Texas Interdisciplinary Plan
University of Texas at Austin

- Academic First-Year Program
- Colleges of Natural Sciences and Liberal Arts
- “Small-College Environment”
- Cohort Model
- Rigorous classes, dedicated advising, peer mentoring
Factors that shaped TIP

University of Texas at Austin

- Top 10% Policy
- Poor retention in College of Natural Sciences
- Limited background in pre-CS curriculum
- Minority and female participation rates in pre-CS
TIP’s Pre-CS Program
University of Texas at Austin

- 25 – 35 students each year (since 2000)
- Hands-on introduction to logic & programming
- Mentoring & tutoring by CS majors
- Progressive scholarship awards with INTEL support
What our pre-CS students look like

University of Texas at Austin

- Females fill 4-6 seats in each section of 25  (vs. 3-5)
- 48% are minority students   (vs. 18%)
- 20% are first-generation
- 38% are low SES
- Average SAT is 1100  (compared to 1250)
Data we collect

University of Texas at Austin

For TIP & Control Groups:

- Major code
- Courses taken toward the major
- Course grades & GPA
- Graduation in the college and the major
- Anecdotal feedback (surveys, focus groups, etc.)
- First-hand experience (instructors and mentors)
What our data show: short-term

University of Texas at Austin

- Higher GPA during the first fall semester
- Lower rates of academic probation
- More likely to enroll in CS 307 and PHL 313K
- Increased confidence in pursuing the major
### GPA Comparison: Freshmen

University of Texas at Austin

<table>
<thead>
<tr>
<th>Cohort</th>
<th>TIP</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3.02</td>
<td>2.46</td>
</tr>
<tr>
<td>2001</td>
<td>2.91</td>
<td>2.54</td>
</tr>
<tr>
<td>2002</td>
<td>2.78</td>
<td>2.52</td>
</tr>
<tr>
<td>2003</td>
<td>3.21</td>
<td>3.01</td>
</tr>
<tr>
<td>2004</td>
<td>2.85</td>
<td>2.43</td>
</tr>
<tr>
<td>Average</td>
<td>2.94</td>
<td>2.39</td>
</tr>
</tbody>
</table>

General CS population GPA: 2.88
Anecdotal Evidence
University of Texas at Austin

<table>
<thead>
<tr>
<th>Survey results</th>
<th>Increased</th>
<th>Stayed Same</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>My confidence in my ability to do CS has</td>
<td>56%</td>
<td>40%</td>
<td>4%</td>
</tr>
<tr>
<td>My belief that I think like a CS person has</td>
<td>53%</td>
<td>26%</td>
<td>14%</td>
</tr>
<tr>
<td>My interest in majoring in CS has</td>
<td>26%</td>
<td>65%</td>
<td>8%</td>
</tr>
</tbody>
</table>
What our data show: long-term

University of Texas at Austin

Good News:
- Students more likely to stay in the College
- Students more likely to stay in the major
- Minorities retained at higher rate

Bad News:
- Overall numbers are small
- Retention of females still a problem
Retention in the College

Texas Interdisciplinary Plan

Year Entered UT

<table>
<thead>
<tr>
<th>Year Entered UT</th>
<th>TIP</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>95%</td>
<td>92%</td>
</tr>
<tr>
<td>2003</td>
<td>92%</td>
<td>85%</td>
</tr>
<tr>
<td>2002</td>
<td>62%</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>52%</td>
<td>30%</td>
</tr>
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</table>
Retention in the Major

Texas Interdisciplinary Plan

Year Entered UT

<table>
<thead>
<tr>
<th>Year</th>
<th>TIP</th>
<th>Control</th>
<th>CS Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td>18%</td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td>64%</td>
</tr>
</tbody>
</table>
### Trends for Underrepresented Groups


<table>
<thead>
<tr>
<th></th>
<th>Freshmen</th>
<th>Seniors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minorities</td>
<td>23%</td>
<td>7%</td>
</tr>
<tr>
<td>Females</td>
<td>14%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Retention of Minority Students in Major

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Year Entered UT

0% 0% 0% 0% 0%

TIP
control
CS overall
Retention of Female Students in the Major

Texas Interdisciplinary Plan

[Graph showing retention rates for female students in the major over years entered at UT, with categories: TIP, control, and CS overall. Key points include:
- 67% retention in 2004 for TIP
- 50% retention in 2003 for control
- 45% retention in 2003 for CS overall
- 43% retention in 2002 for control
- 40% retention in 2002 for CS overall
- 29% retention in 2001 for control
- 20% retention in 2001 for CS overall
- 9% retention in 2000 for control
- 7% retention in 2000 for CS overall
- 0% retention in 2000 for TIP]
Retention of TIP Students in the Major

Year Entered UT

- Overall
- Minority
- Females
## Graduation Data

**Texas Interdisciplinary Plan**

<table>
<thead>
<tr>
<th>Cohort</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduated in Major</td>
<td>1</td>
<td>Male, Hispanic</td>
</tr>
<tr>
<td>Will Graduate in Major</td>
<td>3</td>
<td>Male, Hispanic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male, Asian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male, White</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Male, Hispanic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male, Asian</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female, Hispanic</td>
</tr>
</tbody>
</table>
What we’ve learned: the good...

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- Our courses work: students are well-prepared.
- Cohort model keeps minority students in the pipeline.
What we’ve learned: the bad…

Do we work too hard to entice “uncertain” pre-CS students?

Should we be teaching high school students what CS is?
What we’ve learned: the ugly

University of Texas at Austin

- Our program has not increased female retention in CS.
- Female students continue to be concerned with their “fit” to CS.
Next Steps

- Explore ways to help our students better understand CS careers
- Make CS a more attractive option for females
- Promote student interest in graduate school
- Seek funding support for our undergraduates
For more information
University of Texas at Austin

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