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Sustained commitment to diversity

Kathryn S McKinley
Principal Researcher
Microsoft Research

Microsoft Research
Faculty Summit

Sustained support of diversity

2004-14 Platinum Sponsor of **CRA-W Grad Cohort**

support for ~130 participants each year

Goal increase success & numbers of CS PhD women

Information & tools

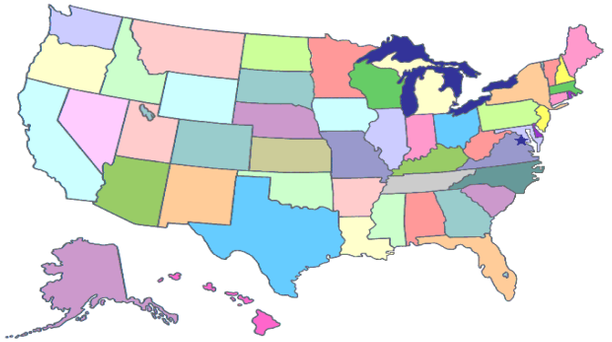
- Strategies and information on navigating graduate school
- Tips on joining CSE community
- Early insights into career paths & qualifications
- Networking and mentoring with successful, senior women
- Peer networking and mentoring

CRA-W Grad Cohort reach

Year	PhDs earned		Grad Cohort	
	Women	% total	Applicants	Participants
2004	181	18%	100	100
2005	172	15%	225	200
2006	264	18%	326	200
2007	337	19%	279	245
2008	374	21%	349	291
2009	357	21%	350	240
2010	343	20%	425	259
2011	345	20%	578	294
2012	358	19%	520	247
2013			549	302

Over 125 institutions

Does it work?



CRA CERP Center for Evaluating the Research Pipeline

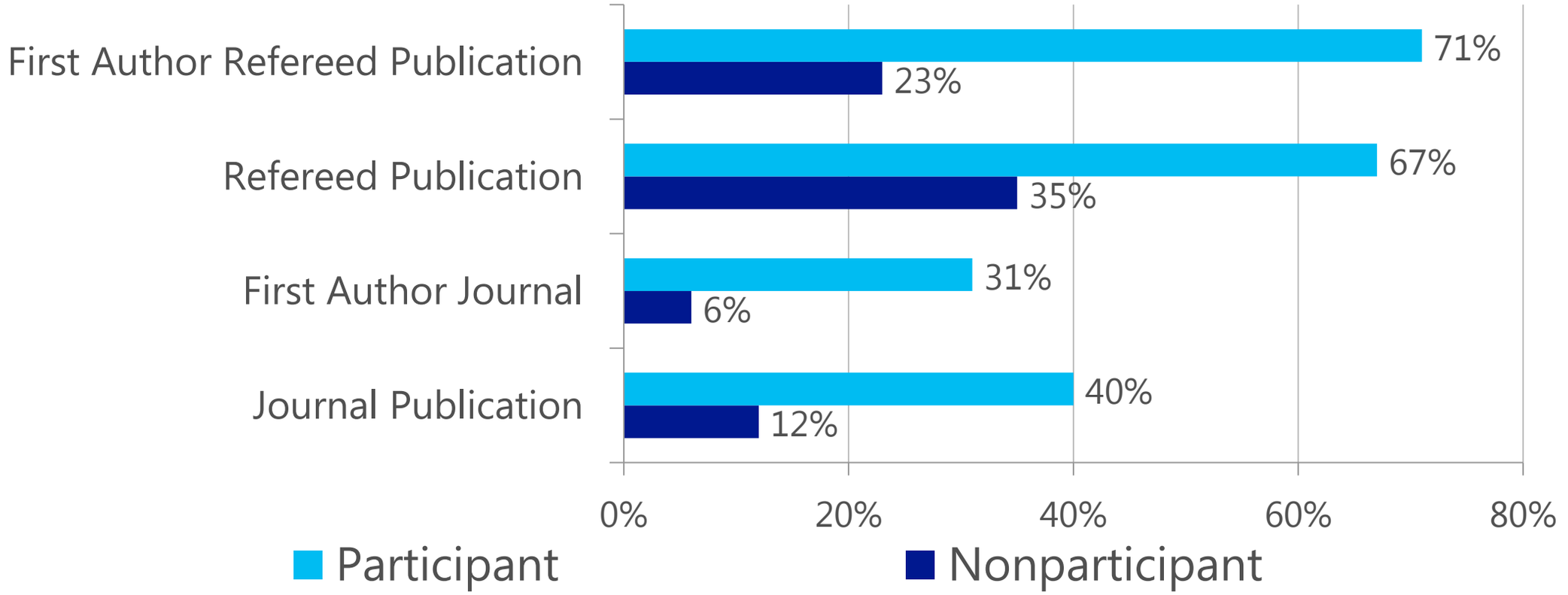
National Survey of Computing Students via CS departments

