

# **Relationship between Innovation and Professional Communication in the “Creative” Economy**

David E. Hailey, Jr., Ph.D.  
Matthew Cox  
Emily Loader

BIOS:

Dr. Hailey teaches technical communication at Utah State University. His research interest is in the impact of digital genres on cognition, but his classes often address the impact of digital media on the profession. This paper is distilled from the work of several of those classes.

Matthew Cox recently completed his MS in technical communication at Utah State University and is currently pursuing a doctorate at Michigan Tech University.

Emily Loader recently completed her MS in technical communication at Utah State and is currently editor for a major software company.

# **Relationship between Innovation and Professional Communication in the “Creative” Economy**

## **ABSTRACT**

We evaluate forty-five jobs professional communicators might occupy. Specifically, we examine the impact of creativity on careers that may become more or less easily outsourced domestically or offshore in the future. We are unable to find any particular relationship between creativity, per se, and job security. Instead, we find that people with knowledge of the processes required for innovation are more valued by industry than those recognized as creative. We suggest that to be prepared for the evolution of the global economy, technical communicators and their educators should understand “innovation” in its formal context and be able to apply that knowledge in their workplaces and classrooms.

## **INTRODUCTION**

In a poll of a group of twenty professional writing colleagues, examining the topic of outsourcing and offshoring, five of them (25%) had seen their companies attempt to offshore documentation projects in the past year. Although some of these offshore experiments went badly, the group generally agreed that many of the failures were

attributable to startup problems. After several months of examining the profession, the general consensus of this group is that if software programming goes to a remote site with an English-speaking population, there are few valid reasons production of its entire communications package cannot follow. This conclusion is in keeping with arguments presented by Prashant Natarajan and Makarand Pandit [1], JoAnn and William Hackos [2], Ron and Anil Hira [3], Thomas Friedman [4], Lou Dobbs [5] and others who variously claim, “Any activity where we can digitize and decompose the value chain, and move it around, will get moved around” [4, p. 13], or more bluntly, “anything that can be digitized can be outsourced to either the smartest or cheapest producer or both” [4, p. 12]. Given that virtually all communications can be digitized, it is reasonable to believe that in the future more and more professional communications positions will be outsourced and may move overseas (offshored).

Some of the authors discussing the topic of offshoring predict gloom (e.g., Dobbs and the Hiras), while others suggest the problem is of limited scope -- that the informed employee can and should adjust (e.g., Hayhoe [6]; Alexander et al, [7]; Pink [8]; Murphy [9] Bekins and Williams [10], Hackos and Hackos [2]). Some (e.g., Junhua and Baake [11],) even suggest that outsourcing and offshoring is a phenomenon that can be valuable to those prepared to take advantage of it. But what does “take advantage of it” mean?

To answer that question, one should understand the many dynamics of our profession – or, stated more accurately, “professions.” In our observation no one has dissected the various communication professions to see what might make specific jobs more or less vulnerable. Moreover, although many authors suggest that being creative or

innovative is important in the new, global economy, their descriptions of “creative” and “innovation” tend to be vague and slippery (e.g, Pink [7], Bekins and Williams [9]),

In this article we carefully define “creative” and “innovative,” and we examine forty-five technical communication careers to determine the extent to which being creative or innovative protects employees. We conclude that the most secure jobs all involve employees who make strategic decisions and solve strategic problems that lead to commercially viable innovations, but these people may not be particularly creative. In a sense, the “new creative economy” discussed by some scholars may be quite old. In The World Is Flat, Tomas Friedman suggests that Americans have thrived in a creative economy for the past 200 years: “[I]t is our ability to constantly innovate new products, services, and companies that has been the source of America’s horn of plenty and steadily widening middle class for the last two centuries” [4, p.253].

In the end, our study implies that in the global economy, communication professionals and educators should acquaint themselves with the formal meaning of “innovation” and adjust their professional behavior and instruction accordingly, with that in mind, we conclude with step-by-step instructions on innovative design adapted from engineering design techniques. These instructions can be applied in the classroom or workplace.

### **Digression: “innovation” in a professional context**

Of the entire process of innovation, only step two can be defended as truly creative. An example of a typical innovative process follows: (1) understand the problem, (2) identify all possible solutions, (3) identify all possible constraints, (4) filter all possible solutions through all possible constraints, (5) reiterate until optimal solution

becomes apparent, (6) construct solution, (7) introduce solution to stake holders and (8) establish distribution opportunities for the new products or processes. This process, grasped easily enough, is at the heart of the “creative economy.”

