

Bridge Program

Buster Dunsmore

Gustavo Rodriguez-Rivera

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Motivation for Bridge Classes

Bridge to First Computer Science Class --

Students with good math scores, good high school GPAs, excellent SATs, but with little or no programming experience

These students often struggle in the first CS class (CS 18000)

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

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

Motivation for Bridge Classes

Bridge to First Computer Science Class --

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

Bridge to CS 18000 would give them an opportunity to get to know fellow incoming CS freshmen students and to prepare for the first CS course

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

Learning in an informal environment at a comfortable pace

Bonds formed with students in same situation could be most important aspect of Bridge to CS 18000

Motivation for Bridge Classes

Bridge to Second Computer Science Class --

This program is for students who have taken Java during high school but are afraid or feel not well-prepared to take the testout exam to skip CS 18000

Skipping CS 18000 allows them to take CS 24000 (C Programming) and CS 18200 (Foundations of Computer Science) early

That may accelerate their graduation

The Bridge to Second Computer Science Class reviews Java and prepares them to successfully pass the testout exam

How We Recruited Students

Sunil sent letter to every student explaining benefits of both Bridge programs and inviting them to enroll in one or the other

We charged \$550 for this program (which included room and meals), but only charged \$150 to students with "financial need"

How We Recruited Students

Bridge to First Computer Science Class --

Only 12 students initially enrolled in Bridge to CS 18000

Buster identified about 40 more students who would benefit from this program

Contacted these with personal email messages

Lots of help from advisors who identified potential Bridge to CS 18000 students and let Buster meet with each during their Summer Transition, Advising, and Registration (STAR) appointments

How We Recruited Students

Bridge to First Computer Science Class --

Many of these students seemed shy and reluctant, but we ended with 20 enrolled -- our goal

Some students from Indiana

Some from surrounding states -- Illinois, Michigan, Ohio, Minnesota

Some from further away -- Missouri, Pennsylvania, Texas, California

Some from really far away -- South Korea and India

Many students for whom Bridge to CS 18000 class was appropriate had financial need

How We Recruited Students

Bridge to Second Computer Science Class --

For the students who were interested we asked them to answer some questions online and to submit examples of Java code they had written

Only 6 students initially enrolled in the Bridge to Second Computer Science Class

We tried to invite more students directly

We used SAT scores to identify potential students

Ended with 7 students register in the course

How the Classes Were Conducted

Began at 6:30 pm, Sunday, July 28 with an orientation and dinner in the Atrium of the Hillenbrand Residence Hall

Two weeks of Monday-Friday classes

Ended at 12:00 noon, Friday, August 9 in the Commons area of the Lawson Computer Science Building with a luncheon

How the Classes Were Conducted

Bridge to First Computer Science Class --

1 hour of instruction each morning and afternoon (traditional class room)

2 hours of lab each morning and afternoon (self-paced exercises with lots of help from lab instructors)

Joint lunch for all Bridge students, instructors, lab instructors, advisors

Had 6 Lab Instructors who worked with Bridge to CS 18000

How the Classes Were Conducted

Bridge to First Computer Science Class Topics

- Computer Basics
- Types, Variables, Strings
- Selection
- Repetition
- Arrays
- Simple Graphical User Interfaces
- Methods
- Inheritance

How the Classes Were Conducted

Bridge to Second Computer Science Class

Combined instruction and labs

3 hours of instruction/lab each morning and afternoon

Reviewed Java Basics and concentrated on topics from the second half of CS 18000

Also explained GUI programming, Threads, and Networking -- topics that often are not included in high school courses

How the Classes Were Conducted

Bridge to Second Computer Science Class Topics

- Java Basics, Basic I/O, Primitive Types, Selection
- Repetition, Arrays, Simple GUI
- Methods, Classes
- Interfaces, Inheritance
- Concurrent Programming and Synchronization
- Graphical User Interfaces
- Dynamic Data Structures
- Recursion, Exception Handling
- File I/O and Network Communication

Fun (Bonding) Activities

Renate Mallus-Medot and Tracy Harrington-Atkinson handled logistics and activities

Activities for some evenings and the weekend --

- Scavenger hunts
- Game nights
- Team-building rope course
- Bowling
- Canoe trip

Results

Bridge to First Computer Science Class --

19 students finished the course (1 dropped out the first week)

Most did very well with the lab exercises

Most worked very hard ... especially the first week

Some slacked off a little in the second week ... buoyed by the confidence that they could master the material later

The Bridge to CS 18000 class seemed to go very well

The real evidence will be how many of these 19 students get an A, B, or C in CS 18000 and are still with us at the end of the Fall and Spring semesters

Results

Bridge to Second Computer Science Class --

A grade of B is required to test out of CS 18000 -- not an easy task

4 of the 7 students were able to test out of CS 18000

2 of those 4 decided to take CS 18000 anyway

Students who did not test out improved their programming skills a lot and should do very well in CS 18000

Future Plans

Bridge to First Computer Science Class --

Buster will set up a lunch in late November with all Bridge to First CS class students

We will talk about how the semester has gone and what their plans are for Spring semester

Questions to be discussed:

What should we do the same next time?

What should we do differently next time?

Do we need two weeks?

Future Plans

Bridge to Second Computer Science Class --

Gustavo will also talk with his students in late November

We want to know if the program should be repeated

We want to know how to identify better which students could benefit from the program

About 20 students took the testout exam this Fall semester who did not participate in the course

Only about 1/4 of them passed the exam

Future Plans

Bridge to Second Computer Science Class --

We want to put preparation material online to allow students to study on their own in order to test out of CS 18000

Skipping CS 18000 could potentially allow them to graduate sooner and/or to take more advanced courses while they are here