Categorize: top-ranked & other PhD, Masters-only, Bachelors-only, …

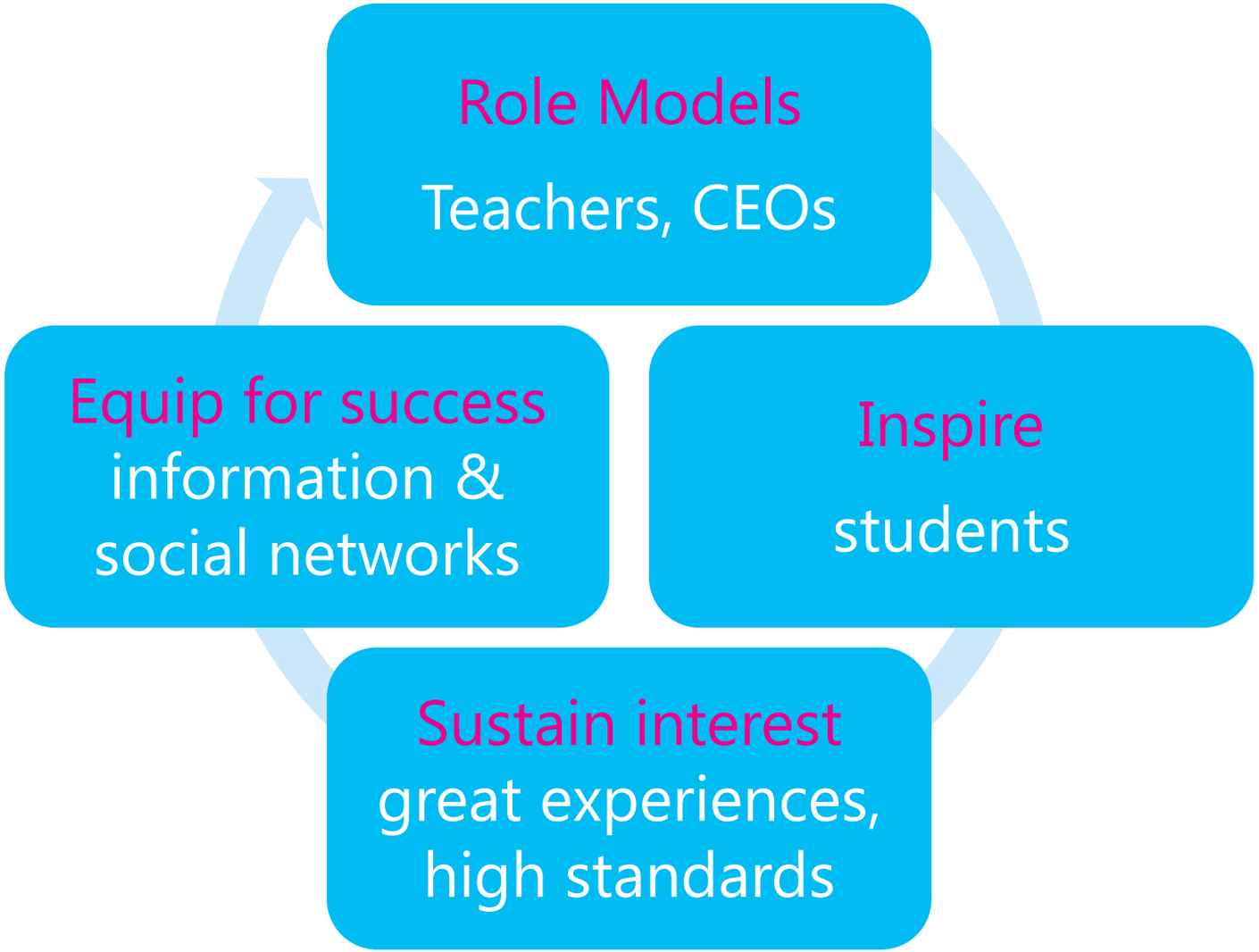
Survey CRA-W participants and non participants