## **OUR METHODOLOGY**

Using resources provided by the STC, IEEE, and U. S. Department of Labor, we created a table of approximately sixty relevant careers, culling several new careers that have no track record (e.g., technical animation), and consolidating titles that are virtually identical (e.g., graphic artist and visual designer) – leaving a total of forty-five job titles. In this case, the “we” in discussion is a class of graduate students and their teacher, all working professionals. Among the students were two general-purpose technical communicators, four documentation specialists, two online training developers, two lead writers, a managing editor, publications manager, compliance manager, program director, graphic designer/illustrator, freelance writer, web designer, animator, and industrial copywriter.

### **Using descriptions supplied by STC, IEEE, Federal Government**

Once we identified the relevant careers, we used job descriptions supplied by the above resources in combination with our personal experience to create tables broken into “description,” “required skills and knowledge,” and “valuable talents.” For example, the Department of Labor, STC, and IEEE give a description of what managing editors might be expected to do and what skills they might be expected to have, but an ex-managing editor within the group was able to add vital information. Moreover, an experienced managing editor can give a good sense of the required skills and talents of related subordinate positions such as graphic artist, illustrator, and copy editor. Similarly, STC

and IEEE might have a good description of the demands on a documentation specialist, but documentation specialists and lead writers will also be able to give a more comprehensive sense of required skills and talents. In an environment of relatively broadly experienced technical communicators we were able to come to consensus on most of the jobs examined, including all of the more relevant positions (e.g., computer documentation, web design, and copywriting). Once we had established the job descriptions, we could explore the components of those jobs, seeking the elements that might make the employee's job more or less vulnerable.

### **Applying the Delphi method**

The process we used is a variation of the Delphi method. The idea behind the Delphi method is to have a panel of experts or stakeholders evaluate a complicated problem or condition without a clear solution. The committee then makes suggestions or predictions based on their individual expertise. From their comments, using consensus, common information is retained and irrelevant information is culled. The relevant information is then recycled to the original panel or to a new one. If the information is recycled to the same panel, members are given the opportunity to change their opinions (based on the body of information provided by the others). The goal is to reach practical or statistical consensus. For national policy decisions, this can be a statistical process with blind reviewers, but the Delphi method can be as simple as a panel of experts recursively reviewing data until they come to consensus on the topic (e.g., some usability studies are done with small panels of users or usability experts coming to consensus on site quality [12, 8]).

In our case, there were three iterations. A panelist would describe the work process for a specific profession. Others would contribute to it, and others would suggest revisions. The input was consolidated by the facilitator and resubmitted to the panel for feedback. Once consensus was achieved, the facilitator reduced the information to paragraph format and resubmitted it to the panel for approval. Each job title was handled similarly. In some cases (e.g., game narrator), we were unable to establish the exact nature of the job and removed it from the list of jobs we evaluated.

### **Toward defining skills and talents (especially “creativity”)**

One important problem for identifying valuable skills and talents is defining the terms we use. We separated required knowledge from required skills and found them easy to list. Understanding the meaning of “talents,” however, posed different and more difficult problems, and “creativity” posed the most difficult problem of all. If we are discussing a component of the creative economy, “creativity” needs a careful definition, but what does “create” actually mean? Definitions range from using it in the context to make (as in “produce”), to crossing boundaries to produce new ideas, designs or art [7, p.131] to the combinations of knowledge and skill that makes innovation possible [13, p. 31]. Our problem is that “creativity” has such a broad variety of meanings, it can mean whatever the author or reader wants. Rather than casually use the term “creativity” or make up our own definitions, we used an already researched and preexisting collection of definitions for talents that includes talents directed toward creativity. Over the past thirty years the Gallup Organization has interviewed approximately 2.2 million employees and their employers. One important body of information derived from the interviews is a list of thirty-four talents these researchers suggest combine in various ways to define

employee personalities and core talents. The thirty-four talents are presented in detail in the books, First Break All the Rules [15] (Buckingham and Coffman) and Now, Discover Your Strengths [16] (Buckingham and Clifton). According to Buckingham and Clifton [16, p. 30], “Talents are naturally occurring patterns of thought, feeling, or behavior.” Being “drawn toward strangers and enjoy[ing] the challenge of making a connection is a talent.”

