



/ ANITA
B.ORG 2022

GRACE HOPPER
CELEBRATION

SPEAKER

NEXT is
NOW



Effective Teaching Tactics: In-person, Hybrid, Virtual - Wow!

Susan Rodger | Duke University & CRA-WP Board



Colleen Lewis | University of Illinois, Urbana-Champaign



Susan H Rodger (she/her)



*BS Computer Science
BS Mathematics*

NC STATE UNIVERSITY



Internships



*MS and PhD
Computer Science*

PURDUE
UNIVERSITY®



Rensselaer

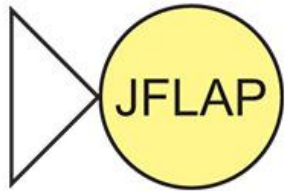
Assistant Professor



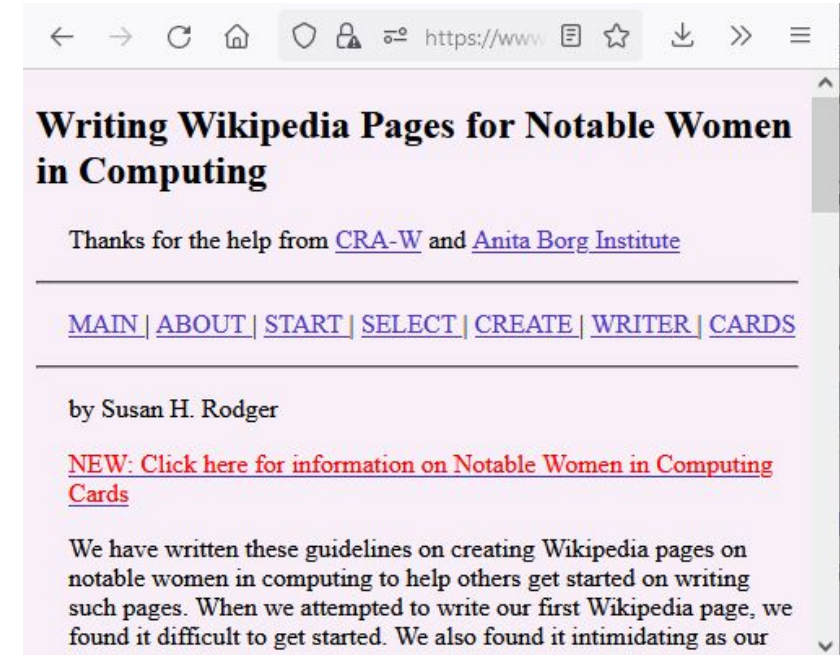
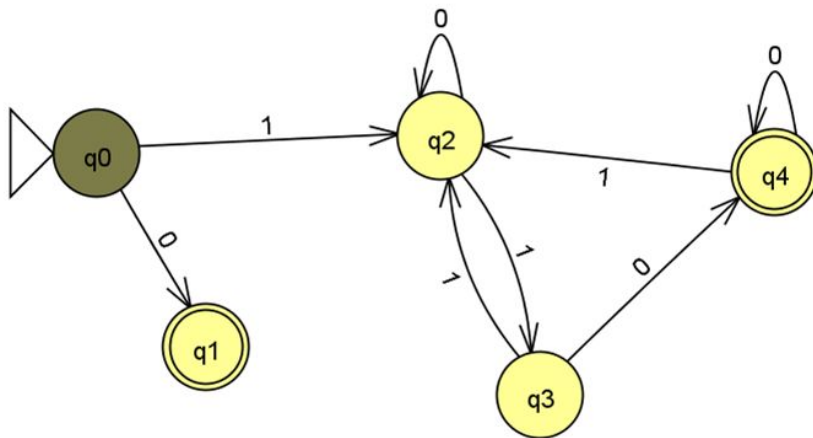
Duke
UNIVERSITY

Professor of the Practice

Susan H Rodger (she/her)



Wiggles Magazine Issue No. 42



Colleen Lewis (she/her)



CRA-WP
Computing Research Association
Widening Participation



Berkeley | EECS
ELECTRICAL ENGINEERING & COMPUTER SCIENCES



Berkeley | EECS
ELECTRICAL ENGINEERING & COMPUTER SCIENCES

Berkeley
UNIVERSITY OF CALIFORNIA

Graduate
School of
Education

HARVEY
MUDD
COLLEGE



UNIVERSITY OF
ILLINOIS
URBANA - CHAMPAIGN



Summer 2020 - Week 8 - Work: Meetings:

Monday 7/6	Tuesday 7/7	Wednesday 7/8	Thursday 7/9	Friday 7/10	Saturday 7/11	Sunday 7/12
4+55	3+6	7+5	46			

Teach

Advise

BPC

Email

M/A

SaTC

NMs

CSTT Paper

CSTT

Read

Sega

I am ...	M	T	W	T	F	S	S
Consistent	★	★	★	★	★		
Strong	★	★	★	★			
Tidy	★	★	★	★	★		
Organized	★	★					
Clean					★		
Connected	★			★	★	★	
Well Rested	★			★			



What Is CRA-WP?