- Students, faculty, & professionals experiences in their department, with mentoring, with research, background…
- Research track Interest and outcomes
- Current & planned degree, employment…

Yes! CRA-W Continuing Grad Cohort students more successful



Virtuous cycle to diversity



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Thank you

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Growing the Computing Talent Pipeline Through NCWIT's Aspirations in Computing Program

Lucy Sanders
CEO and Co-founder
NCWIT

Microsoft Research
Faculty Summit

Building U.S. Talent Pipeline – NCWIT Aspirations in Computing

community

Online Peer Network
Meet-ups
Scholarships
Internships
Technical Contests
Outreach
Leadership
Encouragement

Bank of America · Microsoft · Bloomberg · Google · intel · Motorola Solutions Foundation · Northrop Grumman Foundation

Aspirations is Working

2,300

- Young women recognized; more than 10,000 young women registered for Aspirations

47%

- Ethnic minorities (18% Asian/Pacific Islander, 12% Latina, 9% African American, 7% multiracial, 1% Native American, 33% White, 20% N/R)

Aspirations is Working

50

- States represented, plus Puerto Rico, U.S. Virgin Islands, and overseas military bases

1,600

- Volunteer reviewers; more than 350 organizations nationwide participate

>80%

- Recipients who persist in a male-dominated STEM discipline

Surface

How Aspirations Scales

Middle School Through Post Secondary Talent Pool

Aspirations Community
Participant-Led Outreach

Program Promotion
Local Affiliates Award Ceremonies
Opportunities (Scholarships, Internships, Jobs)

National/Affiliate Award Program Structure
Technology Infrastructure
Project Management

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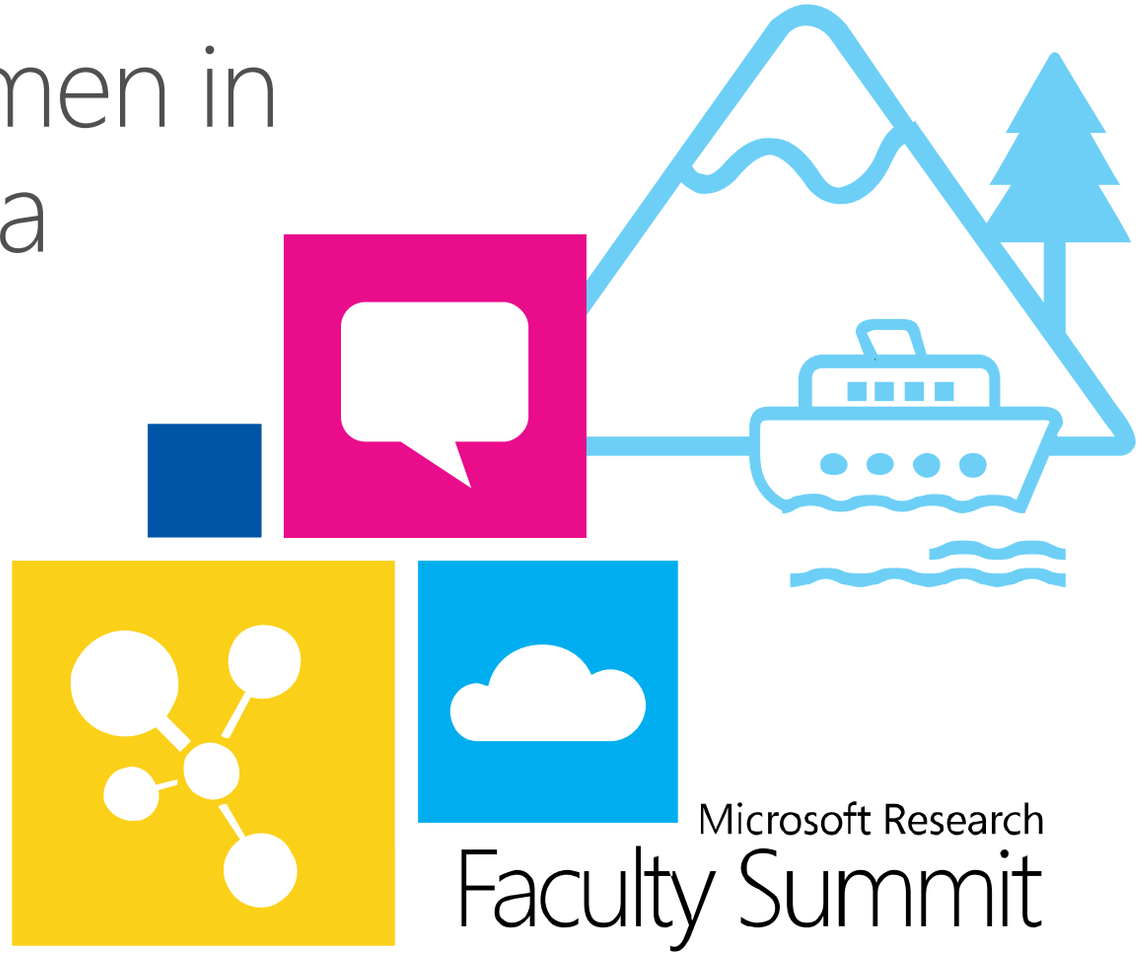
Attracting and Growing Women in Computing – a Latin America Perspective