Look at the things you cannot help but do. Perhaps, time after time, you find yourself advocating a new idea or technology, or perhaps you are the one in the group that always pulls the community together to advance a goal, or you are the one who cannot pass up solving a good crossword puzzle. These are all examples of talents. They are the things we find ourselves doing again and again without being able to stop ourselves. If these things contribute to our wellbeing, they are talents.

A good sales person might manifest combinations of skills such as good sales training and experience, plus a detailed knowledge of the product, and important talents - a love for making connections with others and being braggadocios.

From their list of talents, we can extract four that combine with other talents to define creative people.

**1. Futuristic visionaries** are excited by the possible futures and are often able to influence others into seeing these possible futures. Their creativity will come from their combined ability to visualize the needs of the future and map the possible paths of an innovation toward meeting those needs.

**2. Ideation-oriented people** love new and different ideas. They may be attracted to an idea by its elegance, uniqueness, its conceptual complexity, but

it is the idea of the thing and not the thing itself that attracts them. Their creativity comes from their ability (need) to explore new ideas.

**3. Connective people** see the links between apparently unrelated ideas and objects. Many of the most creative ideas are generated when someone sees how to connect apparently unrelated concepts.

**4. Adaptable people** see no problem with sudden changes such as the addition of a radical new idea or requirement that a product description be rewritten to facilitate a change in the programming. Adaptable people are creative because they are prepared to embrace change.

As we mentioned earlier, a creative person has a variety of talents that always include some or all of the talents listed above. This description, in part, explains why “creativity” is so difficult to discuss in simple terms. In the end, “creativity” is not, itself, a talent. It represents combinations of talents and skills that come together in complex ways. For example, a contrasting talent that adds power to the creative talents listed above is found in highly focused people. These people have the ability to see and repair even the smallest flaws in their work (or the work of others) while they take whatever time they need to push their project to completion. When highly focused people are also visionaries, connective, adaptable, and love interesting ideas, they produce exceptionally creative art, music, or literature. Buckingham, Clifton, and Coffman suggest that people have no choice but to be drawn toward using their talents and are happiest when they can.

Many communication professionals would have little use for the creative talents listed above. Highly focused people might make outstanding indexers, documentation specialists, editors, or archivists. While these people might also possess the creative

talents of “adaptive” or “connective” or “idea oriented” or “visionary” they do not necessarily need them to produce exceptional work. In this context, while the indexer, documentation specialist, and archivist create finished products and are required to find creative solutions to tactical problems, their work can hardly be classified as “creative” when compared to designers, artists, animators, composers, or similar professionals.

With those principles in mind, if we saw a job that required more than one of the above talents, we considered it a creative job, and using the four definitions of creativity listed above, we created a matrix through which we could filter job descriptions. We concluded with 20 jobs that require significant creativity and 21 jobs that do not. We felt unqualified to assign levels of creativity to six jobs. Of the 20 jobs requiring creativity, seven also required ongoing innovation. (Table 1)

[Please place table 1 approximately here.]

### **Integrating talents, skills and knowledge into communications careers**

As a final step, we evaluated the talents, skills, and knowledge requirements for each career. In the following example of our process, we concluded that excellent documenters often exhibit talents described by Buckingham and Clifton.

- 1. Love for learning**-- They often entertain themselves attacking steep learning curves.
- 2. Empathy**-- They work effectively with other professionals.
- 3. Connectedness**-- They like to work in groups.
- 3. Analysis**--They enjoy manipulating ideas or information for better understanding.

4. **Desire to communicate**--They love writing.
5. **Input**-- They are attracted to mining information.
6. **Focus**-- They push until they get the job done, and they do a good job.
7. **Adaptability**--When necessary, they must often change directions without hesitation.

Combine the above list with a comprehensive education and experience (knowledge and skills) and we should have the makings of an excellent documentation specialist (see table 2).

[Please place table 2 approximately here.]

In contrast, an exceptional copywriter for marketing might exhibit many of the talents of the documenter (e.g., a love for learning, a talent for communication), but will probably lack other talents (perhaps focus and analysis). Armed instead with a love for interesting ways for presenting unique ideas (ideation) and a tendency to shift direction mid-stride (adaptability), the copywriter might well make a weak documenter. The excellent copywriter (but problematical documenter) might be driven to make every help file a uniquely creative piece. Still, since many of their projects are expected to end as unique works, their talents are appropriate for what they do (table 3).

[Please place table 3 approximately here.]

Arguably, both professionals can be creative, yet for each person “creative” means something different. More importantly, although both positions, in their own ways, have creative opportunities, neither requires innovation in the economics and business context.