Individual & Group Research Mentoring

Our mission is to widen the participation and improve the access, opportunities, and positive experiences of individuals from populations underrepresented in computing research and education. We individual and group research mentoring provide for:

- *Undergrads* - Undergraduate Research Experiences (DREU), Research-Focused Scholarship opportunities at GHC (GHC Research Scholars), Scholarships for Women Studying Information Security (SWSIS)
- *Grad Students*— CSGrad4US Fellowships, Grad Cohort for IDEALS, Grad Cohort for Women, Mentoring Tracks at GHC, and Scholarships for Women Studying Information Security (SWSIS)
- *Academics/PhD Researchers* – Career Mentoring Workshop, CSGrad4US Mentoring Program, Mentoring Tracks at GHC, Returning Scholars Program at GHC, and Travel Support



Quick Poll - Who is here?

- Current instructors?
 - Average class size?
 - Online?
- Teaching Assistants?
- Students who plan to teach someday?
- High School teachers?
- Others?



Planning your first day

- Seem interested and smile
- Set expectations:
 - “I will start and end on time”
 - “Please put your cellphones and laptops away”
 - “I want this course to challenge you!” (Leslie et al., 2015)
- Use active learning (Theobald et al., 2020; Freeman et al. 2014)
 - “Point at the person you’re going to talk to.”
 - “In 10 seconds, shout your partner’s name, 10, 9...”
 - “We’ll come back together in 5, 4, 3, 2, 1.”
- Manage show-offy questions
 - “Good question, but outside the scope of this course. If I were in the course, I’d be intimidated, but I’m sure that wasn’t your intention. Let’s chat about it after class.”
 - Be ready to say “I don’t know. I can get back to you.”
- Make your learning goals explicit (Winkelmes et al., 2019)



Ways to engage in the classroom

- No sitting in the last 10 rows! Come closer!
- Two versions of lecture notes
 - Lecture with missing parts, Full notes (later)
- Active learning - many forms
 - Short lecture, group problem solving, repeat
 - Collect and share responses
 - Many techniques, One is Think-Pair-Share
 - Answer(self), Discuss, Answer(together)
- First day students write index card - name, about you
 - Use cards to call on, can pass - card back in

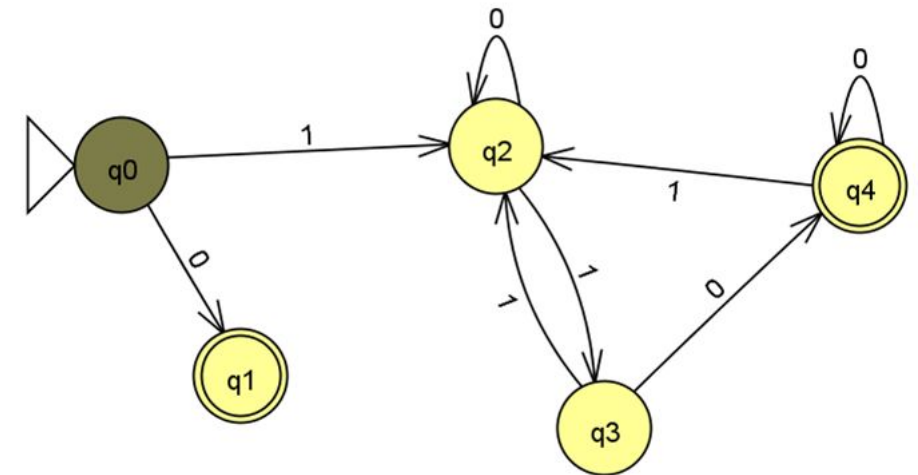
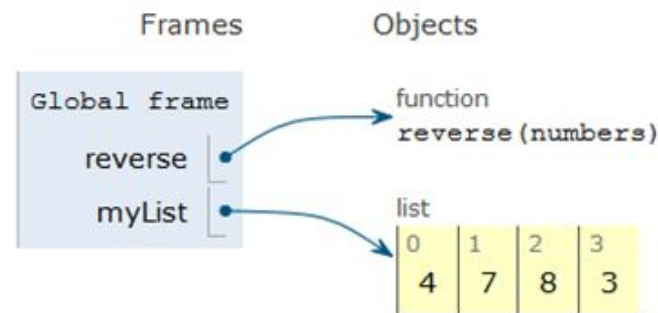


