diesel programs, for instance, 24 are from general studies; those courses include English, Math, Behavioral Sciences, Speech, History, Political Science, and Philosophy.

What makes "Tech" different

One of the concerns of the National Council for Workforce Development (as well as partner businesses and industries) is whether or not two-year colleges "match with industry and professional standards" (Hamm and Mundhenk 11). Development of internship programs on the OSU-Okmulgee campus maintain industry and professional standards by creating work-based internship programs that require students to split their time between the college campus and the workplace. The internship programs—as designed by the college—have an intense hands-on focus; students spend 7½ weeks in the field working for a sponsoring dealership or company, then return to campus for 7½ weeks of coursework, both technical and general studies courses. Coursework and internships operate year-round through a total of six 15-week trimesters.

Corporate and industry-specific internship groups on the Oklahoma State University-Okmulgee campus account for a major portion of the enrollment; specifically, corporate involvement includes corporations such as Caterpillar, Chrysler, Ditch Witch, Ford, Freightliner, General Motors, Komatsu, Nissan, and Toyota. Industry-specific internship groups include air conditioning/refrigeration and natural gas compression (Tichenor, "Industry-Specific"). Besides the programs listed, some programs—such as Automotive Collision Repair, Computer Systems Technology, and Construction Technology have fifth or sixth trimester internships which are done only near the completion of the degree program.

In many cases, businesses and industries recruit students to attend classes on our campus. In some cases, students were already full-time employees and the employer became a sponsor of that student, reinforcing the belief in both the value of the student as an employee and the training and education provided on campus. For example, one student, working full-time in the parts department of a Ditch Witch (trenching equipment) dealership in Michigan, was asked if he

would like to attend classes in Oklahoma. Within two weeks, the student was enrolled in the Ditch Witch STEP (Service Technician Excellence Program) program—one that required a six-trimester commitment.

Another example is a student who was recruited by the natural gas production company that he worked for. Based in New Mexico, they enrolled him in the Natural Gas Compression program and continued to pay him full-time salary for the 7½ weeks he attended classes. Most students, however, are paid only during their internships with their sponsoring company. Still, these students are paid well above minimum wage, with many students receiving a raise at the beginning of each new internship.

What Employers Expect

Reviews of literature concerning employment skills needed by students almost always mention "communication skills." Zimmerman and Long summarize the most commonly mentioned:

- Problem-solving skills
- Audience analysis
- Components of the writing process
- Word-processing skills
- Communications which involve adapting
- Communications with professionals (307-308).

One source, Gerson and Gerson, clearly states that employers expect more than just a technically capable person. In their estimation, "the successful job candidate must provide more than

degree-program expertise. That's where problem solving, teamwork, and communication skills become important differentiating characteristics" (198) for potential two-year college graduates.

Since business and industry have always hired from colleges and universities, it follows that the schools these students graduate from should provide them with the necessary skills they need for their careers. However, that is not always the case. Merwin, writing about a shortage of skilled workers in the construction industry, cites a survey respondent who said,

> We have relied too heavily on America's education[al] institutions to provide skilled people without giving them enough input on changing job needs and educational requirements [. . .] Scholastic standards have slipped [. . .] Entry-level people applying for technical jobs are deficient in the language, math and science skills necessary to work on complex machinery (75).

Employers on the outside looking in believe that one of two things happens: 1) students graduate from a liberal arts institution with communications skills but no technical skills; or, 2) students graduate from a technical school with good technical skills, but minimal liberal arts versatility and minimal communications skills. In employers' minds, there appears to be a trade off; theoretically, at least on the surface, there may be. If students are schooled in the liberal arts, they are supposed to have inquiring and critical minds; if students are schooled in technical skills, they allegedly place less value on liberal arts skills. The difficult question to answer in this case is how students' skills can be accurately or reliably measured.

In some cases, students are so involved with their technical education that they see no reason to study anything else (Tichenor, "Public-Private" 4). In other cases, there may even be animosity between the technical teachers and general studies teachers. General studies teachers often believe that the school would be no more than a vocational-technical school without them;

on the other hand, technical teachers believe that the general studies teachers would not have jobs if it weren't for the technical programs. Ironically, both sides are correct.