### **Contributors in the “Creative Economy”**

Some professions do require the specific creativity defined by Florida [13, 14] and the others who focus on innovation when they discuss the creative economy. The director of communications, for example, makes decisions solving strategic problems as a matter of habit and is constantly looking for ways to improve corporate communications in a manner that improves return on investment—in a word, they are innovators (Table 4).

[Please place table 4 approximately here.]

### **OUR SELECTION OF JOBS AT RISK**

We suggest that if a profession or a segment of a profession is already being outsourced in large numbers, it has already demonstrated it is at risk. JoAnn and William Hackos point out that “[U]nless direct physical contact is essential or heavy equipment or products are involved, jobs can be performed anywhere as long as workers have sufficient skills [2, 113] . If our jobs are completely digitized, and no physical presence is ever required, they might be done as easily in Bangalore as in Boston. If a communications professional is in a specific field and companies are already outsourcing large numbers of projects specific to that field, it logically follows that the field is vulnerable to offshoring. For example, the fields of graphic arts and copywriting have had huge populations of freelancers since the 1970s. According to the U.S. Department of Labor, “About 3 out of 10 designers are self-employed” [17]. They are similarly bleak about copywriters. “More than one-third are self employed” [18].

One need only look at corporations that specialize in managing offshore projects to see which careers their efforts impact the most. For example, effective 2008, one such company, OffshoreExperts, offers access to 1528 companies that will contract graphic design (including desktop publishing) and 5612 that will contract to do web design [19].

With each profession we examined, we determined the percentage of jobs being freelanced, contracted, or otherwise offered as temporary positions, comparing them to the number of outsourcing companies offering to do them. For example, an examination of regional STC chapter job listings reveals that approximately 45% of the documentation specialist positions are contracted or outsourced to freelancers. Given that many contracted positions are bid out to contractors without listing them, it seems reasonable to assume that more than half of all documentation jobs may be outsourced. An alternative resource, Guru.com, advertises 15,080 outsourcing contacts for companies and individuals specifically for doing writing and editing [20].

We also considered additional factors. Is the job we are examining best done closer to the company or closer to production facilities? Hackos and Hackos explain:

Because of the new communications technology, technical writers no longer need to be in close proximity to developers or end-users. In fact, unless direct physical contact is essential or heavy equipment or products are involved, jobs can be performed anywhere as long as workers have sufficient skills [2, 113].

In short, if the engineers producing a new technology at a remote location, (assuming all else is equal) why wouldn't it be advantageous for its documentation and telephone support to be there as well?

### **Careers at Risk**

Of the list of careers we examined, twenty seemed to fit within the definition of "highly creative" (table 1). Of the twenty job titles, all but seven are already commonly outsourced to freelancers, independent contractors, or consultants. An examination of less creative job titles offers twenty-nine jobs; all can easily be outsourced.

Only seven jobs seem somewhat protected from outsourcing. They include creative director, director of communications, documentation manager, editorial director, managing editor, publications director, and technical communications educator. They are all highly creative. Of the thirteen other jobs that also fell into the highly creative group (art director, copywriter, desktop publisher, grant writer, graphic artist, industrial photographer, multimedia designer, public relations writer, script writer, visual designer, web designer, web master, and training/courseware developer), none seem comparably protected. It seems logical that all relatively protected jobs are creative, but by no means are all creative jobs protected.

We immediately noticed that all of the most protected jobs are management positions, presenting the possibility that they are protected because they are in the company's inner circle. In contrast, there are five managerial positions commonly outsourced: art director, training/courseware developer, project coordinator, technical editor, and training manager/coordinator -- if we add "lead writer," the list makes six. These six positions fall into both the creative and less creative groups.

The thing the unprotected careers share is no expectation the employees be innovative. The thing the protected careers share is that their employees are expected to find the next innovation for saving the company money or making the company more money or both.

## **SOLUTIONS AND SUGGESTIONS**

It seems to us that in most cases the entry level communications jobs are vulnerable. Nonetheless, employees who habitually develop innovative products and

solutions and can demonstrate that value to the company may have the best chance of either making their jobs valuable or moving into positions with higher degrees of protection.

