

Education & Training for Knowledge Workers
Presentation to Graduate Students in Professional Writing
Carnegie Mellon University
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I believe it's ludicrous to teach *computers* as the be-all and end-all or even a primary component of much workforce training. It's like teaching *clay tablet and stylus* or *quill pen* or *printing press*. It's like teaching a carpenter how to use a hammer and saw and then saying he or she is equipped as a professional to plan and construct a house or design and put an addition on.

We use computers as tools to accomplish tasks. Beyond learning rudimentary keyboarding (which I am old enough to remember calling *typing*) skills, knowing their way around the computing system du jour and what the plethora of applications do, what computer skills, exactly, do most workers require?

You could argue that they might need to know the arcane workings of a spreadsheet or how to create tables in a word-processing application. But do they need to know HTML, XML, Javascript or C++? I'm not sure, since most applications at this point hide most of the gory details of the code. The fact that employees periodically need to re-learn the basic details of using standard computing applications says less about their lack of ability sometimes than it does about poor software design and the incessant pre-occupation of designers and manufacturers -- and the public -- with supposedly new and improved features.

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But I digress.

Again, what exactly are the skills and abilities we require of workers'? Who defines what they are? Who correlates what we teach students in elementary and secondary schools – and vocational schools and colleges – to the actual demands of what Shoshanna Zuboff in her book *In The Age of the Smart Machine: the Future of Work and Power* calls an 'informed' workplace -- in other words, an information-rich, knowledge-based work environment?

In a speech on February 14th 2002, President Bush called Pittsburgh *Knowledgetown, USA*. Pittsburgh has emerged in the forefront of the information and knowledge economy. The city that made its fortune manufacturing iron and steel now serves as a focal point for research, innovation and service built upon information technology.

You are emerging from Carnegie Mellon's writing program at a time when our pre-occupation with the tools that technology provides threatens to undermine our knowledge and ability to use those tools wisely and well. As you enter both the corporate and academic workplace, you will encounter people, especially in the technical professions, who patronize your choice of specialty in professional writing, rhetoric and communication. They will regard you with bemused tolerance or even grudging admiration. But they may not take you seriously. After all, everyone can write. Can't

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they? At least well enough to get along. And we have grammar and spell checkers, voice-recognition software, and applications that parse documents and assemble a taxonomy of related links based on key terms and information faster than you can say *Jimmy Crack-Corn*. We have the Internet, for crying out loud: the biggest super-document of them all; a virtual library of information to rival any of the volumes maintained at Alexandria (though the quantity of that information often seems more evident than its veracity or usefulness). So why do we need professional writers?

Here's why your skills and background and expertise are more vital than ever.

Let's start with some background as a basis for addressing my first question: What are the skills and abilities we require of what are increasingly-called knowledge workers?.

First, the nature of work has changed. The demands for education are in flux. Technology (the tools of the trade, if you will) plays an enormous part, and is in flux itself.

Since the middle of the 19th century public education in the U.S. has had at least a two-fold purpose in preparing students to :

- * Be good citizens for a democratic society
- * Enter and function in the workplace

The influx of foreign immigrants into the nascent and later U.S. republic (including my own Irish and German ancestors) necessitated a means of enlightening (or indoctrinating,

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depending on your point of view) them on the means for getting along in their new homeland. This included schooling in such quaint subjects as:

- English (to give them a common language)
- Civics and history
- Character and morality

We may smile now at the notion of boys and girls reciting stories of great Americans like George Washington and ancient Romans like Cicero from their McGuffey readers, but such exercises instilled in the schools' impressionable charges a common knowledge of western culture and what it means to be American, and equipped them with a common language and basis for relating to each other -- whatever their ethnic or economic background. As the industrial revolution progressed and manufacturing centers such as Pittsburgh became the engines of the new market economy, schools sought to teach students a trade or marketable skills that would serve them and their employers throughout their lives. These might be carpentry for boys or weaving for girls. They might simply be showing up on time according to the increasingly-prevalent clock or whistle, understanding verbal and written instructions, and following orders.

Before the twentieth century only a minority of students had the aspiration or even the means to go to college. Most went as far as sixth grade before returning to the farm or, increasingly, moving on to jobs in factories that men such as Andrew Carnegie, Henry Frick and H.J. Heinz built in industrial cities like Pittsburgh. But those factories didn't especially need innovative thinkers. What they needed mainly were laborers to smelt the

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steel, process the coke, can the tomatoes -- prepare the vast quantity of mass-produced goods that the developing democratic middle class wanted to buy.

The nature of work has changed since the nineteenth and early twentieth centuries. I don't mean necessarily the jobs that are available or even the physical working environment in which jobs are performed -- though these have. I mean the fundamental nature of the tasks involved. This has come about with the introduction and increasing use of information technology.

In her book *In the Age of the Smart Machine* Zuboff describes a shift in the tasks that workers perform from acting on materials and with people to primarily *interacting* with, *interpreting* and *communicating* information in a meaningful fashion. These are the skills which knowledge workers must bring to bear and, not incidentally, the skills that you as professional communicators and rhetoricians bring to the table.

My question is, with all the investment they make in information technology and computing tools, why do companies and organizations sometimes seem to get so little payoff? Why, in fact, does the whole of human talent and expertise allied with this technology often end up being less than the sum of its parts?

Whether they know it or not, corporations and organizations -- from high-tech venture-capital firms to low-tech manufacturing operations, to government agencies -- desperately need the expertise and knowledge that you as professional writers and communicators

Lanigan, *Education & Training for Knowledge Workers*

provide. For every javascript or C++ programmer there are a multiplicity of administrators, sales and marketing personnel, support staff and designers who must (or should) collaborate in interpreting, communicating, and making decisions that affect those who purchase or use what they develop. For every geneticist working on recombinant DNA technology there are numerous lab technicians, administrators, secretaries and – dare I say, bioethicists -- who must create or follow documented procedures, write reports and grant proposals, act as patient advocates and communicate to the public.

You see where I am going with this.

It is not just the expertise that you as professionals provide that I am speaking of. The cognitive skills, mental rigor and discipline that being schooled in clear, effective writing and communication inculcates are most relevant to knowledge workers in an information-rich work environment. Lauren Resnick, a local researcher at the University of Pittsburgh's Learning Research and Development Center (LRDC), in her monograph *Education and Learning to Think* draws a strong positive correlation between literacy and cognitive and metacognitive skills such as suspending judgment in making decisions until one has the facts, recognizing connections between related ideas or concepts (or forming new ones), and performing deep analysis of text and information to evaluate their veracity and possible bias.

So in being writers and communicators you are problem-solvers. You bring structure to

Lanigan, *Education & Training for Knowledge Workers*

chaos in the morass of bits and bytes that surrounds us. You slay the dragon of
meaninglessness and obfuscation, or just plain lazy thinking. In so doing you promote a
sensitivity of meaning, value and context – the proper use of the tools that information
and other technologies provide (rather than our pre-occupation with them) – and help us
apprehend the world together and the actions we must perform in it.

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