It is also ironic that two-year colleges are getting dual messages and expected to live up to both of them. Businesses and industries are saying that they need technically trained students; at the same time, they want students who have a thirst for lifelong learning as well as being proficient in problem-solving skills and being proficient communicators. In a position paper by the National Council for Occupational Education, two points are made in the beginning pages: 1) industry needs an educational system that "must invest more heavily in technical education programs," (Hamm and Mundhenk 2); in contrast, on the following page, they state that "preparing an individual with a finite package of skills that is expected to be useful throughout a career [. . .] is both undesirable and dangerous" (3).

Clearly, there is a dual need for the students who become potential employees. They need to be trained with relevant skills that are above entry level, yet they must also be sensitive to and trained in general knowledge skills that will allow them to be flexible and more adaptable to the constantly changing workplace.

> But is it reasonable to expect a two-year program to produce competent technicians and employees with liberal arts skills? The mission of a technical school is often mandated by innumerable pressures—the biggest one being to provide business and industry with the kind of graduates they want. If schools don't produce, business and industry will get technicians somewhere else (Tichenor, "Public-Private" 5).

What We Provide

When looking at the general studies requirements of technical programs, it is uncertain whether these basic courses are enough to give technical students sufficient exposure to what could be loosely called a liberal arts curriculum. Some students, regardless, will eventually be promoted into management; it is safe to say that those students may realize the importance of writing and speaking skills now, but many students protest vigorously and continually complain about general studies classes. With over two-thirds of their classes being technical classes, students are often heard saying, "I don't need to know this to turn wrenches!" Whether this is their true feeling or they are saying that for the benefit of their classmates is not known.

Sometimes, showing students the relevance of general studies classes is difficult, especially when they are really intent on becoming an automotive or diesel technician. McDowell echoes that sentiment when he states, "one cannot realistically hope to present a classical liberal education to an unappreciative or under-prepared student generation" (19). In addition, with less than one-third of the graduation requirements being general studies courses (24 credit hours for most internship programs), there may not be enough emphasis to require students to become critical thinkers. When teaching writing, for instance, a teacher never knows when a student will have what some call the "aha! experience." That experience occurs when, at some date after a student has left school, the lessons truly percolate and begin to make sense—no longer just information to be remembered for a teacher or memorized for a midterm examination. It is impossible to tell how much a student values his or her education when there is no way to track or otherwise document when that "aha! experience" takes place.

Table 1. Credit Hour Requirements for Internship Programs*

Program	Total credit hours	Technical program credit hours	General Studies credit hours	Interdepartmental credit hours**
Air Conditioning & Refrigeration-HVAC	91	62	25	4
Automotive—Chrysler CAP	95	67	24	4
Automotive—Ford ASSET	92	64	24	4
Automotive—GM ASEP	93	65	24	4
Automotive—Nissan PROCAP	95	67	24	4
Automotive—Toyota T-TEN	84	54	18	12
Diesel—ATC Freightliner	92	61	24	7
Diesel—CAT Dealer Prep	92	61	24	7
Diesel—Ditch Witch STEP	92	61	24	7
Diesel—Natural Gas Compression	92	61	27	4
Diesel—Komatsu ACT	92	61	24	7
Diesel—Toyota T-Lift	92	58	27	7

* These programs require students to spend half of each trimester working for a sponsoring dealership or company. Other programs offer internships, but only in the 5th or 6th trimester.

** For specific courses, see the college catalog.

Source: Oklahoma State University-Okmulgee, 2002 Catalog.

Because of its mission as a technical school, OSU-Okmulgee was not created as a true liberal arts experience—it was created to give students marketable skills that would help them become employed. And, for over fifty years, it has been doing just that. The school has very high placement rates for program graduates. In some minds, that means vocational training takes precedence over the need to be a critical thinker. However, most of the faculty, both technical and non-technical, have long recognized the need for more balance between technical and academic departments. Reflecting on that type of balance, an Illinois task force states, "students who have experienced integrated academic and occupational instruction will be better prepared to compete for jobs in high performance and changing workplaces and will be able to succeed

when they acquire them" (Illinois 4). Convincing students, however, is another story. Moreover, as Cross suggests, "we can't improve student learning without the active and intelligent participation of students themselves" (5).

