

Bridge Program Update

Tracy Harrington-Atkinson
(Bridge Coordinator, 2013-2014)

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Motivation for Bridge Program

We have found that students who are comfortable in their first Computer Science course and do well in it...

- Usually do well in all their other CS courses
- Usually get the Computer Science degree

Over 40% of CS majors nationwide will drop out of the major unless they have some kind of retention intervention



Motivation for Bridge Program

The Bridge Program is meant for students with

- good math scores
- good high school GPAs
- good SAT scores
- but with little or no programming experience

Many high schools

- do not offer Computer Science courses
- have Computer Science courses taught by teachers with limited capability

Motivation for Bridge Program

Students arrive at our department with a wide range of backgrounds

- At one extreme -- years of experience in programming
- At the other extreme -- people who have never done any programming

The latter group of students often struggle in their first CS class

Many feel "clueless and lost" because many of their fellow students can "speak Java" from the first day of class

Motivation for Bridge Program

Many underestimate their ability to succeed as a CS major and self-select out of Computer Science after the first or second semester

Such students can be successful given a little boost ("a bridge")

The Bridge Program also gives them an opportunity to get to know fellow incoming CS freshmen students

Motivation for Bridge Program

Two-week program introduces them to basic Computer Science and programming concepts

Learning in an informal environment at a comfortable pace

Bonds formed with students in the same situation could be the most important aspect of the Bridge Program



2013 Bridge Program

15 of the 19 students returned for their sophomore year

In the past we would have expected only 1-2 of these students to survive and return for their sophomore year

Many of the students are not just surviving, but flourishing!



2013 Bridge Program

Mason Everett is a sophomore member (and Secretary) of the USB as well as President of Purdue Hackers

Two were recognized for Academic Honors last year

Two had internships after their freshmen year

Three students are Undergraduate Teaching Assistants (UTAs) this year

2013 Data

All currently registered 2013 CS Bridge students have completed CS 24000

Data for CS 18000 (Introduction to CS), CS 18200 (Foundations of CS), and CS 24000 (Programming in C) will not change

Students must complete CS courses with a grade of A, B, or C

Next slide: "DFW" refers to a D, F, or Withdrawal from a class

2013 Data

CS 18000 DFW rate (2013 Bridge students): 10.5% (over the course of three semesters)

CS 18000 DFW rate fall 2013 (for all CS students): 19%

CS 18200 DFW rate (2013 Bridge students): 20% (over the course of three semesters)

CS 18200 DFW rate spring 2014 (for all CS students): 23.1%

CS 24000 DFW rate (2013 Bridge students): 27% (over the course of three semesters)

CS 24000 DFW rate spring 2014 (for all CS students): 51%

2013 Data

Following the completion of the fall 2014 semester ---

- 3 of the original 19 students from the 2013 CS Bridge program have completed CS 25000 (Computer Architecture) and CS 25100 (Data Structures and Algorithms)
- 5 are in CS 25000 and/or CS 25100 in spring 2015
- 3 are in CS 25200 (Systems Programming) and starting their tracks in spring 2015
- All 3 of these are in CS 30700 (Software Engineering)

2013 Data

Loss rates ---

- Following CS 17700, none of the 2013 Bridge students left the CS program
- CS 17700 (Programming With Multimedia Objects) is a course taken by CS students not ready for CS 18000
- Following CS 18000, 4 (21%) of the 2013 Bridge students left computer science
- Following CS 24000, an additional 3 (20%) of the 2013 Bridge students left CS

2013 Data

Loss rates ---

- 7 (37%) of the 2013 Bridge students have left the program at this point
- 12 of the 19 (63%) are still in Computer Science
- **This is a population from which we typically have retained no students at the end of the sophomore year**

Results of the 2014 Bridge Program

Most students did very well with the lab exercises

Most worked very hard throughout the 2-week period

Lots of enthusiasm

Over the course of two weeks, asked in class approximately 500 questions

Difficult to cover all classroom materials every day



Results of the 2014 Bridge Program

Two young men with vision challenges

- We used large font materials for them
- Bridge Program provided nice transition to college for them

Two of our 2014 Bridge students were actually admitted to the College of Technology. Both CODOed into CS after the fall semester.



Results of the 2014 Bridge Program

When students finished this program, they...

- Had learned tremendous number of Computer Science concepts
- Had experience with classes like they are going to encounter in college
- Had experience with labs and knew how we conduct them
- Had taken a "final exam" and had experience with something like that
- Had met and gotten to know several members of their incoming freshman class

Results of the 2014 Bridge Program

- Had met and gotten to know CS students who will serve as lab instructors and mentors
- Networked with prior Bridge students who were UTAs this time
- Were on campus early, explored the campus and the CS building, and knew their way around
- Gotten off campus to see some of the local area
- Had formed friendships that will carry throughout the academic year ... and may even last throughout rest of their lives
- Are confident that they can succeed

2015 Bridge Program

Scott Nelson, Administrator of CS Undergraduate Programs and Services has taken on the role of Bridge Class Coordinator



2015 Bridge Program

Hard to use a "grapevine" because there is no communication between CS freshmen and students still in high school

Postcards, email, phone calls are NOT the way to reach today's high school senior students

This year -- text or SnapChat

We will include Bridge flyers in our recruitment information for students who visit campus

We will add Bridge flyers to the STAR folders students receive when they arrive on campus

2015 Bridge Program

We will speak in the morning to all STAR students for that day

We will not make online materials available until later in the summer

We will include as many former Bridge students as possible as UTAs

We will create mentoring between former Bridge students and current Bridge students -- giving them more contacts on campus

2015 Bridge Program

We will invite faculty of freshmen courses to meet the Bridge students during social events

We will have social events only the first week

(Students get to know each other during the first week and find their own things to do together during the second week)

We will set up closing social event in the second week with some kind of buffet and visiting instead of a movie night

Students want a large area to visit together and hang out instead of a scheduled event