Juliana Salles
Senior Research PM
Microsoft Research Connections



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MRC Gender & Pipeline Work in LATAM

- Started in 2008
  - The main goal was to understand the status of women in IT in the region
  - We worked with thought leaders to collect data
    - Quantitative data about CS programs
    - Quantitative data about the IT industry
    - Effort lasted from 2008-2011

Raising awareness – 2012

- 3 Pilot projects
  - Mexico – undergrad students using robotics to attract kids into CS
  - Colombia – data gathering (quantitative and qualitative)
  - Brazil – speaker series and workshops about women in computing

Raising awareness – 2013

Girls' programming competition

Pilot in the Institute of Computing at Federal University of Amazonas

1st female only Brazilian group participating in a programming competition. They were lead by Prof. Rosiane de Freitas (http://www.icomp.ufam.edu.br/rosiane)

Incentives, challenges & outcomes

- Incentives
  - Couching – communications, presentation
  - Training – usability, Windows Phone programming
- Challenges
  - Coach/mentor/lead invests personal time/effort; no formal institutional support
- Outcomes
  - Girls exposed themselves to scenarios they wouldn't typically do
  - Positive visibility encouraged them
  - New soft/hard skills
  - Results will be announced on July 22

Scaling up

- 2013/2014 – other girls only group(s) participating in an international competition
- Mixed groups participating in the competition

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Girls and Games and Code

Constance Steinkuehler
Games+Learning+Society Co-Director
University of Wisconsin-Madison

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Faculty Summit

Studio K Team

Constance Steinkuehler
Kurt Squire
Matthew Berland

Gabriella Anton
Tyler Banh
Wade Berger
Jeremy Dietmeier
Shannon Harris
Amanda Ochsner
Emanuel Rosu
Meagan Rothschild
Jake Ruesch
Allison Salmon

Image via http://www.flickr.com/photos/jezpage/

Girls game.

Games are a gateway to computer science.

Add/Change Tile
Delete Tile
Enter
Add/Change Tile
Tab
Next Page
Shift
Tab
Prev Page
Delete
Delete Tile
Esc
Return
Ctrl-P
Print Kode
1Undo
L
1
R
KODU
1
WHEN
gamepad
L stick
DO
move
quickly
2
WHEN
keyboard
DO
move
quickly
3
WHEN
mouse
left
DO
move
toward
4
WHEN
on land
type
DO
switch
2
page 2
5
WHEN
DO
say
once

STUDIOK

LOGIN REGISTER

WHAT IS STUDIO K?

Studio K is a game design curriculum, online community, and set of teacher-support tools intended to enable teachers to help learners make their own video games using Microsoft Kodu. Kodu is a powerful 3D game design and programming tool that enables users to focus on creating compelling games for their friends.

Want to join? Learn more at:
http://www.gameslearningsociety.org/studiok/

GLS GAMES+ LEARNING+ SOCIETY

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AMD Foundation
Changing the Game

SUPPORT.STUDIOK@LEARNINGGAMESNETWORK.ORG

STUDIO K 101

The ins and outs of making games in Kodu.