Ways to engage in the classroom (2)

- Use tool to step through concept - what happens next?
 - pythontutor.com - to step through code
 - jflap.org - to build/run finite automaton with them

Python 2.7

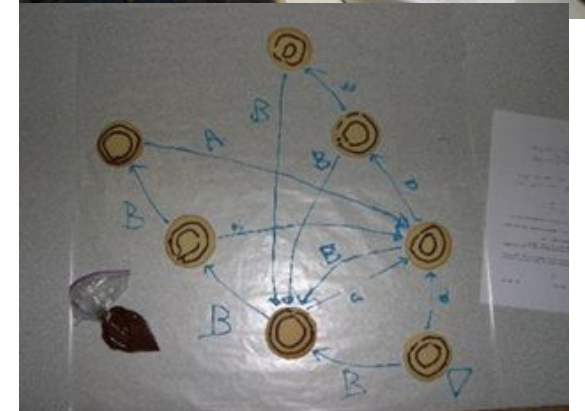
```
1 def reverse(numbers):  
2     answer = []  
3     for num in numbers:  
4         answer.insert(0, num)  
5     return answer  
6  
7 myList = [4, 7, 8, 3]  
8 reversed = reverse(myList)
```



Ways to engage in the classroom (3)

- Physical Props: Pass parameters (frisbees) in class
- Students work with props - sorting cookies/paper
- Students build automaton - cookies/icing

- Pass by reference – throw frisbee
- Pass by value – throw copy of frisbee
- Pass by const reference – throw “protected” frisbee



Finding resources

- Look for courses/syllabi at similar institutions
 - Email the instructor for anything they are willing to share
- Post on SIGCSE to request materials
 - SIGCSE-members@listserv.acm.org
- Look for a book that covers the course content
 - Publishers will often send you the book and slides
- Look for “peer-instruction” slides
 - peerinstruction4cs.org/
- Look for individual assignments to integrate
 - nifty.stanford.edu
 - engage-csedu.org
 - acm.org/education/CS2013-final-report.pdf
- Use tools to check for cheating on programming assignments
 - <https://theory.stanford.edu/~aiken/moss/>



Teaching a Flipped Course

- What is a Flipped course?
- Make expectations clear:
 - prework, in-class work, postwork
 - Course may be different then other courses
- Prework: Read textbook, Watch Videos
 - Quiz: Easy, Turns off when class starts!
- In-class work: Interesting, challenging, group work
 - UTA/TAs attend to help, train them
- Postwork?: finish work not started in class?
- Starting out? Flip some days, make it clear when



Teaching a large course, 200+

- Format: Lecture and smaller lab/discussion?
- Management: Support staff, Hire TAs/UTAs/Head UTAs
 - Who hires them? Weekly meetings, Training
- Grading
 - Autograder, Detailed Rubrics other grading, Checks?
- Office hours/Consulting hours
 - Scheduled, Checks? Adjustments?
- Exams
 - Cart to carry exams, extra staff proctoring, multiple rooms
 - Tactics to prevent cheating - Room flow, multiple versions
- Tools (engage): clickers/google forms, back channel
- Tools (manage): Gradescope, Slack, Ed Discussion



Responding to student challenges

- Create a plan for accommodations and request info early
- Provide a seamless way to request extension
- Find helpful colleagues
 - “Who would you recommend for advice during the semester about responding to unexpected student situations?”
- Create clear articulation of what counts as cheating



Teaching an online course

- Modes of Online course - Asynchronous, Synchronous, Hybrid
- Asynchronous - Students learn when they can
 - Record lectures, short videos (how to, common mistakes)
 - Make deadlines clear, Need checkpoints
- Synchronous - Students online with you
 - Assign groups for breakouts/problem solving
 - Keep groups the same, build community, you/staff check/drop in
 - Ask groups to respond to questions after they met
- Hybrid - Students online and in person at the same time
 - Don't forget your online students, talk to them
 - Group work in-person groups and online groups
 - Get help: staff to monitor online questions
- Exams - Take home style questions, record exam reviews
- Be flexible - students have problems connecting



Soliciting feedback

- Never read your teaching evaluations
 - Have a TA, colleague, or friend summarize them
- Always tell students about the feedback and your plans
- Do not identify as a “good teacher”
 - “I would be offended if you think I don’t care. I need feedback!”
 - You should be embarrassed about how you taught the content in the past!
- Ask for feedback at the 5-minute level
- Take notes *during* class about feedback and questions



THANK YOU

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**CRA-Widening
Participation**