Suppose, for example, a writer goes to work for a start-up company and produces excellent documentation while carefully following all the dictates of a supervisor. Any competent, temporary employ can do that. Suppose, in a similar job, the employee performs an exemplary job as a writer, but sees that a marketing thrust on the corporate web site has rhetorical problems and suggests innovations that demonstrate measurable improvement in corporate profits. Suppose she develops a new method for consolidating, managing and protecting all of her digital files, a method eventually adopted by the company. Then, later, she might lead a team that develops solutions to communication breakdowns between sales and engineering. Doing all of these things may not assure her retention in the face of job cuts, but if she has done these things and the company is aware of them, surely she is more valued than her counterpart who stopped at the stage of writing well.

### **A Process for effective innovation**

A comprehensive examination of communications textbooks reveals no examples of the innovative process being applied to the communications profession, but in engineering, innovation skills are typically taught in engineering design courses – beginning in the freshman year. These courses are required by ABET, Inc. (formerly the Accreditation Board for Engineering and Technology). On this topic, ABET requires that schools equip their students with, “an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability” (the very definition

of “innovation”) [20, p. 2]. The heuristic applied below comes from an engineering design text book (Fundamentals of Engineering Design [22]), but the same design processes occur to varying degrees in all engineering design textbooks.

Description of the process usually includes specific steps: (1) identify and understand the problem, (2) identify all possible solutions, (3) identify all possible constraints, (4) filter all possible solutions through all possible constraints, (5) reiterate until all the most optimal solutions surface, (6) construct solution, (7) introduce solution to stake holders and (8) push it to conclusion. The process is quite formal; each step follows in succession.

Since our investigation, when we have had opportunities to suggest to teachers that decision making and innovation are important, we usually hear, “Oh, I already teach that.” But once questioned, teachers typically describe permitting students to bring projects to class or permitting students to make decisions about assigned projects. We see no formal decision-making or problem-solving instruction in either of these scenarios, nor do we see understanding of “innovation” as a step-by-step process that can be formally taught. Teachers who permit students to develop and design their own projects are letting the students guess at the best approach to solving problems; or they are letting the students make tactical decisions (color, font, page design, etc.) -- and letting students make decisions is not the same as teaching students how to make them.

### **Models to teach from, models to follow**

In Web design, creating a new website is not innovative. Developing new kinds of websites and developing new ways of understanding websites is innovative. Innovations need not be so global, however. A creative repair that makes a defective

website work presents an excellent opportunity to study the innovative process on a reasonable scale. For example, to introduce innovation in one digital media course, the teacher assigns students the task of evaluating the process for selling rare books on PowellsBooks.com. Powell's is often called "the best used-book store in America," and not without good cause. For writers, it is a true joy to wander the many aisles of the store, confident they can find virtually any book on any topic. The rare book section of the web site, however, has a critical flaw that permits teachers to guide students to a variety of innovative solutions. For example, while describing Travels to the Source of the Missouri River and Across the American Continent to the Pacific Ocean. Performed by Order of the Government of the United States, in the Years 1804, 1805, and 1806 by Meriwether Louis and William Clark (a \$46,000 book), PowellsBooks provides a three sentence physical bibliography that includes the following phrases:

Quarto early paper covered boards recently rebacked in brown calf; intrimmed with detailed folding map and five charts (on three plates as issued) Map soiled in crease, 4cm tears at top of one crease. Some repair & small loss of paper at 3P2, some paper repair at 3Z1, 4N1last leaf remounted with marginal restoration [23].

This represents their entire rhetorical effort to sell this book. Although there are a number of lines that might dissuade a purchase, there is nothing about why a reader might want to spend \$46,000 for this book – even if it was written by Meriwether Louis and William Clark.

PowellsBooks also says, "Comment on this book: be the first to comment on this title and you could win free books!" In short, PowellsBooks follows the Amazon.com model of asking readers for reviews. But for collectable books, the critical information is found in the book's uniqueness, provenance, and condition, not its content. Without

already owning the specific book being sold (or at least seeing it), a reviewer cannot reasonably discuss a book's uniqueness, provenance, or condition. As a consequence, PowellsBooks' descriptions of their rare books are inconsistent, incomplete and usually directed toward no identifiable audience. This is a strategic marketing problem that requires innovations a writer can address. A teacher can create case-based instruction that permits students to study the problem and go through the process that identifies the best possible solution.

### **Spelling out the innovative process for writers**

**(1) Identify and define the problem.** Innovation is almost always about solving problems with new products or systems. Anytime an employee hears someone complain about how badly something works, there is an opportunity for innovation. Anytime someone searches half a day for a specific file, there is an opportunity to innovate a better file management system. Whenever someone runs into any problem time and time again, there is the opportunity for producing a system or product that solves this chronic problem. An employee who identifies such problems and begins searching for solutions is in a position to become more valued by the company.