LANDCRAFTING

Designing the game world.

TICK TOCK BOOM

Mastering timers and scores.

COPYCAT

Copying, cloning, object control.

KODU'S KEEPER

Creative control of assets.

PWND!

Designing the competition.

NOW YOU SEE ME

Big picture of broadcasting.

OMG DRAMA

Narrative and dramatic elements.

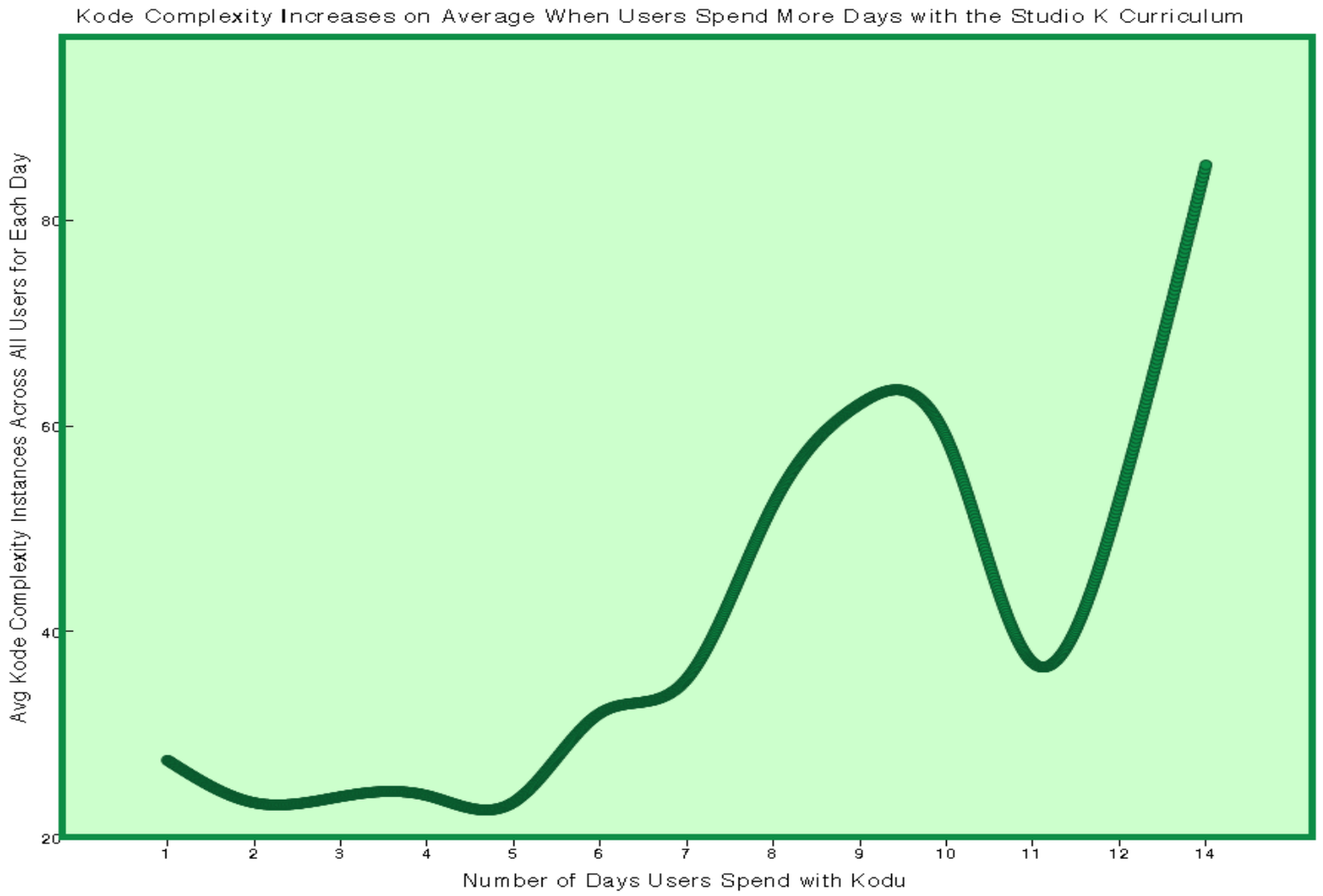
STRUTTIN'

Commanding the pacing.

