



How to Get Higher Transfer Rates in Computer Science Pathways

Allison Marino, Principal Investigator

What is the Computer Science Transfer Best Practices project?

Your chance to find out about the Best Practices at “Transfer Champion” Community Colleges

It's **not** a checklist

Something to take inspiration from



Who Created the Computer Science Transfer Best Practices project?

Conceived by Steve Wright, State Director of ICT-DM

Data Research by WestEd, Karen Beltramo

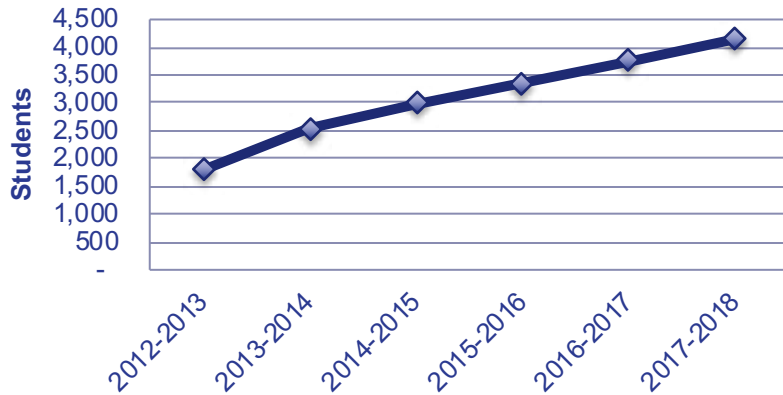
Interviews by Allison Marino, BS & MS, Electrical Engineering & Computer Science

Star Contributors: The CS Faculty and Department Chairs that shared their time and experience for these interviews, despite already full plates guiding students along the transfer pathways.

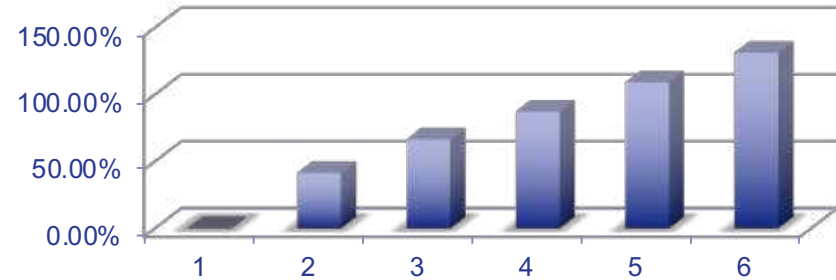


Good News: We Are Scaling Up

Total Community College CS Transfers into CSU and UC



Percentage Increase over 2012/2013 Total Computer Science Transfers from CCC into CSU and UC combined



Up 130% over 5 years; 4,146 total transfers in 2017/2018

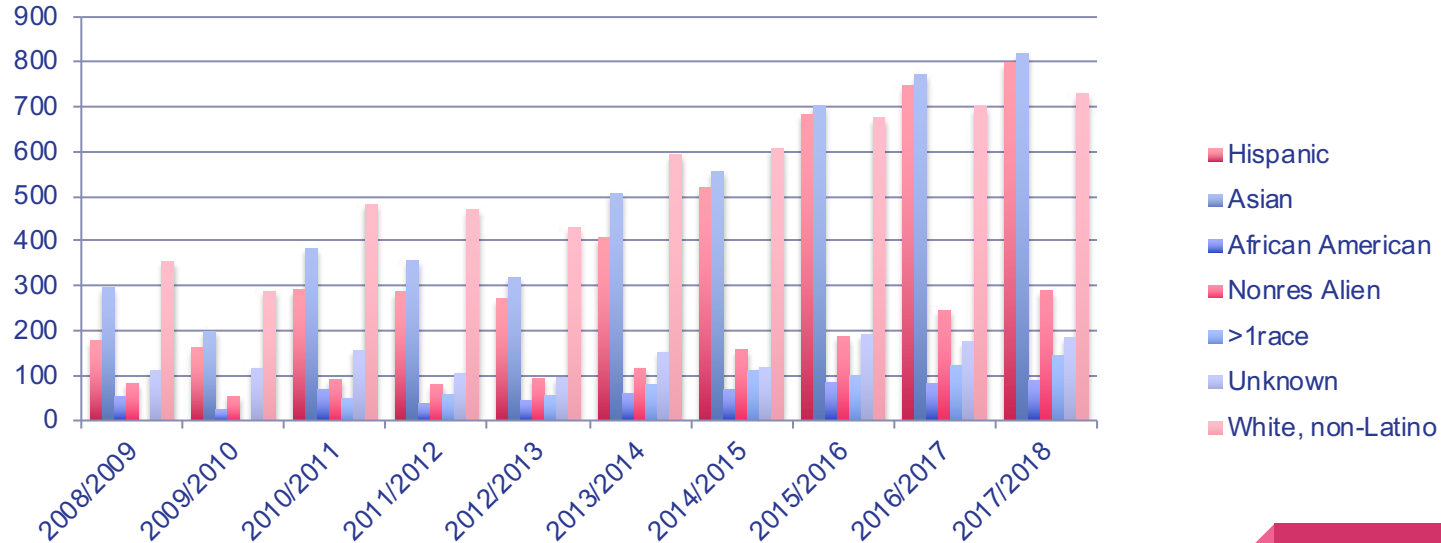
Overall transfers (not just CS) increased 34% during this same time period