**(2) Create a body of all possible solutions.** This is the most creative part of the process and is often best done in teams. There are no bad ideas at this stage. Even ideas proposed in jest could lead to excellent solutions. One might suggest that unless Powell's Books is prepared to put more effort into selling their rare books, they should not try to sell them online. Despite seeming silly at first, the solution of taking rare books off line and selling them in other markets (e.g., a specialized rare book annex), might be worth considering if there are no good solutions for selling them online.

Individuals are often weak at finding all possible solutions and often “marry” their first “great” idea. They see what looks like a solution and push that idea to the exclusion of all others, and they end up going down a less-than-optimal path. Remember, at this stage no idea, however improbable it might seem, is superior or inferior to any other idea. Every idea should be considered. Moreover, as people evaluate ideas, they tend to evolve into more, better ideas. Often these new ideas tend to lead to successful solutions.

**(3) Identify all possible constraints.** This step is not as creative as it sounds. Typically, constraints should be predictable. They include the cost of the solution, personalities of stake holders, talents and skills within the company, complexity of the ideas, acceptability for audiences, morality and legality, realistic possibility, and breadth of the mandate.

**(4) Filter the possible solutions through all possible constraints.** There is a good chance that none of the early ideas will pass through the constraint filters. Different filters will include matrices, decision trees, evaluation scales, risk assessment, or pairwise comparison.

**(5) Submit conclusions to stake holders for additional guidance.** In the workplace, conclusions might be expressed in a simple conversation with a supervisor at the water cooler, or they might be included in a comprehensive report to a board of directors.

**(6) Repeat the process** until the optimal ideas (acceptable to everybody) are identified.

**(7) Produce and publish the finished product.** Although this is the penultimate step of the innovation, without careful instruction, many students and employees looking to solve problems will see it as their first step.

**(8) Push the solution into application.** The first model for the graphical user interface was proposed by Vannevar Bush in a 1947 article in *Atlantic Magazine* [24]. The first physical manifestation of Bush's idea was the oNline System developed by Douglas Engelbart in the Augmentation Research Institute, at Stanford University in 1965 [25, 81]. When one considers the importance of his invention, it is somewhat surprising that only a few people will have heard of it -- assuming that the GUI was invented by Apple or Xerox. Although Apple did not invent the GUI, they solved the problems necessary for successfully bringing it to the market. An innovation, therefore, is not an innovation until it has been adopted [26].

The above eight steps are highly formal, but they can be truncated once the communications professionals understand how they work and develop the habit of using them. The point is not that professionals mindlessly follow some lockstep process, but that they understand how innovation works and be able to apply their own processes as professionals.

## **CONCLUSION**

We suggest that to contribute to the creative economy and be valued by it, professional communicators should be able to apply specific creative processes to making strategic decisions and solving strategic problems as a matter of habit. These decisions and solutions lead to innovations that help the corporation expand its market or improve its workflow. We further suggest that technical communicators who consistently identify

and solve important corporate problems and who develop innovations that positively impact the corporation's bottom line will be more valued than those who write well but contribute nothing more.

Of course, innovation is just as valuable for educators. It can be taught to any community of students looking at a design problem. These are the courses other professionals (e.g., engineering and management) use to introduce the decision-making and problem-solving instructions we suggest are also important. There is no reason professional communication teachers (including writing, IT, and art teachers) cannot introduce similar levels of decision-making and problem-solving. At the same time, we consider it important to reiterate, it is not valuable for students to learn the habit of making decisions and solving problems based on presumptions, uneducated guesses, and unsupported opinions.

It remains to be seen what will actually happen to the professional communication professions over time. We do know, however, what has already happened. Many of the most interesting jobs are already largely outsourced. It stands to reason that in the future, many more will follow suit.

