



Encouraging CS Novices to Write

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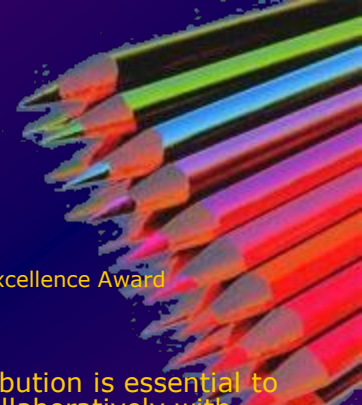
Why?



WCCCE 2006

12 Essentials for Success: Competencies Employers Seek in College Graduates

from: Michigan State U <http://www.csp.msu.edu/pdf/competencies.pdf>



The National Association of Colleges and Employers (NACE) recently awarded Michigan State University's Career Services Network the 2005 Excellence Award

Working in a Diverse Environment

- Learning from people who are different from you—and recognizing your commonalities—is an important part of your education and essential preparation for the world you will join.

Managing Time and Priorities

- Managing how you spend your time, and on what, is essential in today's world. Learn how to sort priorities so you stay in control of your life.

Acquiring Knowledge

- Learning how to learn is just as important as the knowledge itself. No matter what your future holds, you'll continue to learn every day of your life.

Thinking Critically

- Developing solid critical thinking skills means you'll be confident to handle autonomy, make sound decisions, and find the connection between opportunities you have to learn and how those opportunities will affect your future.

Communicating Effectively

Developing listening, interpreting, and speaking skills is just as important as reading and writing.

Solving Problems

- You may only have thought about problemsolving when you're faced with a crisis. Understand the process and mind-set of successful problem-solving and you'll more easily handle the bigger challenges that come your way.

Contributing to a Team

- In the workplace each person's contribution is essential to success. Having the ability to work collaboratively with others is vital. This includes identifying individual strengths (yours and others) and harnessing them for the group, building consensus, knowing when to lead and when to follow, and appreciating group dynamics.

Navigating Across Boundaries

- Life is filled with boundaries—good and bad. Discover how to avoid the boundaries that become barriers so you don't hamper the ability to collaborate with other people.

Performing with Integrity

- It only takes one bad instance to destroy years of good faith and good relationships. It's important to develop a code of ethics and principles to guide your life.

Developing Professional Competencies

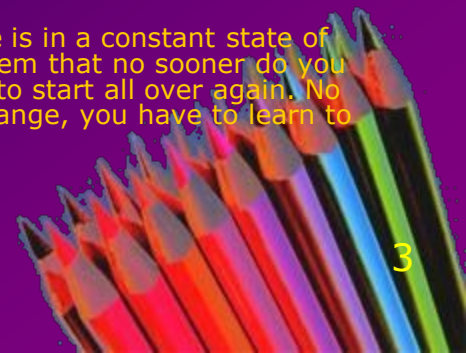
- The end of college is the beginning of a new education. Build on what you already know and keep learning new skills—your job will challenge you to grow and develop in ways you haven't imagined yet.

Balancing Work and Life

- You've got a lot to accomplish in limited time. How do you get it all done and still stay sane? The key is maintaining balance among the different parts of your life.

Embracing Change

- Just about every aspect of life is in a constant state of change. Sometimes it may seem that no sooner do you get caught up than you have to start all over again. No matter how you feel about change, you have to learn to deal with it.



Communicating Effectively??



“You teach a child to read, and he or her will be able to pass a literacy test.”

— *G.W.Bush, in Townsend, Tenn., Feb. 21, 2001*

“Rarely is the question asked: Is our children learning?”

—*G.W.Bush, in Florence, S.C., Jan. 11, 2000*

Overview

1. Writing to Communicate
2. Writing to Learn
3. Writing in CS
4. Learning ***about*** vs. learning ***to be***
5. Forms of Writing
6. Reading Responses
7. Conclusions

Writing to Communicate



Writing to communicate is what James Britton calls “transactional writing”, which means writing to accomplish something, to inform, instruct, or persuade. . . .

James Britton, *Language and Learning*, London: Penguin Books, 1970.

Our students need this.
They already do some of this.



Writing to Learn

is different.

- to objectify our perceptions of reality
- to order and represent experience to our own understanding.
- a tool for discovering, for shaping meaning, and for reaching understanding

Our students also need this.
We don't do much of this.

Writing Across the Curriculum



WAC: 1970's – 1980's

Based on: Writing is a valuable learning tool that can help students synthesize, analyze, and apply course content.

Writing to Learn

- Makes use of journals, logs, microthemes, and other, primarily informal, writing assignments.
- Writing reactions in their own words == better comprehension and retention of information.
- Frequency helps maintain or improve writing skills and avoid a decrease in writing ability from entrance to senior year.

Writing in the Disciplines (WID)

- Each discipline has its own conventions of language use and style
- Must be taught to students to successfully participate in academic discourse.
- Reports, article reviews, and research papers

Where did it go?

WCCCE 2006

CS Then and Now....

ACM Curriculum'78 → 20 pages

ACM/IEEE CC2001 → 240 pages,
→ CS volume **ONLY**

Discipline has grown → more to learn...

Leads to learning that is:

A Mile Wide

but only an inch deep



"Just the Facts..."

WCCCE 2006



Learning ABOUT

VS.



Learning TO BE



CE 2006



Writing in CS

Typical:

- programs
- documentation
- specifications (requirements, functional, etc.)
- “end-of-term” papers (sometimes)

All transactional

Why Don't we Assign Writing?

- lack of expertise to assess
- too much work
- not my union
- someone else already did (is doing) it

Writing supports at least three roles in a CS program

- 1) writing is a communicative skill important in the discipline
- 2) writing is an effective way to learn as it involves the entire brain in all the processes: doing, depicting, and symbolizing
- 3) writing as a means of communication in the classroom helps to foster a more supportive and inclusive climate

Writing to Learn Activities

- * The reading journal
- * Generic and focused summaries
- * Annotations
- * Response papers
- * Synthesis papers
- * The discussion starter
- * Focusing a discussion
- * The learning log
- * Analyzing the process
- * Problem statement
- * Solving real problems
- * Pre-test warm-ups
- * Using Cases
- * Letters
- * What counts as a fact?
- * Believing and doubting game
- * Analysis of events
- * Project notebooks
- * The writing journal

Forms of Writing in CS: ~ most to least common

- Code
- Documentation
- Specifications (requirements, functional, etc.)
- Email / IM
- Forums
- Blogs
- Essays
- Post Mortems
- Reading Responses

Forms of Writing

Writing improves with practice.

Encourage practice through:

- small
- manageable
- low risk
- high feedback
- fast turn-around

Reading Responses

- Assigned readings
 - News articles, other current topics
 - Anything relevant
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- 250-500 words (1/2-1 page)
 - Reaction/opinion rather than summary
 - Casual, but not *IM*
 - Referenced

Reaction

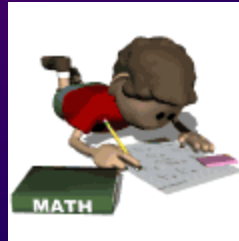
- Tentative at first
- Second responses became more adventurous
- Liked the approach
- Examples:
 - “Realism in Gaming”
 - “Wicked Problems”
 - “The Art of Computer Games Design” (book review)
 - “Hitting The High Notes from Joel on Software”
 - “The Post-OOP Paradigm” by Brian Hayes

Conclusions

Reading Responses

- Require active engagement with the material.
- Allow inclusion of real-world news, issues, research
- Promotes contact with both scholarly and popular writing

Thanks!



Questions?