Who is
actually
transferring
into 4 year CS
programs?



Ten Year Trend by Ethnicity

Computer Science Transfers into CSU

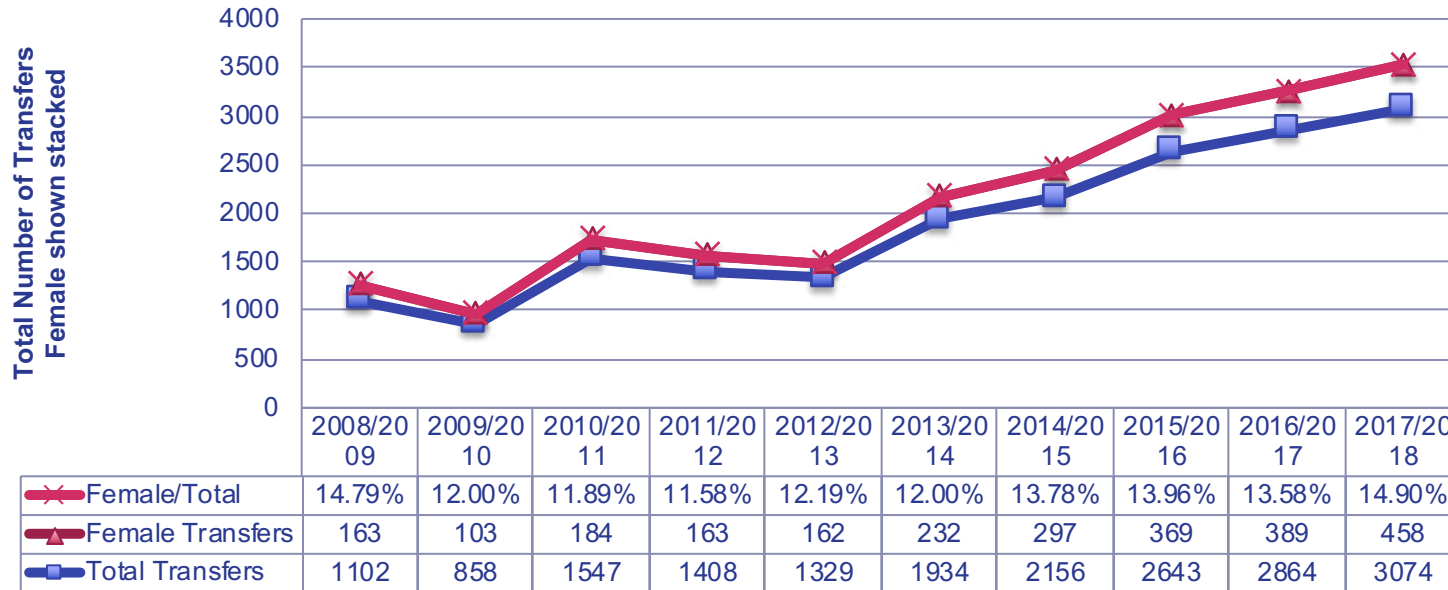


Noticeable progress for Hispanic students

26% of 2017/2018 transfers, up from 16% in 2008/2009

Women Still in Small Numbers, but Tracking

Computer Science Transfers from CCC to CSU: Total and Female with Percentages



There is a common citation that CS classes are 30% women, but only 15% are transferring in this dataset.