## REFERENCES

1. Natarajan, P. and M. Pandit, Technical Communication and IT Outsourcing in India – Past, Present, and Future, in Outsourcing Technical Communication: Issues, Policies and Practices. B. Thatcher and C. Evia (eds.), Baywood, Amityville, NY, pp. 11-30, 2007.
2. Hackos, J. T. and W. Hacos, The Information Developer’s Dilema, in Outsourcing Technical Communication: Issues, Policies and Practices. B. Thatcher and C. Evia (eds.), Baywood, Amityville, NY, 109-121.
3. Hira, R. and A. Hira, Outsourcing America: What’s Behind our National Crisis and How We Can Reclaim our Jobs, AMACOM, New York, 2005.
4. Friedman, T. L., The World Is Flat: A Brief History of the 20<sup>th</sup> Century. Farrar, Straus, and Giroux, New York, 2005.
5. Dobbs, L., Exporting America: Why Corporate Greed Is Shipping American Jobs Overseas. Time Warner Group, New York, 2005.
6. Hayhoe, G., The Future of Technical Communication, Technical Communication, 52:3, pp. 265-266, 2005.
7. Alexander, S., T. Unni, and R. Ravishanakar, Working with Indian Technical Communicators – Collaborate for Success, Information Management News. 5:8, 82-85, 2005.
8. Pink, D., A Whole New Mind: Moving from the Information Age to the Conceptual Age, Riverhead Books, New York, 2005.

9. Murphy, M., Protecting Yourself from Offshoring: Advice for U.S. Based Technical Communicators, Intercom, pp. 4-7, February 2007.
10. Bekins, L. K. and S. D. Williams, Positioning Technical Communication for the Creative Economy, Technical Communication. 53:3, 287-295, 2006.
11. Junhua W. and K. Baake, Offshoring and Serving the Needs of Indian Technical Communicators with Online Technical Communication Programs, Technical Communication, 53:4, 427-438, 2006.
12. Tory, M. and T. Moller Evaluating visualizations: do expert reviews work? Computer Graphics and Applications, IEEE, 25:5, 2005 pps. 8 - 11
13. Florida, R. The Rise of the Creative Class. Basic Books,, New York, 2002.
14. Florida, R., America's Looming Creative Crisis, Harvard Business Review. 82:10, 122-136, 2004.
15. Buckingham, M. and C. Coffman., First Break All the Rules: What the World's Greatest Managers Do Differently, Simon and Schuster, New York, 1999.
16. Buckingham, M. and D. Clifton.. Now Discover Your Strengths. The Free Press, New York, 2001.
17. U.S. Department of Labor, Artists and Related Workers.  
[HTTP://www.bls.gov/oco/ocos092.htm](http://www.bls.gov/oco/ocos092.htm), 2008.
18. U.S. Department of Labor. Writers and Editors.  
[HTTP://www.bls.gov/oco/ocos089.htm](http://www.bls.gov/oco/ocos089.htm), 2008.

19. OffshoreExperts. [HTTP://:www.offshoreexperts.com](http://www.offshoreexperts.com), 2008.
20. Guru.com, Find freelancers at the world's largest online service marketplace, [HTTP://www.guru.com/emp/search.aspx#%7B%22pageClientState%22%3A%22tab%3DProfiles%5Ec%3D11%5Esub%3D500%22%7D](http://www.guru.com/emp/search.aspx#%7B%22pageClientState%22%3A%22tab%3DProfiles%5Ec%3D11%5Esub%3D500%22%7D), 2008.
21. ABET, Inc. 2007-2008 Criteria for Accrediting Engineering Programs, ABET, Inc, Baltimore, 2008.
22. Hyman, B, Fundamentals of Engineering Design, Prentice Hall, Upper Saddle River, NJ, 2003.
23. PowellsBooks.com, [HTTP://www.powells.com/biblio/17-9781135468781-0](http://www.powells.com/biblio/17-9781135468781-0), 2008.
24. Bush, V., As We May Think. The Atlantic Monthly, July 1945.
25. Bardini, T., Bootstrapping: Douglas Engelbart, Coevolution, and the Origins of Personal Computing, Stanford University Press, Stanford, 2000.
26. Brown, L. Innovation Diffusion: A New Perspective. Methuen, New York, 1981.