HIGH SCORE!

Engineering scoring systems.

Code complexity over time.



No gender effects.

Making a space for girls.

Image via http://www.flickr.com/photos/sanjoselibrary//

AP Students

Search AP

Explore AP | AP Courses | Taking the Exam | AP Scores | Credit & Placement

Course Overview | Course Details | About the Exam | Exam Practice

AP Computer Science A

Home > AP Courses > AP Computer Science A

Print Share

Course Overview

What makes this course interesting?

- Learn to design and implement computer programs that solve problems relevant to today's society, including art, media, and engineering
- Learn to apply programming tools and solve complex problems through hands-on experiences and examples

Sample Activity

Program specific tasks and commands in an online robot simulation

Next

- En
- Und
redu
- View J
- View Gridw
- View Exam Practice Tips

Interested in taking AP Computer Science A? Talk to your teachers and counselors about finding the right course for you.

16%

coursera | Explore Courses

WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON

Videogames and Learning

Constance Steinkuehler and Kurt Squire

Videogames aren't just fun, they can be powerful vehicles for learning as well. In this course, we discuss research on the kinds of thinking and learning that goes into videogames and gaming culture, benefits and drawbacks of digital gameplay, tensions between youth culture and traditional education, and new developments intended to bridge that growing divide.

Workload: 4-6 hours/week

Next Session:
September 2013 (10 weeks long)

Sign Up

AP CS Prep for Girls MOOC

About the Instructors

Constance Steinkuehler
University of Wisconsin-Madison

Kurt Squire
University of Wisconsin-Madison

coursera.org/course/videogameslearning

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MSR Stars

Tiffany Barnes
Associate Professor of Computer Science
NC State University

Microsoft Research
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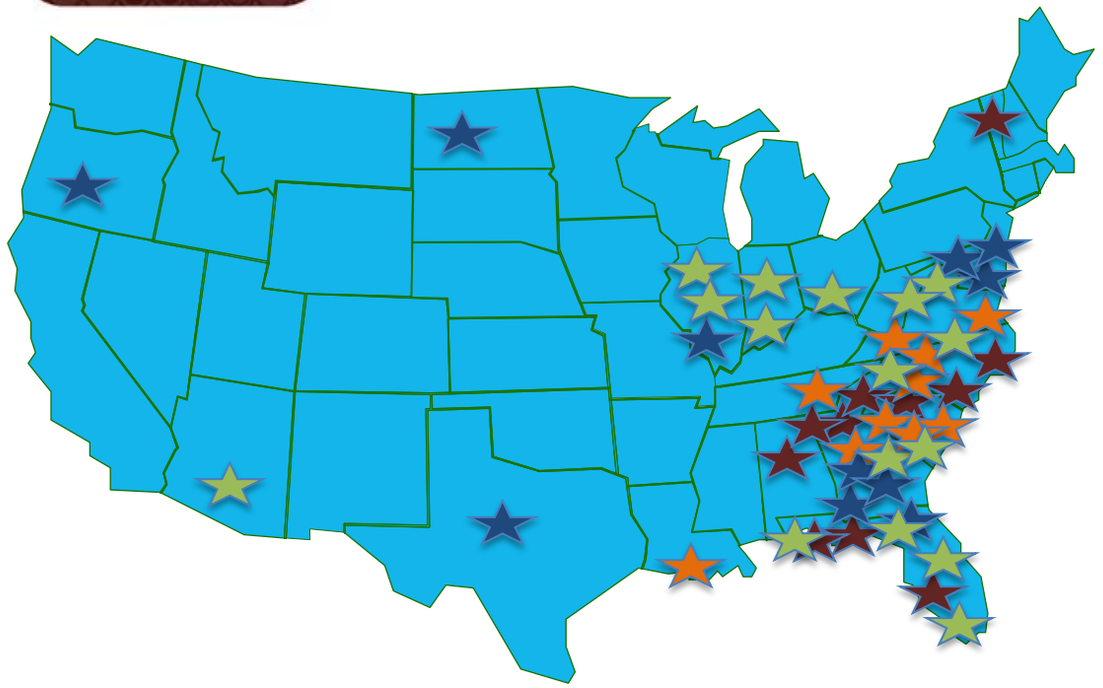
STARS Community & Corps Model