What The Writing Teacher Actually Deals With

Because of scheduling in both the General Studies Department and the technical departments, internship groups move through their classes together as a unit. On paper this works well, but for students it often denies them of what most people think of when they envision "the college experience." Most graduates of college, at any level, have experienced people from a variety of majors, a variety of backgrounds, with a variety of perspectives. This, however, does not happen with the internship groups. They are robbed of the true liberal arts college experience. Although they may meet students from other majors while residing in the dormitories and mingling in the student union cafeteria, they attend almost all their classes with their "unit." As a group, they move from class to class, from building to building, with others enrolled in the same program; as a result, this creates what some teachers call a "herd mentality."

The group, as a herd, has a determined hierarchy that can, sometimes, ostracize group members. That hierarchy, in addition to the change that comes over students in a group psychology situation can prevent desired interaction in the classroom or prevent some students from gaining maximum benefit from a class. This often happens because they do not want to speak out. Likewise, they may not even want their grades to be significantly better than their peers' grades, when to do so would change the group's attitude toward that particular student.

Another challenge for teachers is the compressed class schedule. In Technical Writing I and II classes, for example, students typically have one of two schedules:

Table 2. Sample Program of Study—CAT Dealer Prep

1st Semester	Course number	Course name
	DHEC 1124	Introduction to Caterpillar
	DHEC 1134	CAT Electrical Fundamentals
	MATH 2003	**Business Mathematics**
	GBGE 1111	**College Cornerstone**
	DHEC 1114	Internship
		16 credit hours
2nd Semester	**Course number**	**Course name**
	DHEC 1213	CAT Hydraulic Fundamentals
	DHEC 1223	CAT Fuel Systems
	GTBT 1173	**Information Technology and Applications**
	ENGL 1033	**Technical Writing I**
	DHEC 1214	Internship
		16 credit hours
3rd Semester	**Course number**	**Course name**
	DHEC 1323	CAT Engine Fundamentals
	DHEC 1333	CAT Machine Hydraulic Systems
	ENGL 2033	**Technical Writing II**
	POLS 1113	**U.S. Government**
	DHEC 1314	Internship
		16 credit hours
4th Semester	**Course number**	**Course name**
	DHEC 2413	CAT Engine Diagnostics and Repair
	DHEC 2423	CAT Machine Electronic Systems
	PSYC 2313	**Psychology of Personal Adjustment**
	HIST 1493	**U.S. History Since 1865**
	DHEC 2414	Internship
		16 credit hours
5th Semester	**Course number**	**Course name**
	DHEC 2524	CAT Power Train I
	DHEC 2532	CAT Mobile Air Conditioning
	GTCT 1183	Welding
	SPCH 1113	**Introduction to Speech**
	DHEC 2514	Internship
		16 credit hours
6th Semester	**Course number**	**Course name**
	DHEC 2603	CAT Power Train II
	DHEC 2636	CAT Capstone
	PHIL 1213	**Ethics**
		12 credit hours

Source: Oklahoma State University. "CAT Dealer Prep: Information Guide." 2001.

- 2-hour classes on MWF—classes meet approximately 21 to 24 class periods, depending on when the trimester begins, ends, holidays and breaks
- 3 hour classes on MW or TR—meet only 14 to 16 class periods, again, depending on when the trimester begins, ends, holidays and breaks

The state requirements for total minutes of contact time are still met, but classes are compressed into a 7½ week trimester. Meeting twice the number of hours in half the time of a regular trimester, though, is not the same as meeting for fifteen weeks. The most noticeable difference is that discussions and classroom exercises must be streamlined in order for students to have a sufficient amount of time to actually prepare and write assignments. The pace is, therefore, noticeably faster; as a result, students have less time in between assignments to prepare. Classes become much more results-oriented because students only have a limited amount of time on campus before they return to their sponsoring dealership or company for their next internship.