CS Transfer Champions by the Numbers

Greater than 20% transfer rate

Greater than 50 students transferred in 2018

Successfully serving URM

Secondary Criteria

Location (wanted representation across CCC regions)

Willingness to be interviewed



Transfer Champions

Colleges Excelling in CS Transfers

City College of San Francisco
Evergreen Valley College
Hartnell College
Folsom Lake College
DeAnza College
Los Angeles Harbor College
Long Beach City College
Golden West College
Pasadena City College
East Los Angeles College
San Bernardino Valley College
Crafton Hills College
Riverside City College
Palomar College



 = Responding Schools

Success Philosophies

Happy faculty, happy students

- Mary Pape, De Anza Dept. chair

Focus, focus, focus

- Caleb Fowler, Folsom Lake

Be excellent and they will come

- Henry Estrada, Evergreen

Host coding competitions & travel to them

- Mark Lehr, Riverside

Outreach and remove administrative obstacles - Sathya Narayanan, Hartnell, CSUMB



Common Threads

Better success with in-person programs than online

TA program matters- looks quite different for large and small

Project collaboration builds good programmers: opportunities for collaboration built into the program

Attention to scheduling



Inclusivity Threads

Visibly-placed diverse instructors

Meeting real-life upperclassmen at ACM/ICPC (International Collegiate Programming Contest). This event mixes 2-year and 4-year colleges.

Incentivized enrichment events (e.g., extra credit to attend industry speaker talks)



“We’re not trying to weed people out, but meet them where they are.”

*Caleb Fowler, Professor & Dept Chair,
Computer Information Science
Folsom Lake College*



*Dr. Suha Al Juboori, Asst. Professor,
Computer Information Science,
Folsom Lake College*

Large Department Focus: DeAnza

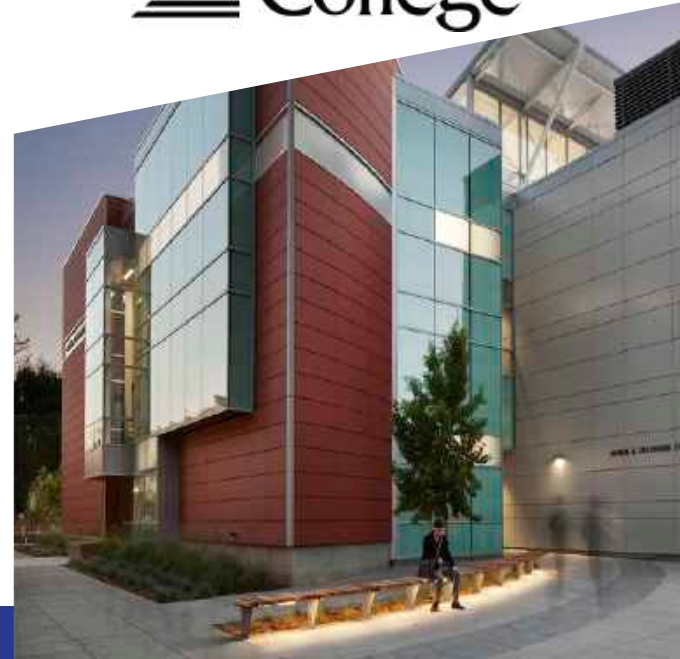
249 CS transfers in 2017/2018,
the most of any CCC

9

Fulltime Faculty

38

Adjuncts



Large Department Focus: DeAnza

#1. Meeting Students Where They Are

#2. Started a Peer Tutor Program *in the classroom* (in CS 22B)

students learn to help other students

some peer tutors become paid TA's
(Strong Workforce Funding)

well-published office hours and TA hours; can sign up for a block of time

#3. Didn't jump into online; created a community in the lab, with 2 coordinators

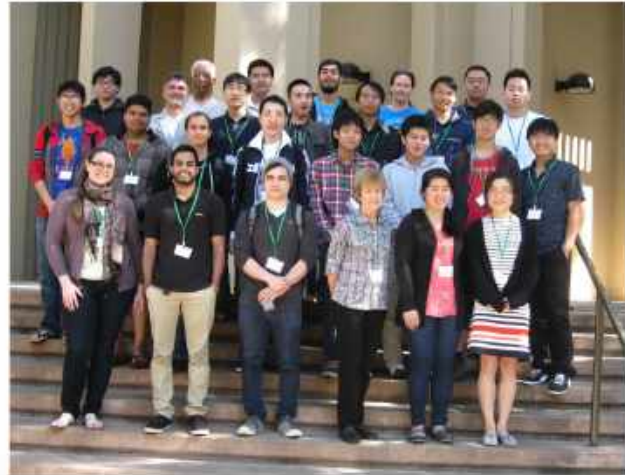
made the path clearer to students

Very easy-to-find office hours for all faculty

Our Faculty & TAs

Numerous CIS faculty come to us from Industry and teach a variety of courses related to their expertise.