The STARS Community of Practice

*Advancing innovation and discovery through **regional partnerships** to broaden participation*

STARS Leadership Corps
Tiered participation of students, professionals, & educators in research and civic engagement catalyzes regional partnerships

Research, Women's, & Minority Universities

Industry

K-12

Community Colleges

Community & Professional Organizations

Tiered Participation
The corps provides stair-step role models & mentors

- Faculty, Industry
- Graduate students
- Undergraduates
- K-12 students

STARS Celebration: Fosters national collaboration on STARS Leadership Corps, Mentoring, Pair Programming, Research Experiences, and other BPC initiatives.

STARS Central Values: Excellence, Leadership, Community, Service & Civic Engagement

GOALS: Recruiting, Bridging, and Retaining underrepresented people in computing, Advancing faculty, Sustaining and Disseminating BPC

STARS & Celebration foster national on STARS Leadership Corps, Mentoring, Pair Programming, Research Experiences, K12 Outreach
42 institutions in 2012-2013

STARS Outcomes 2006-2012

1,134 students & 88 faculty from 49 schools (06-12):

- Half women, > 45% African American, 10% Hispanic
- Conducted outreach to **46,600 K-12** students
- Developed leaders and formed 168 regional partners

49 universities build leaders in regional engagement

- 27 new schools since 2011
- STARS institutionalized at **18 schools**
- 7 Celebrations with 318 workshops & **1,710 attendees**

STARS is a national community of BPC leaders

- *49 STARS* schools, *697 people* in STARS Online
- *52* BPC Digital Library *materials and tools* disseminated
- *20 journal articles, 54 conference papers, 18 posters*

Evaluation cycles on academic year; data from August 2006-August 2012

STARS Components and impact

STARS Leadership Corps – **Key**

- (co-)curricular model for student-led regional engagement for computing

STARS Celebration

- National community for engagement
- Celebration + Corps = National network to demonstrate and scale practices

STARS Online

- Social network, affinity groups, digital library, website

STARS Leadership

- Management of alliance scaling

Corps Impact*:

- ⬆ Computing efficacy
- ⬆ Perceived social relevance of computing
- ⬆ Computing commitment
- ⬆ Computing identity
- ⬆ GPA

*Dahlberg, Barnes, Buch & Rorrer. (2011). The STARS Alliance: Viable strategies for broadening participation in computing. *TOCE, 11, v3,* #18.

National Resource: Highlights

STARS Celebration:
Inspiring, Developing, Connecting the STARS BPC Community

7 Celebrations with **1,710** participants

318 Training workshops in technical excellence, leadership, community & service engagement

Panels & talks by Industry & Research Leaders

Snag'em app for networking

Student **Poster Competitions**

Graduate school recruiting

STARS Online

STARS Online Social Network
- 697 participants [students, faculty, alumni, partners]
- 20 Affinity Groups, 41 School Groups
- Four Leadership Teams

STARS Digital Library Collection in BPC Portal.org
- 52 resources: lesson plans, tools, papers, etc.

Partners & Projects

205 Active Partners in 2012: 32 professional, 67 K12, 34 community, 27 industry, 45 campus organizations

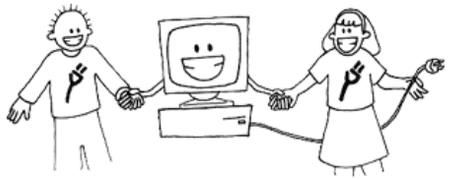
Pair Programming @ 18 schools, **100 classes** with over 4,456 students

Mentoring @ 25 schools, 257 SLC mentors & 514 mentees

Celebration + Corps = Demo and Scale Practices

The STARS Alliance is a National Network to Demonstrate and Scale Practices

- Tekkotsu Robots – with ARTSI Alliance
- REU Preparation – with A4RC Alliance
- Affinity Research Groups – with CAHSI Alliance
- CS Unplugged
- Alice
- Scratch
- Career Mentoring workshops – with CRA-W
- STARS Haiti - *One Laptop per Child* – with Waveplace Foundation and MAC
- EPEC (Georgia Computes! CAITE) – Coming soon!



Alliance for the Advancement of African American Researches in Computing

Computing Scholars of Tomorrow
empoweringleadership.org

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