The compressed classes also mean that students have to be more responsible for their learning. That responsibility has an added factor: if students fail a general studies course, they lose their place in the rotation and have to make up the class at another time or, perhaps, enroll in a night class to make up the credit hours. Occasionally, failing a class forces students to withdraw from their technical program altogether because the course rotation is not flexible enough, given problems with scheduling.

Students typically take their first technical writing class during their second trimester. What is surprising is how students adapt to the compressed schedule so quickly and produce the assignments required for the class. What remains the same is the number of assignments. Students in the compressed classes complete the same assignments as students in a regular 15-week trimester. Because of time constraints, however, lectures are minimal. In almost all cases,

internship groups meet every class period in a computer writing lab. Any lecturing that may need to be done is accomplished there; consequently, more time is spent in front of a computer actually practicing and learning the strategies required for that particular assignment. This takes part of the liberal arts discussion out of the classroom and turns writing into another hands-on experience for relevance-oriented, technical students.

Teaching Writing to Technical Students

My personal philosophy is that "less is better" sometimes and that technical writing textbooks are guilty of "overkill." Produced for a mass market, technical writing textbooks must appeal to a wide audience composed of an uncountable number of teachers with varying philosophies; in addition, these mass market textbooks often contain far more information than a typical student can digest in 15 weeks, much less in 7½ weeks. In a compressed class where students are producing documents on an almost-daily basis, there is not sufficient time for extensive textbook readings and lengthy classroom discussions.

Because students at OSU-Okmulgee are a very specialized audience, it stands to reason that their textbook should also be well-suited for them. Therefore, over a period of about five years, I wrote a study guide (approximately 175 pages) that includes all assignments for Technical Writing I and II classes. This study guide has minimal directions and, in many cases, document examples written by former students—making it very audience-specific. Using a self-written study guide has had obvious benefits. First of all, students often recognize the writers of documents. Secondly, they realize that if other students in their situation can produce documents of this type, they can too. Third, students like the reader-friendliness of the study guide because it is not nearly as intimidating as a more expensive textbook. Other teachers at other two-year

schools have also commented on using audience-specific study materials; Shelp, for example, states that "customized instructional materials enable us to teach (train) with a minimum of distractions" (2).

Part of the rationale for minimal directions is to teach students self-direction and to help them realize that there is not one "correct" way of writing or producing a document. Students are encouraged to apply assignment guidelines to their specific major and situation; doing so allows them to improvise and adapt general guidelines to specific situations. This often means they delete or do not use part of the suggested organization I may have for assignments. It also means they must learn to critically think about what their purpose is, who the intended audience is, and how they will need to adapt to those particular characteristics of the writing situation. In most cases, the classroom attempts to mirror the writing skills that students may need in the workplace.

Final Comments

What OSU-Okmulgee does is working—and has been for quite some time. Since its inception, the school's mission has been to create employable graduates. The combination of two unlike programs, technical and general, has created a desirable force that carries students into productive careers. Carnevale, further commenting on a combination of technical and general education, believes that "the synergy between these two forms of education creates the most well-rounded, productive individual who has the highest rate of success in the workplace" (qtd. in Lane 9). Naturally, any school that provides both technical and general education hopes that it gives students this balance required for the workforce. Unfortunately, there is probably an imbalance with students who tend to lean towards one side or the other.

Students do not always see the two halves—education and training/technical and general—as a complete whole but as separate entities. Two-year schools, furthermore, cannot force students to believe in a well-rounded education combined with vocational training. In addition, in all fairness to technical schools and their students, it may not be possible to accurately measure how much students gain from or value their general studies or liberal arts courses. The best that technical schools can do is continue to work at providing business and industry partners with students who have received sound, technical training and a sampling of the liberal arts. Hopefully, the combination of technical training and general education will continue to provide graduates with the capability of becoming well-rounded citizens as well as productive technicians.

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