- [Read about our instructors](#)
- [Teaching Assistant Schedule](#)



Small Department Focus: Folsom Lake

20% transfer rate, with 42 transfers in 2017/2018, up from 10 in 2012/2013

Most students are full-time and work part-time

2

Fulltime Faculty

7-9

Adjuncts



Small Department Focus: Folsom Lake

Success Approach for Content:

Focus on programming and eliminate classes well-represented at nearby colleges (SQL offerings)

Required core CS courses offered every semester, in multiple formats

Embrace risk when exploring new course offerings

Success approach for Sustainability:

CCCAOE in the Spring in Sacramento

Success Approach for Teaching Methods: ACUE (Association of College and University Educators)

Facilitation

Interactive, project-based class environment with less lecture time

More inclusive, especially with mandatory partner switches

Success Approach for Outreach:

Diversity in hiring

Led to summer outreach programs for women, and refugee women

Tiny Department Focus: LA Harbor

All-adjunct CS instruction within a CS & Math department

0

Fulltime Faculty

3

Adjuncts



Tiny Department Focus: LA Harbor

Math & CS Department Chair: Farah Saddigh

24 students transferred in 2017/2018, up from
6 transfers 5 years ago

Included as CS Transfer Champion for

Transfer percentage out of CS FTEs:
28%

Success serving URM

Success Factors

Strong, diverse math department that is 50% female

AB-705 embedded math tutors

Coordinated scheduling of math and CS courses

STEM Mentor (through a federal grant) that really knows the students

Strong sense of community in math & science department; and connection between faculty and students

Unexpected Findings

Best Practices look different in large and small departments

Programming language is not a determining factor for success

Transfer Model Curriculum isn't driving transfers (yet anyway)

High Level Sponsor: optional




The Real Student Obstacles

The soul-searching and self-doubt that comes from a late night when your code isn't working is real, no matter how much support is all around you. It's important to feel like you belong when that happens.



Top Four Practices to Get Higher Transfer Rates

1. Schedule: optimize it for your students so they can progress through in 2 years
 2. Require student collaboration and interaction in every core class along the way
 3. Meet students where they are, with genuine faculty connection and availability
 4. Stay connected and fueled professionally- that is the wind in your sails for outreach, innovative programming, and whatever it is that the students ask you to say “yes” to next
- 

Further Reading: Equity

From CSforCA.org:

CS Equity Guide: Section 2.5 “What curricula is recommended”

Grades 7-9: “...engage with CS as a medium for *creativity, communication, problem solving and fun.*”

Grades 10/11: “...Along with the fundamentals of computing, students will learn to analyze data, create technology that has a practical impact, and gain a *broader understanding of how CS impacts people and society.*”

CS For What? Diverse visions of computer science education in practice; values underpinning the drive for CS Equity

Short Story: Journey to an AP Computer Science Female Diversity Award

<https://www.pacificcollegiate.com/apps/spotlightmessages/2284>

STEAM, not STEM

Dig Deeper: Be the Data Scientist

California State University: Community College Transfers by Institution of Origin

<http://asd.calstate.edu/ccct/2017-2018/SummaryYear.asp>

Computer Animation and Game Development

Computer Engineering Technology

Computer Science and information Technology

Information Systems

Software Engineering

Computer Engineering

Computer Science

Computer Systems

Information Technology

University of California Transfer Infocenter (2018/2019 data just released)

<https://www.universityofcalifornia.edu/infocenter/transfers-major>

Computer and Information Science, General

Computer Science

Computer/Information Technology Administration and Management

Information Science/Studies

Computer Engineering

Computer Software and Media Applications

Management Information Systems and Services

For the brave: datamart.cccco.edu

Computer Information Systems-070200 Computer Infrastructure

and Support-070800 Computer Networking-070810 Computer Programming-070710 Computer Science (Transfer)-070600 Computer Software Development-070700 Computer Support-070820 Computer Systems Analysis-070730 Database Design and Administration-070720 E-Commerce (Technology emphasis)-070910 Information Technology, General-070100 Software Applications-070210 World Wide Web Administration-070900

Thank You