## TABLES

**Table 1: Professions evaluated and broken into “more” or “less” creative.**

1 = visionary, 2 = connective, 3 = ideation, 4 = adaptable

<b>Jobs Requiring Aesthetic Creativity.</b>	<b>Jobs Requiring Less Creativity.</b>
<b>Art Director – 1, 2, 3, 4.</b> <b>Copywriter – 3, 4</b> <b>Desktop Publisher – 1, 4</b> <b>Grant Writer 1, 2, 3, 4</b> <b>Graphic Artist – 2, 3, 4</b> <b>Industrial Photographer – 2, 3, 4</b> <b>Multimedia Designer – 1, 2, 3, 4</b> <b>Public Relations Writer – 1, 2, 3, 4</b> <b>Script Writer – 1, 2, 3, 4</b> <b>Visual Designer – 2, 3, 4</b> <b>Web Designer – 1, 2, 3, 4</b> <b>Webmaster – 1, 2, 3, 4</b> <b>Training/Courseware Developer – 1, 2, 3, 4</b>	<b>Archivist -- 0</b> <b>Copy Editor -- 4</b> <b>Documentation Specialist -- 4</b> <b>Editorial Assistant -- 0</b> <b>Indexer-- 0</b> <b>Medical Writer -- 4</b> <b>Paste-up Artist -- 4</b> <b>Professional Animator -- 4</b> <b>Project Coordinator* -- 4</b> <b>Proofreader -- 4</b> <b>Fact Checker -- 0</b> <b>Process Preservationist -- 4</b> <b>Software Developer – 1, 4</b> <b>Technical Editor -- 4</b> <b>Telephone Support -- 0</b> <b>Trainer -- 0</b> <b>Training Manager/ Coordinator -- 4</b> <b>Transcriber -- 0</b> <b>Technical Illustrator -- 4</b> <b>Usability Designer and Tester -- 0</b> <b>Validation Analyst -- 0</b>
<b>Jobs Requiring Innovation</b>	
<b>Creative Director -- 1, 2, 3, 4</b> <b>Managing Editor -- 1, 3, 4</b> <b>Director of Communications -- 1, 2, 3, 4</b> <b>Documentation Manager -- 1, 4</b> <b>Editorial Director -- 1, 2, 3, 4</b> <b>Publications Director -- 1, 2, 3, 4</b> <b>Tech. Comm. Teacher -- 1, 2, 3, 4</b>	
<b>Unknown**</b>	
<b>Game Narrator</b> <b>Business Analyst</b> <b>Code Analyst</b> <b>Information Architect</b> <b>Research and Special Projects Manager*</b> <b>Software Quality Assurance Test Engineer</b>	<b>** These cases were new or unique beyond our experience, and we were unable to apply our matrix.</b>

**Table 2: Technical documentation skills and talents.**

Title / Level	DOCUMENTATION SPECIALIST / Entry level job
<b>Description</b>	Documentation specialists bridge the gap between unusable applications and the user. They write the manuals, help files, and other documents the public uses to negotiate technical problems. Their jobs revolve around coming to know the product in the context of the needs of the final users <i>and</i> being able to communicate that knowledge in such a way the end users will find it meaningful.
<b>Skills/Knowledge</b>	Extensive knowledge of subject, vocabulary (mechanical and writing), publication techniques, media, product testing.
<b>Talents</b>	Learner, empathy, analytical, communication, connectedness, focus, input, adaptability.
<b>D &amp; E*</b>	Moderate tactical through low strategic – commonly outsourced, possibly easily exported.

\*D&E refers to kinds of decisions made and exportability of the job.

NOTE: this and the other similar tables were extracted from a larger table that included all of the jobs we evaluated.

**Table 3: Section describing copywriter skills and talents.**

<b>Title/Level</b>	<b>COPYWRITER / Entry</b>
<b>Description</b>	<p>Copywriters write the texts that are used in professional publications. “Copywriting” sometimes implies “marketing copy” but need not. More accurately, “copywriting” implies writing to order. The same person may be simultaneously researching and writing an article, an ad, a script, a web page, and the technical description of a military weapon.</p> <p>Technical copywriters may work for high tech corporations, specialized ad agencies, or as independents.</p>
<b>Skills</b>	Understanding of language and rhetoric, knowledge of topic, research.
<b>Talents</b>	Adaptability, ideation, learner, empathy, communication, connectedness, input.
<b>D&amp;E</b>	Low-level tactical decisions and solutions – this profession is largely outsourced already; it can easily be offshored to any largely English speaking community.

**Table 4: Section describing Director of Communications skills and talents.**

<b>Title / Level</b>	<b>DIRECTOR OF COMMUNICATIONS / Senior Level Position</b>
<b>Description</b>	The director of communication is responsible for both internal and external communication and may or may not oversee management of network and company website. The director of communication job tends to be a marketing position (including public and internal relations), but in technical corporations it can also be highly technical.
<b>Skills</b>	Marketing, writing, negotiating, organizing, managing people and projects, strategic decision making, innovating.
<b>Talents</b>	Achiever, adaptability, arranger, empathy, ideation, command, communication, futuristic, positivity, self-assurance.
<b>D &amp; E</b>	High level, strategic decisions and solutions leading to important innovations – position goes to the heart of corporate decision-making and should be difficult to ever export.

27.